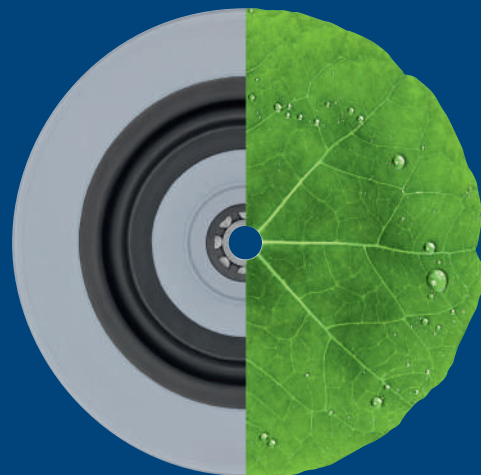
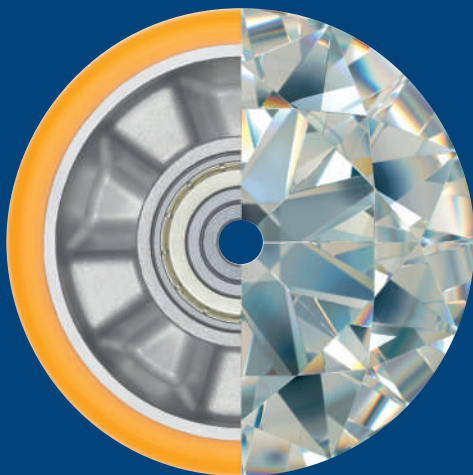


# OUR MOBILITY SOLUTIONS

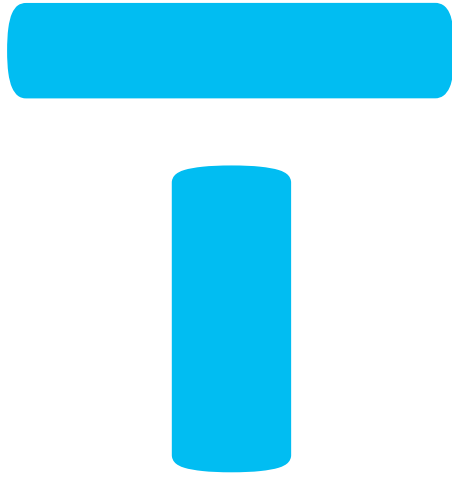


**TENTE**

BETTER MOBILITY. BETTER LIFE.











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**OUR  
BRAND  
PROMISE**





# Better Mobility. Better Life.

There are some significant terms which are closely associated with the word 'mobility': progress, movement, flexibility and drive. They all shape our modern lives and are essential for success and development. It is for exactly this reason that at TENTE we work on driving mobility forward every day – with our trailblazing castors and wheels – with uncompromising standards of quality – and above all, with a clear brand promise: Better Mobility. Better Life.

TENTE has been developing smart mobility solutions since 1923. Solutions which noticeably improve people's lives and their working environment. Solutions which increase productivity, ensure more safety and open up new horizons in matters of design, durability as well as environmental friendliness – and that means in all aspects of life. No matter whether it's for industry, commerce, medical technology, heavy goods transport, mechanical engineering, intralogistics, factory equipment or the furniture sector: TENTE's castors and wheels set new standards and put influential changes in motion. By doing this, we enjoy our customers' confidence not only because of the high quality of our products and our innovative spirit, but especially due to the close customer support which we provide on five continents.

On the following pages we would like to explain in detail which values form the basis of our multiple strengths, in which outstanding mobility solutions manifest themselves and which far-reaching improvements can be brought about – for mobility – for all sectors of life – and of course for our customers.



**OUR  
BRAND  
VALUES**



# GLOBALITY

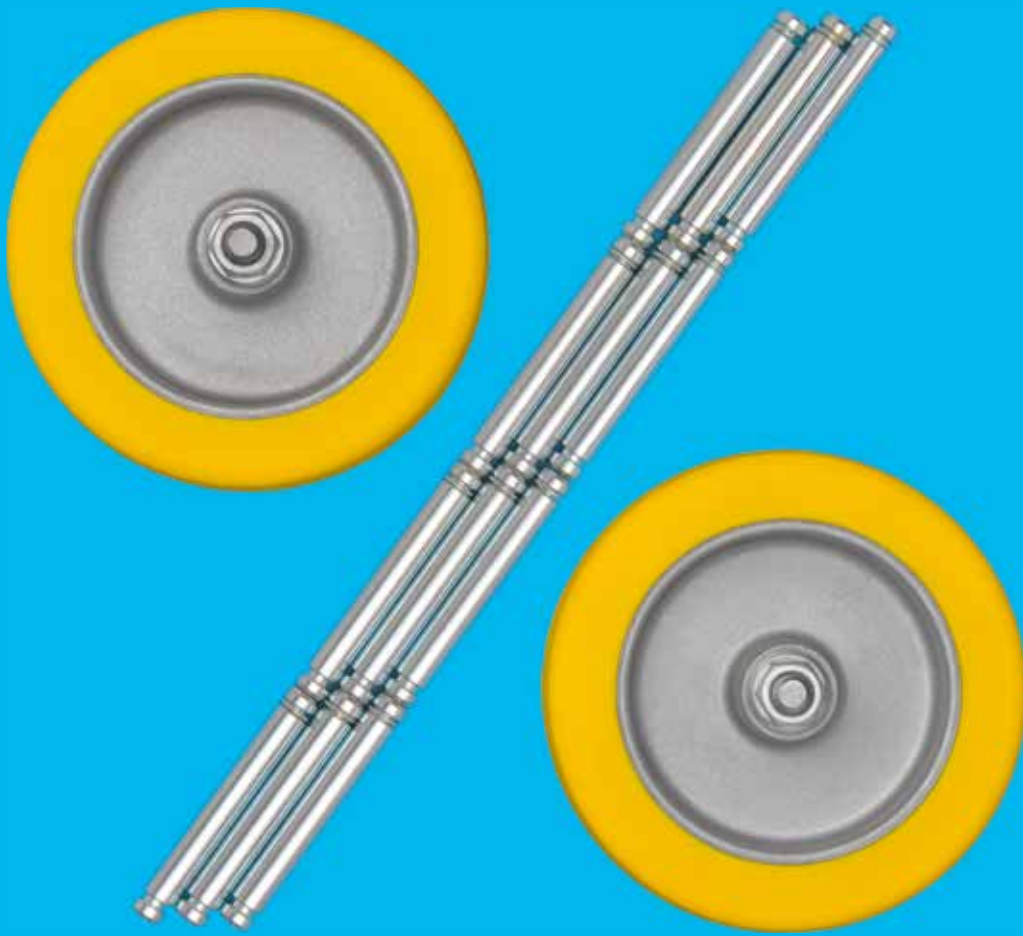
We are a globally operating company that offers you support on five continents. That means on the spot support with an equal opportunity service and in-depth support. Our staff not only understand the regional and industry-specific requirements, but also speak your language and are familiar with your country's cultural practices.

Moreover, global has an additional meaning for us: i.e. it incorporates a holistic point of view. This means we look at each assignment from every angle and achieve a new way of seeing things by changing the perspective. Thus we are able to offer you comprehensive and integrated mobility solutions which ensure improvements in a wide variety of processes.

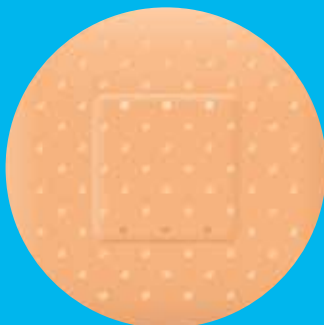
# EFFICIENCY

We make mobility better – faster – more effective, or to put it in a nut-shell; more efficient. For us that means offering you uncomplicated access to our products and services. Plus, we guarantee our customers a professional partnership and we act in a manner which is goal-oriented and fruitful.

This means you can rely on smart mobility solutions – which are designed to achieve maximum efficiency – saving you time, effort, energy and operational costs. This way you can improve your working methods and conditions, thereby achieving diverse optimisation of processes and ensuring increased productivity, profitability and safety.







# INSPIRATION

Our mobility solutions, our know-how and our service are sources of inspiration. They inspire us to recognise new potentials and open up the way for unlimited possibilities. Not only do we take the appropriate measures to ensure this, but we also initiate them. We have many years of experience at our disposal as well as sound expert knowledge which is globally interlinked within our company. It is our global knowledge base which enables us to speak a common language with our customers and to create inspiring solutions anywhere in the world. At the same time, we ourselves are always on the lookout for new inspirations and invest purposefully in our future development and our staff.

This way we are continuously moving mobility forwards and acknowledging the challenges you set us as sources of inspiration from which we can create and pioneer ideas. This is the only way we can meet the requirements of developing new solutions for you – while also improving the quality of life for everybody on a sustainable basis.



**OUR  
MOBILITY  
SOLUTIONS**



# OUR SMART SOLUTIONS IMPROVE PRODUCTIVITY –

for both manufacturers and users. At the same time, they increase the efficiency of processes in a wide variety of areas: from assembly through to the specific applications of the finished products. This gives you, as a manufacturer, the clear advantage of measurably optimising your critical interfaces - both technically and with respect to your workflows.

We not only provide you with individual components, but also offer complete system solutions, which improve the manufacturing process thanks to their extremely high integration, quality and system properties. For users, our castors and wheels ensure greater productivity due to their outstanding features. They facilitate, accelerate and automate processes and noticeably reduce the strain on users.

**The result: Better mobility, enormous time savings, improved satisfaction, lower sickness rates – and significantly more efficient processes.**



# A SOLUTION THAT OPENS UP NEW PATHS BY REDUCING OLD ONES

At first glance, the idea put forward by our customer Esselte Leitz seems daring: to dispose of industrial trucks almost entirely in the warehouse. At second glance, things looked a little different, because for picking the goods, multi-shelf trolleys equipped with our TENTE e-drive flex electric drive system were used. The smart solution allows employees to effortlessly transport a large volume of goods, which not only improves productivity, but also reduces walking distances – by as much as 80 percent.

## THE STARTING POINT

Esselte Leitz GmbH & Co KG belongs to the Acco Brands Corporation and is known for its file folders and innovative office supplies. The company offers its customers a 24-hour delivery service: orders received before 1 pm are shipped the same day. This requires the highest possible flexibility in terms of both personnel and deployment of equipment.

## TIME-CONSUMING PROCESSES AND NUMEROUS ROUTES

Esselte Leitz ships 1.7 million order items annually and records six million goods withdrawals per year. This means that employees handle goods with a total weight of 40,000 tonnes. The company is therefore continuously working on optimising working conditions and making order picking highly efficient.

In the course of this improvement process, the persons responsible modernised their existing concept for order picking and introduced the so-called Takt Time System. It allows shipments to be organised with as little effort as possible. In the course of this transition, the transport of goods by means of electric industrial trucks was also called into question.

Esselte Leitz wanted to significantly improve the utilisation of its technical resources and to reduce the time required for order picking. The aim was to be able to increase capacities flexibly, from one minute to the next. In order to achieve this, the company decided to use order picking trolleys that move under their own steam. Since these weigh up to 400 kilograms when loaded, a solution was required that would make it possible to move and manoeuvre the heavy loads effortlessly.







## OUR SMART MOBILITY SOLUTION

The heavy order picking trolleys need to be moved quickly without burdening the employees. At the same time, the trolleys should be easy to operate and have perfect manoeuvrability. We looked at the situation from several angles and considered various factors: the drive characteristics, the different requirements during the working process and ergonomic aspects.

The solution: our e-drive flex electronic drive system, specially adapted in close cooperation with Esselte Leitz. The system has a powerful electric motor and makes it possible to set the order picking trolleys in motion at the push of a button. The speed is infinitely variable, both forwards and backwards. Employees can move heavy loads easily, quickly and comfortably. If no assistance is required, the drive wheel of the e-drive flex retracts automatically. The parameters of the control module and the battery life were adapted by our team to meet the specific needs of the customer. At the same time, we looked at the entire system and examined the optimisation potential of the existing castors. The selection of particularly low-noise castors made it possible to significantly improve the driving characteristics of the order picking trolleys thanks to precision ball bearings and treads made of natural rubber.

Ergonomics also played a decisive role. We mounted the battery charging plug of the e-drive at the perfect working height and the hand-held control unit for the electronic drive system was ergonomically designed and installed at the optimum operating position. Esselte Leitz thus received a complete system solution in which all of the components are perfectly matched to each other.

## OPTIMISED PROCESSES, REDUCED COSTS AND INCREASED PRODUCTIVITY

With the new order picking concept, Esselte Leitz's employees now have far fewer travel distances to cover during their work – 80 percent less, to be precise. The reduced use of industrial trucks also means that the company saves on repair, maintenance and training costs. Moreover, the highly efficient batteries of the e-drive flex's drive system drastically reduce power consumption.



*“From our point of view as a user, the flexible and easily controllable e-drive solution provided by TENTE fits very well into our Kaizen approach.”*

**Axel Zühlke** Director Logistics at Esselte Leitz

Thanks to the perfect combination of our solution with the order picking trolleys, we were able not only to improve mobility, but also to optimise the entire work process, reduce operating costs and appreciably increase productivity.





# SOLUTIONS FOR LOGISTICS OPTIMISATION

Smart solutions for intralogistics represent critical key factors in process optimisation. Our castors and wheels make up a part of systems that can significantly improve organisation and the flow of materials within the company. Their use under and in transport applications simplifies and accelerates work processes, saves operating costs, reduces energy consumption and significantly increases efficiency. So, it is hardly surprising that the intralogistics branch is steadily developing.

We are here to help you make your processes more efficient – with smart solutions such as the e-drive or the self-aligning Scout castor.



# SIMPLY FASTER: ELECTRONIC DATA EXCHANGE

When it comes to cooperation with customers, qualitative improvements are the focus for our entire company. A premise that therefore applies not only to the development of mobility solutions, but also to the design and implementation of the accompanying commercial and logistical processes. For us, automated processes represent a way of ensuring the secure, reliable and fast transfer of information, data and documents, which generates significant added value for you. In addition to providing common electronic formats and standards for data exchange (Electronic Data Interchange – EDI), we can also adapt the electronic connection to suit your specific, individual requirements. The advantages are obvious: A reduction in effort and process costs thanks to accelerated processing and less data management work. This efficiency also has a beneficial effect on resources, time and costs.

Because electronic data exchange not only improves process reliability, but also makes it possible to implement demand-oriented supply and thus reduce storage and logistics costs. The environment also benefits from this method – after all, EDI generates significantly fewer paper documents. Contact us – together we can create the best conditions for your automated and efficient procurement logistics.

## LESS IS MORE – MORE ADVANTAGES

Anyone who produces 90,000 hospital beds a year and delivers them to 100 countries needs to be able to rely on one thing: top efficiency. For this very reason, we supply our customer LINET with a threefold less-is-more solution in terms of storage, capital commitment and costs through our just-in-time delivery to its base in the Czech Republic. A triple bonus in flexibility, profitability and productivity.





### THE STARTING POINT

The multinational LINET Group SE makes innovative beds for hospitals, nursing homes and also supplies a wide range of products for treatment systems and medical furniture in hospitals and care facilities. LINET insists on using TENTE castors for its many different products, which are made in the production plant in the Czech Republic.

### ASSEMBLY LINE WORK AND SMALL BATCHES

LINET has a clear production strategy and aims to avoid surplus and long storage times. The company therefore uses the Kanban management system to control its processes. This allows the flexibility to be able to produce the number ordered by the customer in any given case – a process in which the individual steps are coordinated in a seamless flow without delays.

In order to fit in with this sequence, LINET is to be supplied only with the castors which are actually needed and no more. Given the wide variety of hospital beds, couches and side tables, as well as the vastly different production batch sizes, this is no mean feat – but not one which could cause us difficulties.



## OUR SMART MOBILITY SOLUTION

We have been working closely with LINET since 1992. Our employees in the Czech Republic are linked to LINET's inventory control system so that the production processes of the bed manufacturer can be improved. We can therefore keep track of exactly which castors are currently being taken out of stock and used in production. Our team checks which specific products have left the LINET warehouse every day and need to be replenished – acknowledging the requirements down to the very last detail. Which types of castors are needed? What is the design specification? What size, colour and material is required?

We have the flexibility to be able to respond to the demand and can guarantee rapid delivery, even for large quantities. LINET also benefits from another advantage of the close working relationship. In the form of reliable data for planning, because we have the means to forecast the precise number of castors which will be required by LINET each year, in all segments, then we can manage our production, assembly and warehousing operations accordingly. Naturally our commitment to the diversity of products made by

the bed manufacturer is not confined to logistics. The variety of our products are equally impressive.

We can therefore offer the company a wide choice of castors and wheels with the ability to provide the right solution for all the requirements in the medical market – in the right size and with the right features.

## GREATER PRODUCTIVITY, FEWER COSTS

Lead times and material stocks are kept to a minimum thanks to just-in-time deliveries. Furthermore, LINET does not need to deploy staff for supply inventory, but instead, just for incoming goods receipts. This approach brings a significant increase in process efficiency. The company has considerably less capital tied up and saves on stock management and staffing costs. The amount of time spent on purchase order processing is also minimised.

**We enjoy a business relationship based on trust and therefore LINET enjoys the benefit of better productivity, as reflected in an extremely efficient manufacturing process.**



*“Not only does TENTE offer us the right products but it also provides just-in-time deliveries every time.”*

**Zbyněk Frolík** CEO and Founder of the LINET SE Group





# HOW AN INNOVATIVE CASTOR IMPROVES LOGISTICS IN A BIG WAY – ALL BY ITSELF

Every inch counts when it comes to small shops. Shopkeepers are always on the lookout for solutions to save them space and work – like the special castor we have developed for our customer CHEP’s wheeled display platforms. The system works with a self-aligning castor that not only makes it easier to stack platforms – but above all boosts flexibility and efficiency in day-to-day selling.

## THE STARTING POINT

CHEP is a global provider of supply chain solutions serving the consumer goods, fresh food, beverage, manufacturing and retail sectors in more than 60 countries. CHEP offers a wide range of logistics, operational platforms and support services that are designed to increase performance and lower risk, while also improving environmental sustainability.

CHEP’s 12,500 employees and approximately 300 million reusable platforms (pallets and containers) deliver comprehensive coverage and exceptional value, supporting more than 500,000 customer touch-points for global brands such as Procter & Gamble, Sysco, Kellogg’s and Nestlé. CHEP is part of the Brambles Group, the operator of a portfolio that includes IFCO, the leading provider of Reusable Plastic Containers (RPCs) to the fresh food supply chain globally, as well as specialist container logistics businesses serving the automotive sector.

## OPTIMISING PROCESSES FOR THE RETAIL TRADE

More and more consumers prefer to shop in small convenience stores right where they live instead of going to superstores on the outskirts of town. However, the sales and storage areas in these shops offer little space and make it virtually impossible to use large pallet trucks or Euro pallets. For this reason, CHEP has developed a mobile quarter-pallet that is perfectly adapted to the limited space in convenience stores and optimises internal logistics processes: the so-called dolly.

Its intelligent design guarantees very easy movement of goods in narrow aisles and allows flexible presentation and fast refilling at the point of sale. For this replenishing and merchandising solution, CHEP was therefore seeking castors that are quiet, guarantee safe and easy handling and lend themselves to fast, stable stacking of the platform once used. This was of central importance for the global market leader. Storing, delivering and collecting millions of pallets worldwide is a huge logistical challenge which has to function smoothly – and can now do so thanks to our support.

## OUR SMART MOBILITY SOLUTION

Our first thought was: The quarter-pallet requires a complete system of two swivel castors and two fixed castors. The second: A conventional swivel castor will twist when lifted, making stacking the wheeled display platforms more difficult. Shop staff would be faced with the task of straightening the castors by hand every time. Added to that, there is a risk that wheeled display platforms could be stacked at an angle, thereby increasing the risk of accidents. Our engineers therefore developed a special design. This incorporated springs which allowed the castors to automatically return to a straight position after every movement.

As the next step, we worked with CHEP to adjust the castor fixings to the platforms to ensure smooth stacking. In addition, a lock on one of the two swivel castors prevents customers from accidentally moving the pallet and increasing the risk of accidents.

It was also important for us to look at other crucial questions: How can we guarantee optimum user-friendliness? And how can we improve alignment to make the work easier? The answer lies in the colour scheme. The fixed castors are fitted with grey wheels and the swivel castors with blue wheels – an easy-to-use system that prevents mix-ups and ensures quick alignment.

However, in developing these castors, we not only looked at them in terms of their use inside the shop, but also outside of it. After all, the platforms arrive by lorry and are wheeled to the shop premises from there – right along the pavement in the early hours of the morning. Excellent sound insulation is therefore vital. As an experienced manufacturer of silent castors, we were able to master this challenge with ease.

### CONSIDERABLE TIME SAVINGS AND A HIGHLY EFFICIENT SUPPLY CHAIN

Thanks to the combination of fixed and lockable swivel castors with an automatic alignment function, the use of wheeled display platforms at the point of sale is considerably simplified in every situation. The brake is a key element and improves safety during transportation and delivery to final places. In small shops where staff are constantly moving pallets, this special design saves a tremendous amount of time and thus defines a completely new level of efficiency – from precise handling, through reliable presentation, to rapid refilling.

In addition to the immediate benefits in day-to-day sales, the solution also has a decisive effect for CHEP: the improvement of worldwide logistical processes. Simply put, the small castors make for tremendous optimisation. Thanks to their self-alignment, the wheeled display platforms can now be stacked faster, stored more securely and delivered more quickly.

While we're at the global level, we were also able to convince CHEP of our ability to do so on an international level. With our staff on the ground on five continents, we offer worldwide service to allow us to react quickly and flexibly to every requirement.

**Our solution thus improves all areas  
of the supply chain around the globe.**



*“Our close cooperation with TENTE has markedly improved the level of innovation of CHEP mobile display platform. Our customers benefit from a simple, efficient solution that reduces disposition costs as well as significantly increases security and turnover at the Point of Sale – especially in convenient stores with limited space.”*

**Daniel Lopez Uran**  
Product Management and Innovation Director of CHEP Europe





# HOW MUCH STRENGTH IS REQUIRED TO MOVE 150 KG? NONE

Take a moment to remember your last stay at a hotel. You were sure to have encountered a service trolley piled with towels and bedding as you walked along the corridors. Weight: up to 150 kg. A load that presents a difficult challenge for service personnel, but won't do so any longer – thanks to the TENTE e-drive flex. In cooperation with our customer Mercura, we put this solution into practice at the Starling Hotel in Geneva, making work processes more efficient.



## THE STARTING POINT

Mercura Industries Suisse S.A. produces lightweight aluminium service trolleys and is present in more than 45 countries. These products are used in hotels, airports and healthcare facilities, for example.

The company was commissioned by the Starling Hotel & Conference Centre Geneva to provide new trolleys for room service and for restocking the minibars. Starling Geneva is the largest 4-star hotel in Switzerland. It has 496 rooms, 43 conference rooms and 270 employees.

## 150 KILOS AND DIFFICULT FLOORS

Mercura Switzerland's service trolleys are used in aisles which have very thick carpets. The unfavourable running properties on this floor covering and a trolley weight of up to 150 kilograms combine to produce an extremely high rolling resistance. This makes it almost impossible to move the service trolleys without assistance. In order to minimise the effort required of hotel employees, Mercura were looking for a solution that would help overcome the resistance. For the hotel, it was essential to create optimum working conditions for its employees, minimise the burden and protect their health.





### OUR SMART MOBILITY SOLUTION

We equipped each of the 15 service trolleys with an e-drive flex. A control unit on the handle allows flexible control of the drive aid. If the cleaning personnel activate the e-drive flex, an electric drive wheel lowers and helps personnel to move the trolley. In combination with four swivel castors, specially selected to deal with this situation, the solution noticeably simplifies forward movement and makes it possible to drive the service and bar trolleys effortlessly, even on the high-pile carpet.

The innovative system has been successfully perfected during the course of TENTE's project partnership with Mercura, whilst also working closely with the employees of the Starling Hotel. Together, we have optimised the motor parameters to correspond to the weight of the individual trolleys and adapted the performance of the rechargeable batteries. Now the e-drive flex is able to lighten the load for service personnel all day long, as well as provide continuous assistance to the staff.

### LOW SICKNESS RATE AND IMPROVED PRODUCTIVITY

With the help of this smart solution, service personnel can move the heavy service and bar trolleys effortlessly along the hotel's long corridors. The e-drive flex noticeably lightens the employees' load and enables them to concentrate fully on their actual tasks.

**The results: Increased employee satisfaction, a lower sickness rate and significant improvement of the work processes.**



*"The electric drive increases the level of satisfaction of our staff and improves our service."*

**Anne Elise Choux** Operations Manager  
Starling Hotels & Conference Centers Geneva





# THE FLOOR AS A CHALLENGE: FUNCTIONAL INFLUENCES

The floor and the castor are in a state of constant interaction. In order to ensure optimum manoeuvrability and floor protection, it is always important to consider the properties of the floor when choosing the right solution. As a rule of thumb, hard castors would normally be used on soft floors and soft castors on hard surfaces. But this rule alone does not cover the wide range of conditions to be considered. There are many other factors that need to be taken into account.

Using the wrong wheel tread can have a negative effect on traction, lead to static charging or even cause considerable floor damage due to unnecessary point loading. Particular attention must also be paid to water-sensitive and porous surfaces such as wood or natural stone floors. Unsuitable wheels can cause severe abrasion of these floor coverings or leave permanent stains. The castors and the wheels must therefore be precisely matched to the particular situation and all of the relevant influencing variables must be taken into account. With our many years of experience, we are here to support you and offer the right solution for every type of application.



# OUR SOLUTIONS ARE SYNONYMOUS WITH MAXIMUM SAFETY

As our customer, you can always rely on premium quality and will always receive products that have been tested and certified. Our castors and wheels meet the strictest safety standards and contribute to improving occupational safety, preventing accidents and reducing health risks.

The result is reduced sickness rates, less downtime and motivated employees. At the same time, they offer the highest reliability, increased satisfaction for customers as well as end users and also create a positive effect on a crucial key performance indicator such as the rate of complaints.

**But our smart solutions don't just protect people:  
they also protect goods and applications.**



# A CASTOR THAT'S IMPOSSIBLE, REALLY IN THEORY

Imagine for a moment you are looking at a castor: It has a certain size and height. However, this latter measurement depends on an intelligent overall design. In hospitals especially, this is particularly important, since safety considerations dictate that the height of the castor fitting should not be more than the castor diameter. It's impossible really to retain the ideal wheel size and at the same time reduce the height – in theory, at least. But, in fact, we have managed to do so and, in the process, have supplied our customer Stieglmeyer with the TENTE Linea.

## THE STARTING POINT

The Stieglmeyer Group specialises in the manufacture of hospital beds. Their portfolio additionally includes hospital furniture. In hospitals, it is important to enable a low mattress base position to be set to enhance patient safety. Falls can have serious consequences, particularly for people of an advanced age. To reduce the risk of injury, hospitals rely on beds whose mattress bases can be lowered substantially to a low height level.

## IT'S THE OVERALL HEIGHT THAT MATTERS

Half of all patients in hospitals are over 65 years old. It is to be expected that this trend will continue to increase in view of demographic change. This makes fall prevention a crucial factor. Stieglmeyer developed the Puro hospital bed which enabled nursing staff to set the height of the mattress base to a particularly low level. The castors on the bed contribute decisively to how low this level can be.

## OUR SMART MOBILITY SOLUTION

We have been a reliable partner to Stieglmeyer for more than 60 years. On top of that, we were also able to deliver the ideal solution in the case of the Puro hospital bed: the Linea hospital bed castor. Its outstanding feature is a fitting that is barely higher than the wheel size. With a diameter of 125 millimetres, the total height of the castor is only 130 mm.

Safety was just one of the deciding factors when developing the Linea castor. It was also important for our engineers to take the overall hospital environment into account and to focus on all influential factors. This included the design, hygienic aspects, noise development and the running characteristics. This resulted in the use of two precision ball bearings to allow the castor to swivel exceptionally easily. The central locking mechanism is also maintenance-free. When it comes to the appearance, the colour scheme of the castor can be matched to the adjacent components and the bed frames. The cover in the centre of the wheel offers further options for customising the castor. Additionally smooth surfaces discourage dirt pick-up and are easy to clean.

Also since a hospital is primarily a place for rest and relaxation, the castor locking and release mechanism is much quieter than with conventional products.





### IMPROVED SAFETY

The Linea castor makes it possible to significantly improve the safety of patients in hospitals. Thanks to its minimal overall height, nursing staff can adjust the mattress base so that it is only 28 centimetres off the ground. Due to this, the Linea twin wheel castor is making a significant contribution to considerably reducing the risk of injury in hospitals.

This smart solution also ensures that the running characteristics are convincing on whole line. The castor offers the same load-bearing capacity as models with a larger overall height and also effortlessly overcomes thresholds and any uneven areas.

**It also meets the highest hygiene standards, excels through particularly straightforward operation – and proves its true greatness with its low overall height.**



*“The TENTE Linea – barely higher than the wheel diameter – fits our low-height bed concept perfectly.”*

**Olaf Steuernagel**  
Head of Product Management at the Stiegemeyer Group



*“Our two family-owned companies have been working together closely for almost 50 years now. That speaks for itself.”*

**Georgios Kampisiulis Kemmler** Managing Director  
**Anja Kemmler** Shareholder of the Stiegemeyer Group





# MOBILITY FOR THE DEMOGRAPHIC SHIFT

According to the United Nations, the global proportion of people over the age of 65 will increase to 15.6 percent by 2050. In 2010, the proportion was just under half of this. Studies also show that Europe is one of the world's oldest regions, with an average age of 39 years. In 2016, the number of people over the age of 65 on the European continent was 115.8 million. By the year 2060, this number could rise by around 60 percent.

A global comparison shows Japan as the front-runner. The studies clearly show that the proportion of people over the age of 65 in Japan could rise by over 40 percent by 2060. In the USA, the average age of the population will grow to over 40 years by 2050. In comparison: This average was still around 35 years in the year 2000.

With this demographic change, the number of inpatients is increasing worldwide. Hospitals and nursing homes face the challenge of adapting to these changes. This is where we can help. Our company has a leading role in the medical sector, offers a broad product portfolio and the right answers to the technical challenges of the future.



# INSPIRATION FOR THE MARKETS

Our company uses innovative ideas to create stimuli that open up completely new opportunities for the markets and offer valuable advantages. One example of this is the Aviana light, which exploits the design scope of synthetic materials and sets new standards for lightweight construction in aviation. With the development of the Integral, we have raised the bar in the field of medicine, once again, by combining an appealing castor design with exceptional shock resistance, durability and safety.

Our Linea castor for hospital beds also created a small revolution. Its special feature is its minimal overall height, which enables the mattress base to be lowered to a previously unattainable level and represents a great bonus in terms of safety for the patients. Our tool-free mounting system is equally pioneering. The castors are fixed in place with a time and cost-saving plug-in connection system – with no fiddly screws. Our completely metal-free Levina scan also opens up new avenues. All of the castor components are made of 100 percent synthetic material and thus meet the strictest safety requirements for magnetic

resonance imaging, research facilities or security interlock systems at airports. The e-drive is our smart solution for logistics and transport. Our easy-to-integrate castor module makes moving loads noticeably easier thanks to an electric drive.

Of course, we are always ready to provide you with customised mobility solutions too. For example: Developments such as steerable castors with automatic alignment, which save an enormous amount of time, increase efficiency and improve logistics processes.



# ONE HUNDRED PERCENT SAFETY THANKS TO ZERO PERCENT METAL

Anyone who has already held a magnet to a coin knows what forces can be unleashed. MRI images in the hospital are similar. In order to obtain diagnostic images of the body, the device generates strong magnetic fields. Therefore, in certain MRI areas, only devices and furniture that do not contain magnetic components are permitted. For this reason, our customer RCN manufactures special MRI products and relies on a completely metal-free castor that meets the high safety standards: the TENTE Levina scan.

## THE STARTING POINT

RCN MEDIZIN- UND REHATECHNIK GMBH develops a wide range of products for everyday care. These include shower stools, wheelchairs and walkers. The company also offers chairs, infusion stands, couches and shelves that are non-magnetic. These are especially recommended for use in the field of magnetic resonance imaging or, in short, MRI. The company has been producing nursing aids for more than 30 years and employs around 100 people in factories in the USA and Germany.

## SPECIAL REQUIREMENTS

An MRI device generates high-resolution images and does not involve exposure to radiation. During tomography, electromagnetic fields, whose strength is measured in Tesla, are generated. MRI devices with up to three Tesla are standard equipment in hospitals. For greater accuracy of detail, doctors are increasingly using devices with higher Tesla values, which also generate stronger magnetic fields. This means that magnetic objects are prohibited in the vicinity of MRI machines. Due to the enormous forces of attraction involved, they pose a threat to staff and patients. RCN therefore develops medical furniture that uncompromisingly meets the strict requirements in this field. This furniture is made of standardised white plastic tubing and has distinctive characteristics.

RCN manufactures products made of synthetic material and brass for MRIs up to three Tesla. Castors containing this metal are also used in this Tesla range. Brass is used for ball bearings and mounting fixtures. However, for examinations from seven Tesla upwards, the approval requirements for furniture and equipment are a real challenge: even non-magnetic brass is not allowed. In some countries, they have special security gates before entry to MRI zones, which sound the alarm when they detect residual magnetism. RCN therefore also manufactures products that do not contain any metal components. In order for these infusion stands, couches and chairs to guarantee safe mobility, RCN requires castors that meet the high specifications for this use.

## OUR SMART MOBILITY SOLUTION

For particularly powerful MRIs from seven Tesla upwards, we have developed a special variant of our Levina scan for RCN with total locking. The remarkable thing about this solution: We have managed to dispense with brass even down to the mounting fixtures and particularly for the ball bearings. The castor is made up entirely of components that are 100 percent synthetic material.



The Levina scan therefore exhibits no residual magnetism and guarantees the highest level of safety in MRI imaging. Compared to solutions containing brass, it has a higher load-bearing capacity and can carry a weight of up to 80 kilograms. To offer even more safety and stability, we have also carried out individual adaptations. The castor stems are adapted to the size of RCN's standard plastic tubes.

In addition, we have secured the Levina scan with a plastic screw on the frame so that the stem cannot twist. The castor is available in 100 and 125 millimetre sizes, in a simple swivel castor or as a swivel castor with total lock.

#### **INTERNATIONAL ADVANTAGES AND VARIOUS APPLICATIONS**

With the Levina scan, RCN has the perfect castor for MRI use. Although made entirely of synthetic material, it has an outstanding load-bearing capacity and stands for maximum safety. Due to its properties, it is also suitable for MRI rooms in which metal detector locks are used.

The solution also offers valuable advantages for RCN's international business. Each country has its own regulations governing the use of products in an MRI environment. RCN can use the castor not only in the MRI area, but also in research facilities or security gates at airports.

**The Levina scan: Completely metal-free products that can be used worldwide without any restrictions, meaning that extensive research into country-specific regulations is no longer necessary.**



*"The Levina scan stands for 100 percent. 100 percent synthetic material and 100 percent safety."*

Volkmar und Michael Jung Managing Directors of RCN



## ONE OF OUR OUTSTANDING COMPETENCIES: SECURING

There is one component that belongs to the basic features of therapy chairs for people with disabilities: safety. Both users and their carers must be able to rely on their mobility aid – and this applies equally to moving and to standing still. That is why we took a closer look at the therapy chairs made by our customer Schuchmann and further improved their safety – thanks to the customised TENTE Linea safety with castor locking system.





## THE STARTING POINT

Schuchmann GmbH & Co. KG develops aids that help children and young people with disabilities to take part in everyday life more easily and comfortably. Safety and effortless handling are particularly important for the Hasbergen-based specialists.

## IN SEARCH OF THE PERFECT CASTOR

Schuchmann's mobility aids make an important contribution to inclusion. With the help of the company's walking trainers, tricycles and therapy chairs, children and adolescents can move around more freely, play with others and learn together in comfort. One of the achievements in this field is the Madita-Fun therapy chair. It has an individually adjustable seat unit, which can also serve as a high chair and provides mobility support for children.

Our task: to provide a smart solution that further improves mobility and ergonomics, whilst also ensuring the highest level of safety.

## OUR SMART MOBILITY SOLUTION

Our Linea safety double castor offers a solution that is precisely tailored to Schuchmann's requirements and perfectly complements the Madita-Fun therapy chair. Its uncompromising quality never fails to impress. It is also available in various sizes and has a reliable castor locking system. When the user operates the locking lever, the castors can be set in motion. When the user releases the lever, the castors automatically come to an immediate standstill.

However, before we mounted the castor on the Madita-Fun, we first focused our attention on something else: namely the big picture. Here, we asked ourselves: How could our castor improve the overall user-friendliness of the therapy chair? How could we further enhance safety and flexibility? Lastly, how can we promote the independence of children and young people as well as improving their mobility? We worked out the answers to these questions in close cooperation with Schuchmann and tuned the Linea safety precisely to the needs of its young users. The developers designed the lever to lock and unlock the castors ergonomically and made it easier to use. On top of that, this smart solution provides the highest level of reliability. So, the chair still stays safely if the Bowden cable breaks, even on an incline of up to 10 percent.

### ALWAYS SAFE

Our Linea safety secures the trust of its young users as well as the trust of parents and carers. It ensures that children and adolescents with disabilities remain able to take part in daily life with confidence.

The ergonomically-designed lever used to lock the castors can be easily reached and effortlessly operated. When operated, the therapy chair can be pulled up to a table or toy and then easily pushed away again. When the lever is released, the chair comes to an immediate stop.



**This is how our Linea safety guarantees improved mobility, always and everywhere, as well as the highest level of safety.**



*“TENTE understood our safety requirements exactly – and implemented them with outstanding success.”*

**Torsten and Miriam Schuchmann**  
Managing Directors of Schuchmann GmbH & Co. KG



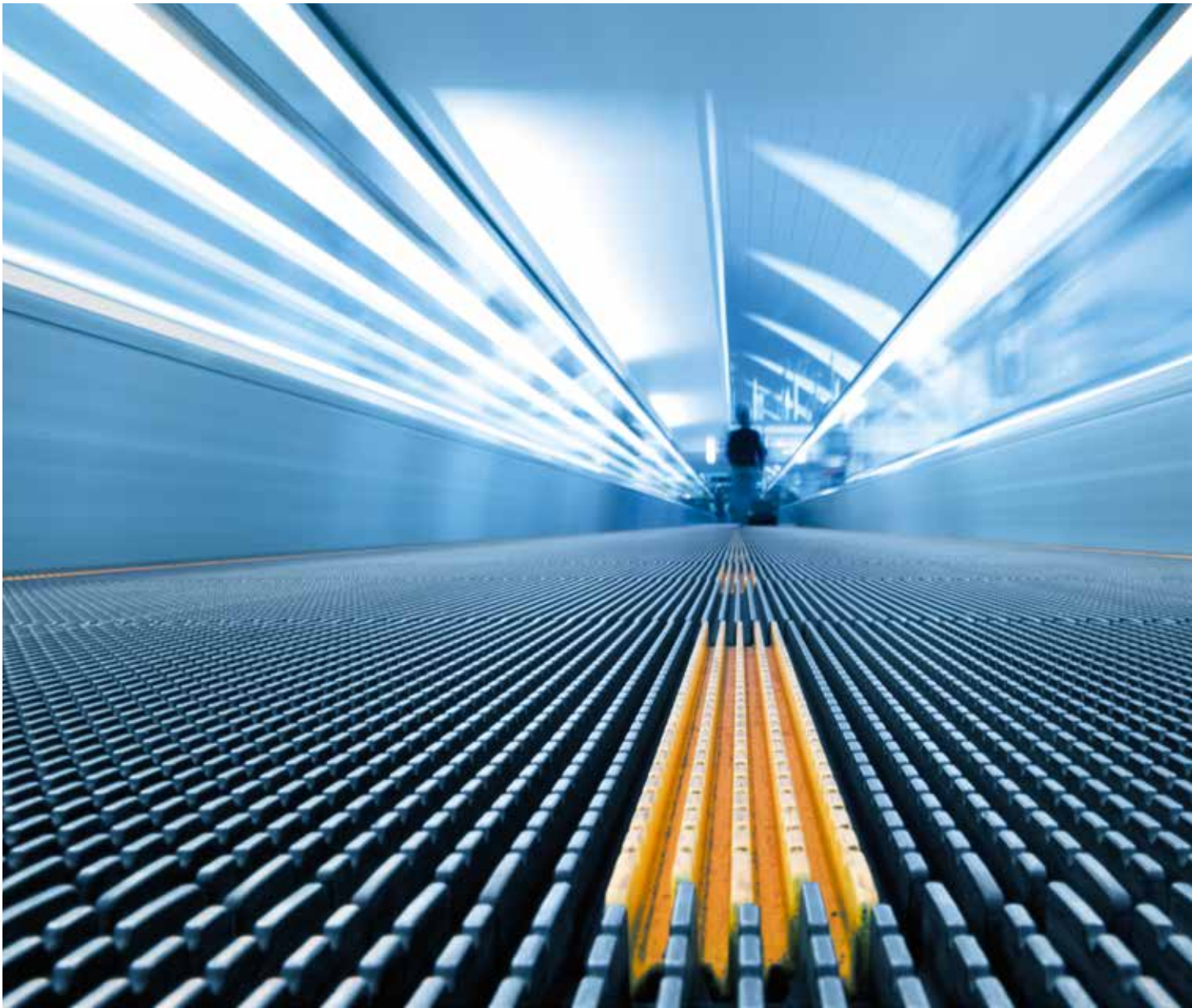


# SAFETY FIRST: AUTOMATIC WHEEL LOCK

Our safety products are equipped with a reliable wheel locking system for maximum safety and ease of use. The wheels are released by actuating the controls by hand, foot or electric button and can continue to be moved as long as the release control is actively operated. As soon as the lever, button or pedal is released, the wheel locking system is automatically activated and the castor is locked. This automatically ensures a stable, stationary footing that prevents any unintentional movement or operator errors.

Our product solutions with this safety function are perfectly suited for use in all applications where it is important to reduce the risk of injury. These include medical equipment, furnishings in offices, schools, ships or trains, luggage trolleys, machinery and transport trolleys with medium and heavy load capacities.

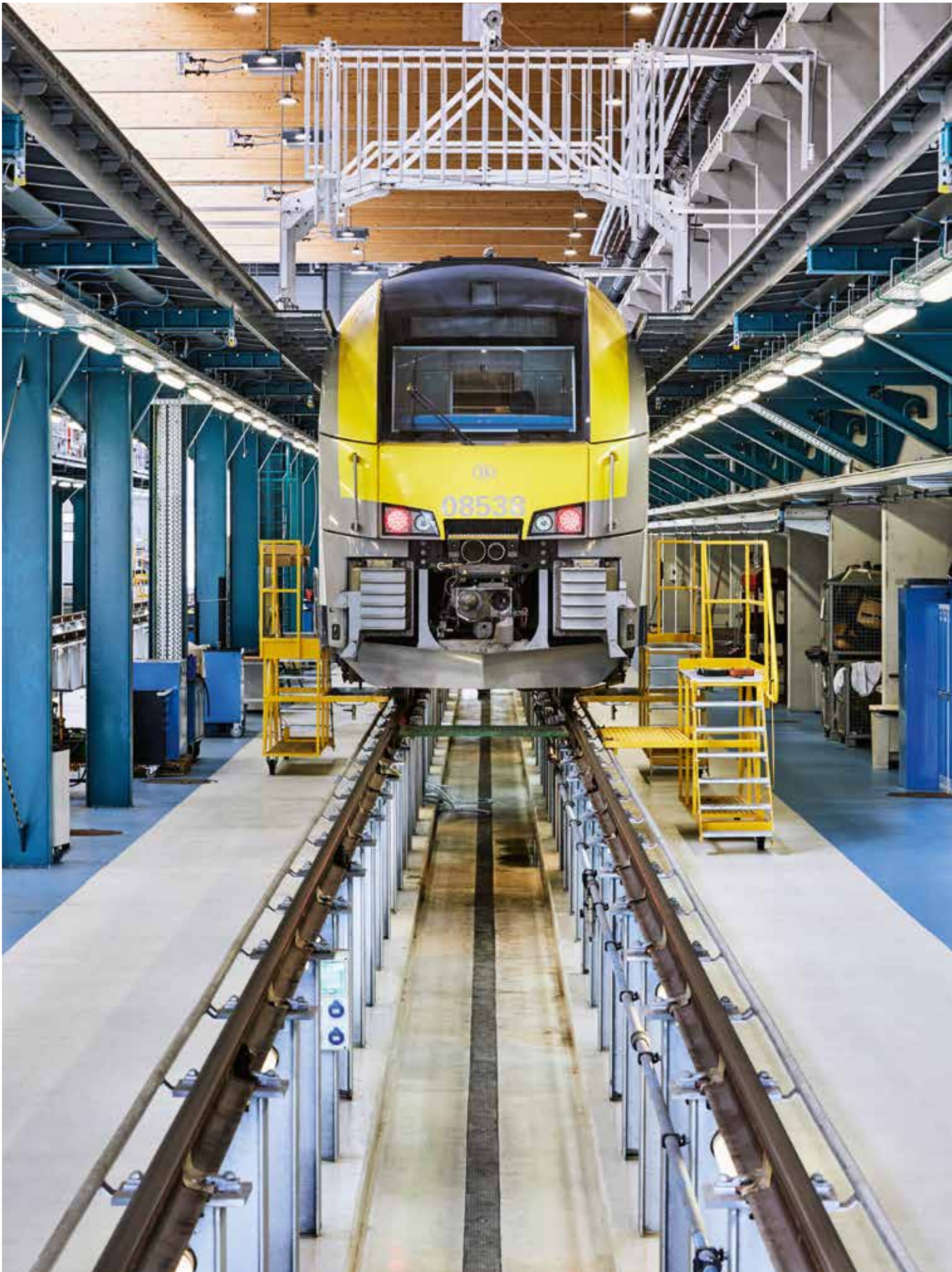




# DIRECTIONAL LOCKING: DIRECTIONAL STABILITY MADE EASY

The directional locks are mounted on swivel castors and can be controlled by various operating elements, such as pedals. A swivel castor can normally run in all directions. If the directional lock is activated, the castor is locked in the direction of travel, so that it can only move in the specified direction. This solution makes it much easier to move the castors in a straight line, along narrow corridors and over long distances.

The directional lock also has another advantage: It prevents the castors from oscillating and flapping when travelling at high speeds. Modern product solutions such as the TENTE Linea e-lock offer electronically activated directional locking systems. This system is operated effortlessly via push-buttons, which allow individual control of the castors. The control function can also be integrated into existing operating panels.



# WORK PLATFORMS WITH CRUCIAL SPECIAL EQUIPMENT: IMPROVED SAFETY

Anyone who has ever stood on a chair to replace a light bulb knows exactly how important a safe footing is. The same applies for industrial work platforms. They should be easy to move, but must also stand firm and unshakable whenever someone is working on them. This is exactly what our Alpha safety castors with wheel lock allow. Our Belgian customer SNCB uses them for its work platforms – where they guarantee the highest level of safety at work.

## THE STARTING POINT

The Belgian railway company SNCB operates various maintenance hangars for vehicles. At the Arlon facility, some 125 railway employees are engaged in cleaning, servicing or repairing railway carriages. This involves the use of large, mobile, rail-guided work platforms, which are moved along the maintenance line. The work platforms allow optimum access to the individual vehicle areas and must guarantee absolute stability.

## PHYSICAL STRAIN, HEALTH AND WELL-BEING

One of SNCB's top priorities is to continuously improve safety in the maintenance hangar. Ergonomic optimisation and the improvement of working conditions for the employees are equally important. The company wants to prevent musculoskeletal disorders, which can be caused by stooping, for example. The maintenance platforms need to be integrated into this concept as precisely as possible. They should be easy to manoeuvre and provide employees with convenient and comfortable access to windows, exterior walls and all other vehicle surfaces. The platforms are not allowed to move at all as soon as anyone steps onto them – even if employees are handling high-pressure cleaners or other heavy objects.

The Belgian railway company was therefore looking for a solution that would meet these exacting requirements in full – they found the right answer with the Alpha safety.

## OUR SMART MOBILITY SOLUTION

The Alpha safety has an integrated locking system that ensures maximum safety at work. As with luggage trolleys at the airport, the castors can only be moved when the user keeps the operating handle of the wheel lock pressed. If the handle is released, the castors are automatically locked and the platform immediately stands still and as steady as a rock. In this way the Alpha safety guarantees a secure footing.

Thanks to the castor's outstanding running properties, the large maintenance platform can also be pushed effortlessly in a straight line to the respective working areas. As soon as the operator releases the handle in order to enter the maintenance platform, the platform does not move an inch. We also considered the challenge from an ergonomic perspective: The handle for releasing the wheel lock is located at shoulder height, is easily accessible and is therefore also comfortable to operate.



Our engineers also focused their attention on the immediate surroundings. They made sure that the castors could not be released unintentionally – for example, if an employee with a heavy object should hit the work platform or accidentally come into contact with the operating handle. The operating element and the brake are connected via a Bowden cable, which is protected from damage by a steel tube. The force required to operate the handle has been set so precisely that it is not possible to release the lock accidentally.

#### MAXIMUM WORK SAFETY AND ERGONOMICS

The large maintenance platforms can be moved easily, but are rendered absolutely immobile as soon as employees release the locking handle and step onto the platform. Even if they are working with heavy equipment, the maintenance platform remains stable, stationary and safe.

Accidental unlocking of the wheels is also prevented, as are dangers caused by third parties. In addition, the Alpha safety reduces physical strain. This is because the locking device's operating handle is ergonomically positioned to improve health conditions in SNCB's maintenance hall.

**Thanks to the Alpha safety, health and safety in SNCB's maintenance hall has been noticeably improved.**



*“TENTE Alpha safety is a solution with in-built health and safety.”*

Yves Héroumont Technical Service, SNCB





# ERGONOMICS AS A KEY FACTOR: PRODUCTIVE AND HEALTHY

Ergonomic design is aimed at ensuring easy and simple handling of aids, tools and controls. The comfort and ease with which handles, levers, pedals and switches can be operated is therefore an important aspect of our product development. In addition to the design of the operating elements, their spatial location is also of ergonomic relevance. The right position guarantees easy accessibility and use. With individual adjustments, the requirements for each application can be perfectly met.

This also applies to making functions quickly recognisable, using colour coordinated switching levers, for example. The mechanical and design quality of our products is crucial in ensuring easy and energy-saving operation. Small actuating forces use a correspondingly small amount of energy and significantly relieve the strain on the user. Both are good for the result: More productive work processes and significantly reduced sickness rates. With our e-drive flex, for the motorisation of transport equipment for heavy loads, we have combined all these aspects into a smart mobility solution.

From applications in intralogistics through to the nursing and health care sector, this system reduces the burden on employees who are at risk of musculoskeletal disorders and reduces the costs resulting from inability to work by up to 30 percent. A contribution to occupational health management that pays dividends. We help you to identify your specific potential benefits – and, with a wide range of solutions, assist you in improving user-friendliness and safety at the workplace in the long term.





# FACING THE DANGERS: INTEGRATED HEALTH AND SAFETY

Effective accident prevention does not simply result from prescribed health and safety regulations and legal requirements. On the contrary. In practice, safety at work is an expression of social responsibility and, at the same time, is an important success factor for companies. Health, physical well-being and the invaluable feeling of being in good hands ensure satisfaction, low sickness rates and a high level of commitment. Occupational safety should not be seen just as a requirement, but as the foundation of the corporate culture. The trend in this area is therefore towards a proactive safety culture and away from the reactive approach, i.e. merely reacting to accidents.

Proactive means that potential risks are anticipated, tracked down and eliminated in advance. This method is of immense importance, especially with regard to mobility. Because, wherever masses are in motion, hazardous situations can arise and these must be prevented in advance. This is exactly why we always have in mind: The protection of the body from moving masses, physical well-being when manoeuvring heavily loaded transport trolleys and the secure locking of wheels. We support you with a wide variety of smart solutions for a broad range of applications.

Starting with our flexible foot protection and our castors with especially good shock-absorbing properties through to our anti-magnetic Levina scan, which enables safe working in MRI areas. On top of that, our Linea safety, with its sophisticated locking system, also improves health and safety at work. Our e-lock solution even has an electrical locking system, raising occupational safety to a whole new level. If you too are faced with the challenge of making mobility safer, we will be happy to support you – simply give us a call.



# BETTER SAFETY FOR EMPLOYEES – AND OPTIMUM PROTECTION FOR THE GOODS

Transporting glass loads requires extreme caution. Especially when the loads take on the dimensions of a small bus. This calls for transport trolleys that demonstrate outstanding manoeuvrability and guarantee the physical well-being of the employees. For renowned glass manufacturer and processor INTERPANE, we have therefore developed a foot protection system that represents the highest level of work safety and at the same time enables trouble-free transport of the glass panes.

## THE STARTING POINT

The One World Trade Center in New York, The Marq in Singapore and One One One Eagle Street in the heart of Brisbane, Australia, have one thing in common: Their façades are made of glazing from the INTERPANE Group. The company is a subsidiary of AGC Glass Europe, which belongs to the Japanese glass group, Asahi Glass Co. Ltd. The company employs 50,000 people worldwide. INTERPANE's product range includes float glass, low-iron glass, high-quality coated thermal insulation glass, soundproofing and solar control insulating glass, safety glass, glazing for architectural design, and products for solar applications.

The company supplies glass elements for regional and international large-scale construction projects as well as for the local window construction market. They also are one of the few manufacturers worldwide to produce coated glazing with remarkable sizes up to 18 metres in length, 3.21 metres in height and pane thicknesses of up to 20 millimetres.

## THE CHALLENGE OF PROTECTING FEET

INTERPANE attaches great importance to health and safety at work when manufacturing and refining its glass products. The company has announced a proactive, zero tolerance strategy. With this strategy, the glass manufacturer is pursuing its goal of preventing accidents at work, protecting the health of its employees in the long term and raising awareness of risks. All of the processes are planned and optimised accordingly, regular risk assessments are carried out and all accidents are analysed in detail.

Naturally, this also applies to the transport of the glass panes, some of which are up to 20 square metres in size. In order to ensure safe transport during the production process, the raw glass is cut to size according to the customer's requirements and loaded onto transport trolleys. Depending on the order, the panes can be up to about seven and a half metres long and around three metres high. Not to mention, their total weight can be up to 2.5 tonnes. This presents a particular challenge in terms of operational safety. If the heavily loaded transport trolleys move too quickly or get caught on obstacles or uneven surfaces, they can bump into the employees' ankles or run over their feet. In order to prevent injuries, INTERPANE has so far used two different foot protection systems, neither of which could meet the stringent safety requirements or cope with the conditions in practice: A rigid system was found to be suitable for transportation on level floors, but as soon as the trolleys hit unfavourable ground conditions, the foot protection soon came into contact with the ground. The result: Abrupt stopping or even tipping of the transport trolleys.

The flexible protective device also posed a similar risk. This device could be drawn under the wheels and stop the castors. Both models thus posed a danger for employees and for the goods being transported.

The glass manufacturer therefore needed a foot protection system that would ensure maximum safety in accordance with the company's preventive strategy.

## OUR SMART MOBILITY SOLUTION

In order to mitigate the acute danger, we reacted quickly by providing a robust metal foot protection, which also significantly improved the handling of the trolleys. At the same time, we started developing a completely new foot protection system to set new standards in safety and mobility for glass production and assembly.

Our aim was to achieve maximum flexibility for driving over uneven surfaces and other obstacles, while also ensuring maximum stability, in order to prevent any contact between foot and wheel. With this in mind, we developed a perfect combination of rigid steel elements and flexible natural rubber. In order to provide optimum protection for the employees, flexible aprons made of rubber with a shore hardness of 80 are fitted in front of and behind the wheel of the transport trolley.



The aprons are shaped in such a way that they are pressed in towards the wheel as soon as the wheel comes into contact with the foot. This prevents the castor from moving over and crushing the foot.

The second safety feature is based on rigid guard rails attached to the side of the wheel. These ensure that the foot is guided safely around the side of the wheel.

Thanks to these two elements, the feet are well protected at every conceivable angle of contact. At the same time, all floor conditions can be overcome without difficulty – and the precious glass elements can be transported safely.

## PERFECTLY ADAPTED SAFETY

The new foot protection is available for wheels in several sizes, and allows for quick and uncomplicated retrofitting.

During the development process, we naturally also considered the thermal conditions that play a role in the production and assembly of glass elements, and indeed in almost all other areas of industrial production. So our mobility solution is suitable for use at minus 40 degrees Celsius and up to 80 degrees Celsius.

**The solution fulfilled the company's expectations to the fullest extent and was recommended by the INTERPANE Group's safety coordinator for use in all of the factories.**



*“With TENTE’s solution we have improved both occupational safety and the protection of our products.”*

**Tobias R ther** Corporate Safety Coordinator of the INTERPANE Group





# WE OFFER YOU DISTINGUISHED **DESIGNS** – IN THE TRUE SENSE OF THE WORD:

Our intelligently designed solutions have been honoured with renowned design awards and satisfy the highest demands when it comes to aesthetics. They can be seamlessly adapted to the individual design language of our customers and enable successful differentiation. We are also able to provide entire product ranges. We have a varied selection of product families for you. These offer the right features for every requirement, while still maintaining a uniform appearance in line with your corporate design. At the same time, our solutions never fail to impress when the design also has to fulfil a specific function for the user.

**This is because they open up wide-ranging customisation options thanks to which you can also use the castors to communicate information, such as assigning codes or improving the brand presence by including your logo.**





# OUR SOLUTION FOR EXACTING DESIGN REQUIREMENTS: A LARGE FAMILY

There are conventional chairs – and there are Greiner chairs. A company that stands for design, functionality and above all: for a wide range of products. For Greiner, it is essential to have a selection of castors which are available in different sizes and with different functions, but which still all fit the company's design concept. For example, castors from a large, uniform product family – such as the TENTE Linea.

## THE STARTING POINT

The family business Greiner GmbH develops couches, chairs and seats for various different applications including those in medical practices, hospitals, hair dressers and even vehicles. For more than 90 years now, three aspects have taken centre stage: outstanding design, functionality and ergonomics. The aim here is to meet the most exacting demands. Above all, however, it should be apparent at first glance that all of the products come from Greiner.

## DIFFERENT TASKS – A CONSISTENT IMAGE

The high expectations in terms of design, functionality and ergonomics apply to all parts of the chairs and couches made by the company – and this includes the castors too. Since the product range is so varied, the manufacturer needs solutions that are available in different sizes, perform different functions depending on the type of application, while also establishing a uniformed overall image. When Greiner was looking for suitable castors for its medical couches, the company approached us with this challenge.

## OUR SMART MOBILITY SOLUTION

To meet Greiner's many requirements, we offer a distinguished solution – in the true sense of the word. The design of the Linea double castor has been distinguished with the Red Dot Award and has made a name for itself in the field of medical applications. The variety of models in the product family is definitive here. The castor is available in different sizes, with various ergonomic locking systems and with an impressive variety of additional advantages for the medical sector.

In short: it is practically predestined to meet these numerous requirements. The Linea family offers easy-to-clean castors, versions with extremely low overall height and even electrically conductive models. The different types of brakes provide improved ergonomics, better safety or outstanding directional stability, as required. Furthermore, most of the 100, 125 and 150 millimetre Linea castors are equipped with a total of four precision ball bearings – a unique selling point in the market. Smaller diameter castors are also available with two ball bearings as an option as well.

But no matter which version you choose, every Linea guarantees outstanding running characteristics and effortless manoeuvring. Not to mention, it leaves nothing to be desired in design terms either: the product family presents a uniform image and can be supplied in various special colours.

The printing of the hubcaps is also a great advantage. Manufacturers and users can show their logo on the caps or use them for various coding purposes. In this way the Linea can adapt to any design specifications and also permits colour coding, which allows simple and unambiguous allocation to different areas of the hospital.

## OUTSTANDING MARKET POSITION BY DESIGN

The Linea product family is used for various medical chairs from Greiner. Each castor matches the exact colour of the respective products and fits seamlessly into the company's design language. The colour scheme can even be designed to suit Greiner's customers. When it comes to design the Linea achieves top marks right across the board. Thanks to the diverse configuration and adaptation options offered by TENTE, Greiner can set itself apart, strengthen the recognition value of its products and position itself outstandingly in the market.

But we are also pleased that our smart solution has been able to improve something else too: the confidence with which decisions can be made in the company. No matter what developments are on the horizon – Greiner can now always be certain they are obtaining the right castor. Whether a suitable side table for a medical chair is in the planning or uneven floors are causing you issues, or even if you require an automatic locking system, we will find the best solution for you and your needs.



**The Linea product family guarantees the right solution every time and ensures a uniform image.**



*“The uniform design of the TENTE product family enables us to establish a unique market position.”*

**Siegfried Greiner, Kristina Greiner**  
Managing Directors of Greiner GmbH





# PRODUCT DESIGN AS A BRAND MESSAGE

Design has become an important element of the brand message – and not only for consumer goods. If you need castors for your product portfolio that guarantee a uniformed appearance for all sizes and functional variants, then we are the right partner for you. We provide you with systematically designed product families whose castors are characterised by a consistent design and reinforce your uniformed brand image. Our product families open up great potential for differentiation by offering a wide range of functional and visual design options for individualisation and configuration.

At the same time, they are distinguished by their high integration quality and are recommended for a wide variety of applications. As a consistent technical and design element, they ensure a homogenous look for your entire product portfolio and enhance the recognition and image of your brand. This is because the outstanding and evident quality and the high practical value of our premium products make a positive contribution to the brand experience.

The design of our castors conveys valuable associations – from high quality, durability and innovation through to exemplary precision and user-friendliness. In this way, we provide you with groundbreaking mobility solutions that also support a successful brand and product strategy – shaping the design, improving performance and enhancing value.



# IN PERFECT HARMONY: MOBILITY AT ITS BEST

Our mobility solutions have already been awarded numerous prestigious prizes for their level of originality in design. We were presented with the renowned Red Dot Design Award for the Smiles and Integral twin product families, while the Levina castor received the universal design award and the Linea twin wheel castor won the iF Product Design Award. The Integral central locking castor has been the recipient of several awards as well.

For us, design means pursuing a clear product philosophy. As a component and system supplier, we focus on an integrative design approach. In other words:

Our mobility solutions adapt perfectly to our customers' requirements, both formally and technically. With their rather reserved aesthetics and style, they can be easily integrated into the design environment. This is due to the broad spectrum of adaptation options we have at our disposal. A modular design enables components, such as the caps, to be exchanged. In this way, the design language can be adapted to suit the end products. Moreover, design adaptations of greater complexity are also possible, such as taking the design lines of the product and

continuing them through the connection area in order to create a visually flowing transition between application and mobility solution. When it comes to engineering design, form always follows function.

Our solutions are always an expression of their technical penetration, maturity and reflect the close alliance of engineering and design. Whether in matters of ergonomics, safety, load-bearing capacity or lightweight construction – the design is always guided by the function and is thought through in every detail.

So, in terms of design, we meet the highest demands and are there to provide you with distinguished solutions, in the truest sense of the word.





# EXCEPTIONAL DESIGN CASTORS IN USE AND A RADIANT SMILE ON YOUR FACE

Many hospitals are increasingly turning the focus of their architecture and interior design towards young patients. The aim is to create a friendly atmosphere for children and their parents. For this reason, our customer provita produces colourful infusion stands and equips them with our Smiles castors, which that really live up to their name.

## THE STARTING POINT

provita medical gmbh & co. kg in Germany is one of the leading companies in its segment. The company produces innovative products and solutions for a wide range of applications and is regarded worldwide as a trusted original equipment manufacturer in the medical sector.

The company's diverse product range includes infusion stands, examination and reading lights, as well as infusion, ceiling and wall rail systems. provita employs over 100 people and has a long tradition going back more than 45 years.

## SPECIAL DESIGN FOR CHILDREN

In recent years, hospitals in industrialised nations have done a great deal to make patients' treatment time more pleasant. Bright and spacious entrances and waiting areas, larger rooms, sound insulation and, last but not least, the use of bright, radiant colours to create a pleasing ambiance.

This development is also shaping the construction of children's hospitals. The architects of the Phoenix Children's Hospital in Arizona, USA, the Akerhus University Hospital in Oslo and the Children's Hospital in Hamburg Eppendorf have designed their buildings to help promote healing. The interior design of children's wards also needs to focus on the young patients and their parents in order to create a friendly atmosphere.

provita meets these requirements with colourful products and relies on castors whose name says it all: Smiles.





## OUR SMART MOBILITY SOLUTION

One of the most important tasks of infusion stands is to promote patient mobility. The Smiles play a leading role here. They enable the children to move about freely during an infusion, which has a positive effect on their well-being. The sooner patients get back on their feet, the sooner they will recover.

The playful design of the castor is also a vital factor. With their lovable faces of a mouse, a cow, an aeroplane or a bear, they enchant young patients and encourage them to leave their hospital beds. With the collaboration of a designer, we fashioned the castors especially to suit the colourful and lively world of children's rooms.

However, the appeal of this child-friendly solution does not lie in the design alone. The castors also have the advantage of meeting the strict hygiene and safety requirements of hospitals, just like the infusion stands to which they are fixed, the Smiles are very easy to clean. They are available with treads for soft or hard floors and with various mounting options. Furthermore, they guarantee stability on even surfaces and sloping floors and ensure that door and lift thresholds can be crossed effortlessly.

## DESIGN THAT PROMOTES MOBILITY

We produce our Smiles castors in one colour or multi-coloured and supply them lacquered or printed, as required. It is the external appearance that makes children love to see the castors in action and motivates them to move around.

Even when the children leave the hospital, our Smiles are happy to put a smile on their faces at home too. Add our castors to desk chairs, toy containers, chests of drawers or even beds to keep their smile going.

**With their appealing design, the castors not only create a friendly atmosphere in hospitals, but also promote the mobility of young patients.**



*"The Smiles do what their name implies: put a smile on the faces of patients, both young and old alike."*

Micha Hilverkus Managing Partner of provita





# A DESIGN PROJECT WITH A CLEAR REMIT: PURE HARMONY

How do you recognise good design? By the language of form? By the colour scheme? By the use of materials? Certainly, all these things are important. But first and foremost, you can tell by the perfect interaction of all these aspects. By the way the design works as a whole. Our customers Tolix and Naber are pursuing just this goal. They have opted for the perfect solution for one of their prestigious projects: the Linea design castor.

## THE STARTING POINT

The French company Tolix Steel Design SAS is one in the icons of the history of design. Ever since its establishment in 1927, it has been producing steel furniture in its own manufacturing facility in the French region of Bourgogne. Naber GmbH is a traditional family-owned business that has made a name for itself in particular with its innovative product ideas – including ones like the mobile designer kitchen.

To envision this ‘concept kitchen’, both companies pooled their expertise giving a new impulse to this market segment with the end result of their creative work.

## HIGHEST STANDARDS OF DESIGN

The concept kitchen is the very opposite of a fitted kitchen, being easy to assemble, easy to dismantle and extremely straightforward to adjust. The idea was to design a kitchen that would work anywhere, offer extreme flexibility and win people over with its harmonious appearance.

It aims to please with its rounded corners and its appealing soft lines. Excellent design was also foremost when it came to selecting suitable castors.

These not only had to blend seamlessly with the kitchen design, but also follow the colour scheme throughout, as well as be extremely durable. These demands are essentially only met by one solution: our Linea design castor.



### OUR SMART MOBILITY SOLUTION

With its precisely matching colour scheme and lines, the Linea harmonises perfectly with the Tolix and Naber concept kitchen. A crucial factor is the exact colour calibration of the synthetic material we use. This unifies the furniture and castors visually despite the use of different materials. Thanks to this match, the colour tone of our Linea corresponds exactly to the specific white of the painted metal surfaces.

To further perfect the interplay of the castor and support frame, we also focused on the formal interaction in the interface area. Together with the designer Kilian Schindler, who created the mobile kitchen, we developed a tailor-made adapter and thus achieved a smooth transition between the components.

The Linea makes no compromises either when it comes to durability. After all, this castor has to bear the weight of heavy kitchen appliances while guaranteeing high stability.

### CONSIDERABLE COST SAVINGS

We not only provided our customers with a suitable castor but with a complete set. This led to a more efficient process. When faced with the complex challenge of creating the perfect transition from the castor to the kitchen frame, Tolix and Naber were able to rely entirely on our expertise.

The customised connecting element that we designed, in fact, provided the very solution that made such a high spec mobile kitchen possible in the first place.

**By developing products jointly, our customer has saved valuable resources, time and money.**



Fotografier: Julian Baumann

*“The customised Linea blends seamlessly with our design concept.”*

Kilian Schindler Designer







# MORE THAN JUST COLOUR: SURFACE DESIGN

There are practically no limits to the design possibilities for our castor surfaces. Different colouring methods are used depending on the requirements profile: Printing, coating and complete through-colouring. We have three different methods just for printing the caps: Laser printing offers different shades of grey and is therefore ideally suited for printing logos and text. Pad printing allows any colour insert, so that logos and symbols can be reproduced in colour. UV direct printing has no colour restrictions and is particularly recommended for displaying images. The coating process can be used to give the forks and housing of the castor an individual and high-quality surface finish – using special coatings, on request.

Not only the colour shade and printed image, but also the gloss level can be defined, depending on the process. Complete through-colouring of the synthetic material offers the greatest possible insensitivity to mechanical influences during use. In addition to homo-geneous colouring of the components, different degrees of gloss and surface texture requirements can be individually implemented at tool level.



# COLOUR SELECTION: THE WHOLE SPECTRUM

We can accommodate your own colour specifications for almost all of our products – and not just for surface finishing. Colour matching for the through-coloured synthetic materials presents a special challenge. In this area, we have extensive expertise, in-depth knowledge and the technical infrastructure that enables us to create shades of colour according to your specifications or your corporate design.

The first step here is to measure your chosen colour photometrically and analyse it using special measurement devices. Based on this data, and taking into account all of the critical process parameters, we then create the exact colour formulation. In the laboratory, the result is compared with the desired colour and then verified. If the colour corresponds exactly to your specifications, it is stored as a reference sample with the relevant process data in our customer library.

This allows us to call up your colour at any time and generate it again. So if you have special requirements regarding colour, for instance, matching neighbouring surfaces and materials, you can rely completely on our experience and expertise in this area.

# ALL ABOARD WITH DISNEY – AND WITH TENTE ON DECK

Sailing on the high seas with Mickey and his friends – families with toddlers on board the Disney Cruise Line's cruise ships can immerse themselves in a fascinating fantasy world. However, we're there too, right in the centre of the action. That's because our company equips selected service trolleys in the fleet with the TENTE Linea castor. This castor offers a customised design that is 100 percent Disney-centred and ensures that the Disney Cruise Line does not deviate, even slightly from the course.





### THE STARTING POINT

The Disney Cruise Line's holiday-goers of all ages opt for a cruise on the entertainment group's cruise liners primarily because of their unique fairytale world. For the company, it is essential that every item of equipment in the fleet fits into the exceptional corporate design and does not break the spell cast by the magical Disney surroundings.

### SERVICE TROLLEYS AS PART OF THE DISNEY WORLD

Service trolleys from our customer SOROL Hospitality Equipts GmbH are used for cleaning on board the ships. These trolleys must also be seamlessly integrated into Disney's corporate design and perfectly match the fantasy world from handle to castor. SOROL GmbH, with its trolley models, makes all this possible. They design the trolleys individually according to the Disney Cruise Line's ideas in order to blend the trolleys with the imaginative theme worlds. Before a cruise ship can set sail, the appearance of all equipment is checked in a demonstration room. Service trolleys are only given the green light if everything is just right.

SOROL GmbH approached us to ensure that the castors, fit in with the overall concept of the cruise liners, which is how the TENTE Linea came to be on board.

### OUR SMART MOBILITY SOLUTION

In our quest to provide our customer with the perfect castor for this purpose, we first of all considered the challenge from every relevant perspective. This meant looking not only at the design options, but also at all other aspects to be considered on a cruise ship. Criteria such as safety, stability, flexibility and easy manoeuvrability were all taken into consideration. In view of this, the choice fell on TENTE Linea. The design castor guarantees SOROL GmbH a great creative scope, since it has already been devised to meet stringent design specifications. It can be coloured to customers' own corporate colours and can also bear a logo and picture motifs. The double castor ensures maximum steering flexibility and excellent stability with its broad wheelbase. It can also be locked in the direction of travel. After activating the directional lock, it moves only in the desired direction.

### PERFECTLY ADAPTED TO THE CORPORATE DESIGN

With the Linea design castor, SOROL GmbH realised design concepts with this quality are only possible with TENTE. No matter what Disney theme worlds are to be conveyed – our solution meets the highest design specifications. The colour nuances know no bounds.

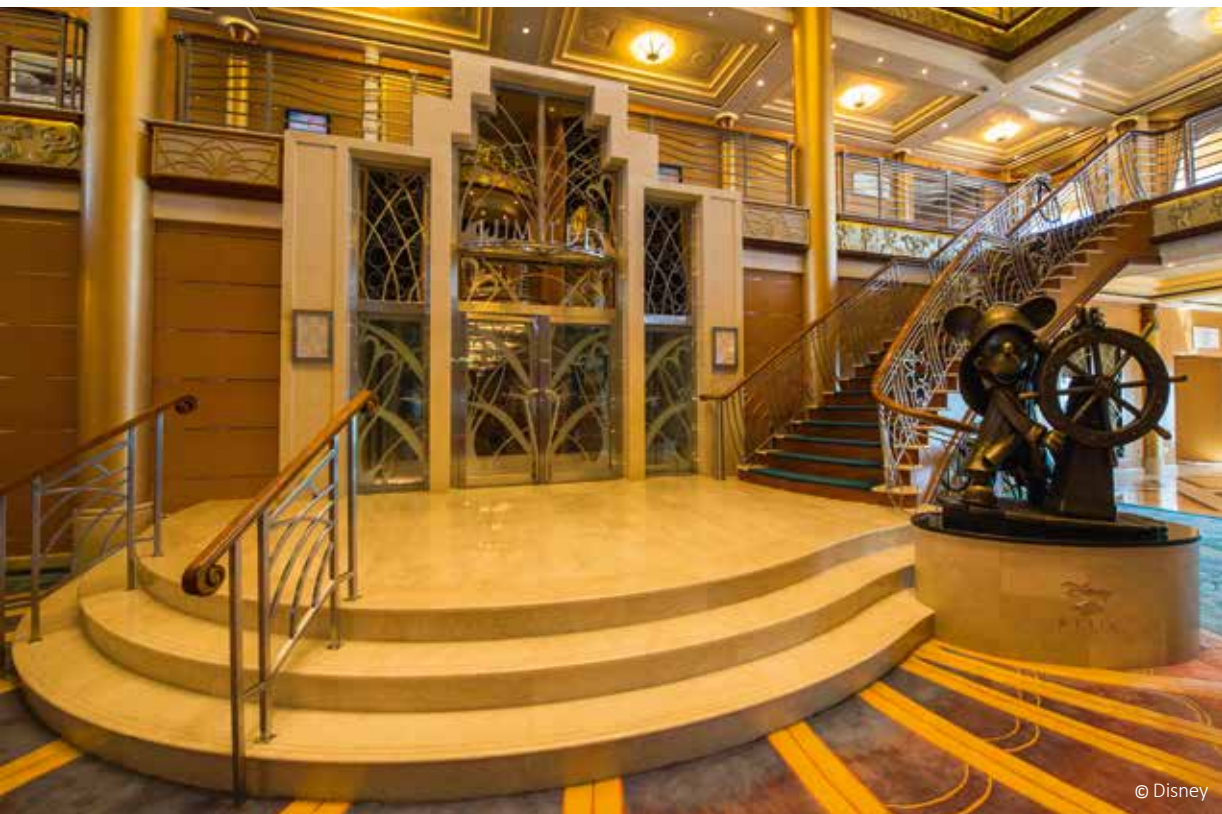
For example, we presented the castor in the typical silver look to represent the 1920s and 1930s. We also delivered it in the particular gold to match the brand too. To top it all off, our engineers can offer maximum user-friendliness.

**The use of TENTE Linea means that, service trolleys can be manoeuvred comfortably, even in the narrow corridors of the cruise liners and, even at heavy seas, you will be thoroughly impressed with their high stability.**



*“When it comes to individual colour design, TENTE leaves nothing to be desired.”*

**Richie Okorie** Managing Director SOROL GmbH







# DESIGNED TO MEET THE HIGHEST STANDARDS AND TO EMBRACE INDIVIDUAL IDEAS

Clean lines, 42 colours and endless possibilities – the famous Danish furniture manufacturer Montana speaks the language of design and opens the door to a unique world of shapes and contours. The resulting high demands also apply to the castors which fit seamlessly into the design concept of the company and allow maximum flexibility given that they were adapted by us to meet the individual requirements visualised by the customer.

## THE STARTING POINT

Montana Møbler A/S offers its customers all over the world a range of different modular systems and occupies a prominent position in the market with its award-winning designs. Founder and designer Peter J. Lassen has made the company a worldwide name with his high-calibre team of designers and a workforce now exceeding 120. In his past life he was employed in the family-run enterprise Fritz Hansen A/S and worked with some of the best designers in Denmark, from Arne Jacobsen, Piet Hein and Jørn Utzon right through to Verner Panton.

Today, Montana is managed by the son of the founder, Joakim Lassen. The furniture manufacturer is known not only for the many different ways in which the pieces of furniture can be combined, but also for the unique range of surface finishes with a choice of 42 paint colours and three veneers.

The Montana approach is to provide people with a system which allows them freedom and scope for personal development. They love the versatility of the furniture with its infinite number of combinations and are charmed by its purest forms, basic geometric shapes and clean lines.

## SPECIFIC REQUIREMENTS

About a quarter of Montana office furniture is fitted with castors and the trend continues upwards. The company needs a solution which fits perfectly with the design language of the furniture manufacturer and which allows the furniture to be moved easily. It is also important to be able to match the castors to the individual brief in terms of colour because Montana also supplies its chairs, side tables, shelves and cupboards in the 42 Montana colours.



### OUR SMART MOBILITY SOLUTION

The castor which meets the Montana specification exactly is the TENTE Linea. Like the furniture made by the Danish company, its design has also won over the judges of many leading design competitions because form and function go hand in hand. As a twin-wheel castor it is the perfect choice for heavy-duty applications. Its high-quality tread surfaces guarantee excellent running characteristics and minimum wear. However, there were some details of the Linea which did not satisfy the design demands of the furniture manufacturer. Instead of the curved contour of the regular cap, Montana preferred a more minimalist solution. The height also needed to be adjusted.

We were able to satisfy both wishes with individual tailor-made solutions. In close liaison with the designers of the Danish company we developed a flat cap which fulfils the Montana design brief down to the very last detail. The modified height of the castors also came to fruition through intensive consultation with Montana. Montana is supplied with the Linea in various sizes: 40 millimetres for its chairs and 65 or 75 millimetres for shelves, cupboards and tables. This range of castors also provides a firm base for the unique items in a broad spectrum of colours.

### MADE-TO-MEASURE DESIGNS FOR OPTIMUM PROCESSES

The customised Linea represents the exact design ideas of Montana and provides the optimum solution for the process in question because the cap can be finished in the required colour and can be fitted or replaced quickly and easily. The clip-in process is straightforward and the caps remain securely in place. They do not fall out and can easily be removed if necessary.

**Our solution therefore introduces a virtually unlimited scope for design, increases the efficiency of the manufacturing process and contributes to flexible and customer-friendly after-sales service.**



*“Customised design and supreme flexibility – just two of the many advantages of the TENTE Linea.”*

**Andy Poulsen** Product Developer at Montana





# ORGANISATIONAL TALENT: COLOUR CODING

As well as serving aesthetic purposes, colours can be used in product design for improving safety, for orientation or for organising work areas. For example, coloured markings and area-specific printing can be used to group objects together or to indicate their function.

To this end, information and labels can be applied to the printable wheel caps of our modular Linea product family. Combined with castor housings in special colours, systematic coding can be implemented quite easily. A smart customisation option to facilitate orientation, increase the efficiency of work processes and improve safety in the working environment: Because a colour-based system can prevent serious mix-ups and prevent risks, particularly in sensitive areas such as hospitals, doctors' practices, nursing homes and areas where people work with dangerous machinery.



# LONGER DURABILITY, LONGER MAINTENANCE INTERVALS AND FEWER COMPLAINTS

These are the decisive benefits that the outstanding durability of our castors and wheels offers. The consistent premium quality is achieved by using high-quality materials and components that are characterised by exceptional durability. For whatever special conditions you require a suitable, durable solution, we can provide you with the right answer – from abrasion-resistant treads and heat-resistant castors and wheels to extremely heavy-duty systems. This means that we offer you individual solutions which we manufacture according to your specific requirements.

**Solutions that save you time, increase performance  
and guarantee maximum reliability.**





# THE SERVICE LIFE OF OUR CASTORS WITH 100 TONNES LOAD: YEARS

A weight of 100 tonnes is simply too much for ordinary heavy-duty wheels, and therefore, after a short time, the their treads tear off. That is precisely why our solutions are anything but ordinary. For our customer Georg Kramp, we have developed a customised wheel with a special design which ensures maximum durability, even after many years of use.

## THE STARTING POINT

Georg Kramp GmbH & Co. KG specialises in the manufacture of jacks, trolleys and remotely-operated transport systems under the brand name GKS perfekt. These applications are designed for loads of up to 100 tonnes – e.g. for machines, train components or safes. The jacks are used to lift the heavy load slightly. Trolleys can then be used to transport their loads to its place of use. Kramp sells its products worldwide. The company's largest overseas office is in Ohio, USA – just 90 miles away from our American office.

## DAMAGED WHEELS AND PRODUCTION STOPPAGES

During transport operations, the previous trolley wheels often suffered serious damage. After only a few months, the treads detached from the wheel core and the wheels had to be replaced. However, the damage was not caused purely by the enormous weight of the loads. The different conditions at the various locations such as warehouses, paint shops or assembly plants, also repeatedly put the wheels to the test. If a wheel suddenly

failed, this had serious consequences: the production process stopped and the risk of accidents at work increased. For this reason, Kramp was looking for a solution that would withstand the heavy loads and show no signs of weakness even on difficult floors. Since then, the company found what it was looking for with us.

## OUR SMART MOBILITY SOLUTION

Due to the special requirements, it was clear that we would need to develop a completely new wheel for the GKS trolleys. All of the components such as the core, the bearings and, above all, the tread material were carefully examined.

We invested a lot of time in development and cooperation. Working closely with Kramp, we tested the custom-made product and perfected it under real conditions. As a result, we created a solution that meets all of the requirements and is recognised for its outstanding durability even under adverse conditions.



The newly developed wheel has four ball bearings and consists of a toothed aluminium core that is encapsulated with polyamide. The interlocking of the core and the tread is crucial. It provides a larger connection surface and at the same time ensures that the two components interlock.

The result: maximum hold for a particularly strong connection. The fibre-reinforced polyamide used for the tread also plays a key role in ensuring excellent durability. It is characterised by higher strength, stress resistance and outstanding impact strength. The material also has good anti-friction properties, which make the tread abrasion-resistant and provide additional protection on uneven floors. To ensure precise concentricity and the largest possible contact surface, the running surface of the wheels is given a plane finish. Depending on the properties of the floor, we supply the wheels with black or white treads. For electrostatically protected working areas, we can also provide conductive models.

#### **OUTSTANDING DURABILITY AND A STRONG MARKET POSITION**

The new wheels demonstrate exceptional stability and durability even under particularly high loads and on difficult floors. Thanks to the well-considered design and the deformation-resistant material, the tread does not separate from the aluminium core even after years of service.

This is also appreciated by Kramp's customers: The company is now keen to make the most of our advantages as a global player and to cooperate with us internationally in the future – in the USA, for example.

**No complaints have been upheld since the switch to our solution. Production stoppages and downtime costs for the end user are a thing of the past. Georg Kramp was able to significantly improve the company's market position.**



*“TENTE's custom-made products prove their outstanding durability, even after many years.”*

**Doris Kramp**  
Managing Partner of Georg Kramp GmbH & Co. KG





# MATERIAL SCIENCE FOR DIFFICULT TASKS

Polyurethane solutions that meet extreme requirements are needed for exacting heavy-duty applications. Particularly with regard to loading, durability and speed. Polyurethanes of standard quality are not sufficient here.

Thanks to our many years of experience, we are in a position to produce suitable high-performance materials. Material mixtures with properties that far exceed the average requirements and which are precisely adapted to the specific requirements of your application. The critical process parameters are the mixing ratio of the individual components, the sequence of the casting process and the regulation of the temperature at which the components are processed. By carefully selecting the raw materials and combining them with certain

additives, we obtain purposefully attuned products. From antistatic solutions and hydrolysis-resistant variants through to load and speed-optimised wheels and adjusted shore hardness values.

On request, we can also provide you with products made of our Ultratech high-performance polyurethane – if you need an individual solution for driverless transport systems, for example, or for comparable special applications in the heavy-duty sector.



# INTERACTION: LOAD AND TREAD

In view of the wide range of requirement profiles, we use synthetic materials with very specific properties in our products. Polyurethane is preferred for solutions where heavy weights have to be moved relatively quickly. The material is notable for its high durability, temperature resistance and wear resistance.

Particularly soft polyurethane is a special solution used for sensitive goods – it also has the benefit of leaving no traces of abrasion on the floor. Polyamide is the preferred material when it comes to the mobility of extreme loads. Because it combines high impact strength and dimensional stability. Depending on the application, we use injection moulded and cast polyamide. Injection moulded parts are usually preferred for loads of up to one tonne. For loads of several tonnes, we rely on turned wheels made of cast solid material, which is extremely stress-free and has a higher impact strength. In addition, turning allows for free shaping of the wheels. This type of wear and break-proof wheel is virtually indestructible in use and guarantees a high level of safety even when driving over obstacles.

For applications with lower loads and for transporting sensitive goods, rubber materials are recommended. These elastic materials have outstanding damping properties and are therefore the first choice when it comes to ensuring ride comfort and protection of the transported goods. Rubber wheels are very resistant to external influences and ensure a good grip in curves.

If you have particular requirements with regard to dynamic loading or rolling and swivel resistance, we can provide specific, tailored solutions with special grades of rubber.





# CASTORS STRONG ENOUGH TO HOLD 63,000 KILOS? NO PROBLEM

A weight of 63,000 kilograms is roughly equivalent to that of 18 small trucks. This is also the weight that AVT Europe, a Belgian customer of TENTE that specialises in heavy good transportation needs to carry. The company was looking for castors for its new models and asked us if we could deliver a solution capable of bearing the weight. “Will do,” we said.

## THE STARTING POINT

AVT Europe NV makes driverless heavy-load transporters for the movement of heavy goods such as aircraft parts or railway carriages. The transporters resemble massive mobile platforms and are fitted with intelligent electronics. They are operated by remote control and can carry loads of up to 100 tonnes.

## COMPACT BUILD, HIGH WORKING LOAD

The weight of the load being transported is distributed evenly across all the castors with the aid of air cushions. The heavy goods transporters have load-bearing castors and drive wheels. The load-bearing castors are always in use and take on the main load. The drive wheels, by contrast, are designed to be lowered to the ground automatically, as and when needed, and they also help to set the transporters in motion.

For AVT, it is important that all the castors have a comparatively small diameter, yet can still withstand heavy loads of up to 12 tonnes while in motion and 20 tonnes while stationary. Supreme quality and excellent durability are also key factors because the transporters are supplied to various companies, including big names like Daimler, Airbus and the nuclear research institute, CERN. These companies need to provide a reliable transport

services for extremely high-quality goods. The discerning customers of AVT expect a lifetime of 20 years and a warranty of 2 years. Our job was to supply castors which meet the many different requirements in the project brief.

## OUR SMART MOBILITY SOLUTION

Our Omikron quadro special-purpose castors were used particularly for the exceptional framework conditions. The outstanding feature of these products is their custom-built design. The castors have two wheels to the left and two wheels to the right of the centre. This allows them a greater load-carrying capacity and a lower point load resulting in a better distribution of the applied load.

They can also be steered very easily when carrying heavy loads because the counter-rotation of the wheels around the common centre point significantly reduces the rolling and pivoting resistance in comparison to a single-wheel castor. This differential effect leads the Omikron quadro unrivalled manoeuvrability with its 400 mm wheels. The drive wheels were built for a strategic purpose and were made to the specification of our close consultation with the AVT staff.



Another advantage is that all the running surfaces are polyurethane, which is good for handling characteristics and easy on the floor. Needless to say, we also approached the job within its wider context and provided AVT with a smart solution where all the components combine to form a perfect whole.

#### **EXCELLENT DURABILITY AND RAPID ADAPTATION TO MARKET NEEDS**

The AVT heavy-duty transporters are capable of carrying goods with a gross weight of 63 tonnes. The sophisticated design of the castors provides supreme durability and an impressive improvement in rolling resistance. AVT therefore needs less powerful drive systems for its transporters and also saves energy. Our staff in Belgium works closely with AVT, for example, adopting a hands-on approach and providing the supplier of heavy-duty transporters with advice, including the progression of future custom developments. We are extremely flexible and can therefore respond to the growth of the company. No doubt this is another reason why AVT is planning to use TENTE castors in its future projects.

**There is something else the company  
can rely on 100 percent: us.**



*“What convinced us was the durability of the special-purpose castors – and the know-how of our business partners at TENTE.”*

**Maarten Van Looveren** General Manager at AVT Europe





# DYNAMIC LOADING: A COMPLEX INTERPLAY OF FORCES

When a castor is in motion, it has more than one force acting upon it. Its development must therefore take into account the interplay of all of the forces acting on it in order to guarantee the highest quality standard in terms of durability. A distinction is always made between the two loading states: Static and dynamic. In the first case, the acting force and its direction of action remain unchanged. The castor stands still and is subjected to a constant load. In dynamic loading, however, the force and direction of action do not remain constant.

The castor is in motion and the load is determined by numerous influencing factors – starting with the weight of the load, through to the acceleration and speed, the duration of travel and the associated temperature changes. All these factors affect the individual components and materials of the castor. It is also necessary to consider possible impact loads. These include forces from above, below or from the sides.

In some applications, the castors must withstand loads that are well above those of the standardised test conditions. This is precisely why we have our own test centre, where products are tested in the development phase according to the individual requirements of our customers.

Our production is subject to permanent monitoring within the framework of continuous quality assurance, during which the various influencing factors and production facilities are critically examined again and again. It goes without saying that we also constantly monitor the final products.

To this end, a defined proportion of the products from the production line are tested rigorously in our laboratories on a daily basis.



# ON THE ROAD TO SUCCESS: DRIVERLESS TRANSPORT SYSTEMS

Driverless transport systems (or automated guided vehicles, AGVs) are intelligent, autonomously navigating vehicles which are used for the automated transport of goods. These systems differ with regard to load-bearing capacity, load handling functions and the number of vehicles.

The areas of application are equally varied and range from production plants, distribution centres and warehouses to hospitals, nursing homes and old people's homes. Among the most frequent driverless transport systems are solutions for pallet transport, load carriers for small parts, order picking robots, clear-up vehicles, mobile assembly platforms, automatic goods transporters and heavy-duty industrial trucks. The systems operate with 2D and 3D obstacle detection as well as intelligent sensor technology – for example with ultrasound, radar or magnetic field sensors. When integrated into the work process with people, they provide support for a wide variety of tasks.

The advantages are obvious: Time savings, increased efficiency, reduction of personnel costs, punctual transport processes, minimised throughput times, the highest level of availability, less transport damage and a significant reduction in effort and strain for the employees. According to the German newspaper "Frankfurter Allgemeine Zeitung", productivity increases of 25 percent are realistic.

We offer various solutions in the field of AGV systems. These include the Omikron quadro heavy-duty castor for driverless transport platforms and the sophisticated TENTE Scout, which, thanks to their slim, space-saving design, are the perfect solution when it comes to transport trolleys for drive-under tractors.





# SMALL CASTORS CAN USUALLY ONLY CARRY A LOW WEIGHT – BUT THIS GENERAL RULE DOESN'T ALWAYS APPLY

The decisive factors for the development of display fixtures in stores: availability of space, flexibility and durability. Our globally active customer Marks & Spencer, based in the UK, relies on mobile shelves fitted with our extremely compact Linea load. Their special feature: a dynamic load capacity of up to 100 kilograms with a diameter of just 50 millimetres.

## THE STARTING POINT

Marks & Spencer Group PLC is a retail company rich in tradition that was founded in Great Britain in 1884 and today employs more than 82,000 people. The range of products offered by this full-range supplier includes, amongst other things, food, clothing, cosmetics and furniture.

## THE HIGHEST REQUIREMENTS FOR LOAD CAPACITY

Marks & Spencer designs the retail spaces at its stores in a highly flexible manner and aims to make optimal use of the space. Special sales promotions for a diverse range of occasions require varying levels of space in the stores – e.g. promotions for Valentine's Day, Easter or Christmas.

Therefore, the company relies on the flexibility to allow the merchandise to be quickly and easily rearranged, allowing the tables and gondolas to grow or reduce at any time, in any section or department. The store equipment is moved regularly and needs to last for five to seven years. The company was thus searching for a compact castor solution that could be integrated into the sales floor equipment with its numerous gondolas and rails and yet, was nevertheless, extremely durable. Or in a nutshell: they were looking for a castor like the TENTE Linea load.



### OUR SMART MOBILITY SOLUTION

The twin-wheel Linea load castor is named for its high dynamic load capacity of up to 100 kilograms – with a diameter of just 50 millimetres. It was not only designed to meet the standard for furniture castors, but also to comply with the stricter requirements in the EN 12530 standard for institutional applications. It has thus also impressed renowned experts: the Linea load was awarded the “High product quality” prize at the interzum trade fair. Due to its compact design, it saves a lot of space and is almost invisible. It delivers outstanding handling characteristics and guarantees the highest level of operational safety. At the same time, the castors are also equipped with a special locking device. This locking device has a wide and extremely resilient pedal that enables optimal operation. If the lock is activated it prevents the display shelves from being unintentionally unlocked and moved by employees or customers. An in-built safety benefit that prevents accidents and damage.

Our company supplies the castors to Marks & Spencer in the company colours, as well as in colours to match specific schemes or internal architecture in the various sales areas.

### MAXIMUM DURABILITY, OPERATIONAL SAFETY AND FLEXIBILITY

Due to its compact dimensions, the Linea load is ideal for the existing display fixtures used at Marks & Spencer and also improves the load capacity and safety.

It thus opens up greater scope for the flexible use of the retail spaces and is a solution that the employees can rely by 100 percent. Marks & Spencer also benefits from this close cooperation on a global level.

**As a result of our global presence on five continents,  
we are capable of responding very flexibly and can offer  
the retail company the best possible customer support  
at every one of its locations.**



*“The Linea load is compact and highly resilient – simply ideal for our Gondolas and rails.”*

**Alex Neilson**  
UK & International Specification Manager at Marks & Spencer





# A SWITCHING SYSTEM WITH AN IMPORTANT JOB TO INCREASING PRODUCTIVITY

Japanese traditionally sleep on a FUTON matt on the floor. This feature has an influence on hospital beds and poses a particular challenge in respect of their design, especially in conjunction with braking systems. We therefore looked at the individual system requirements of our Japanese customer, PARAMOUNT BED and developed a tailor-made solution which overcomes challenges, while also improving work processes along the way.

## THE STARTING POINT

The Japanese hospital bed manufacturer PARAMOUNT BED Co., Ltd. looks back on a long-standing tradition of more than 70 years in business and has established its position as a market leader in Asia. The company builds on advanced technologies, develops state-of-the-art medical products and supplies 90 countries all over the world.

## SPECIFIC STANDARDS REQUIRED OF HOSPITAL BEDS

There are differences between hospitals everywhere in the world. In Europe and North America, the corridors and wards are wide and spacious, and the beds tend to be bigger than in Asia. In contrast, the hospital beds in Asia are compact and low in height by comparison and need to be easy and safe to manoeuvre within the small amount of available floor space.

We always strive to come up with the right solution to meet the varying requirements of the international markets. Our customer PARAMOUNT BED was no exception when they needed a specially adapted switching system.

## OUR SMART MOBILITY SOLUTION

Modern hospital beds are fitted with a central braking system with a lever for nursing staff which allows them to operate the castor locking mechanisms. A mechanical switching system ensures that the bed remains firmly and securely in place if the locking mechanism is actuated.

We adapted the existing switching system for PARAMOUNT BED. It was further optimised in regards to the specific conditions and constraints at Japanese hospitals and it boasts the perfect interaction of actuating forces. The pedal for the brake is located at the height of the castors. Nursing staff can still easily operate it by foot even in the lowest reclined position. If the lever is engaged or released, the distance it travels is determined by the length of the lever and of the switching angle. The nursing staff use the lever to apply the brake, operate the directional lock and to release the castors.

There are therefore three switching positions, each requiring sufficient space for the braking system to function safely. Our system for PARAMOUNT BED does not have the directional lock so it has only two switching positions and a switching angle of well below 30 degrees. This gives the hospital bed manufacturer valuable additional centimetres in order to be able to lower the bed to a height of just 20 centimetres.

In the course of our close collaboration we made even more improvements and perfected the overall application, changing over from a friction-locked mechanism to a keyed system. The teeth interlock and make the braking action possible with far less exertion of force.

The challenge involved in devising the solution is not to be underestimated. On the one hand, our engineers had to achieve gentle actuating forces in both switching directions. On the other hand, they had to guarantee the lever would stay fixed in the released position in order to prevent unintended activation of the switching operation even in the case of obstacles.

#### **IMPROVED RUNNING CHARACTERISTICS AND INCREASED PRODUCTIVITY**

The adapted braking system has many different advantages. Thanks to the reduced switching angle, PARAMOUNT BED can use larger castors which mean improved running action. Also due to the sophisticated design of our solution, it is still possible to lower the bed as far down as before.

Another significant advantage for the Asian market leader is our international presence with direct service provided by our TENTE Japan subsidiary which is based in Tokyo.



**The company is supplied with a perfect overall system which guarantees maximum safety and cuts down on complexity and effort, thereby optimizing the working processes.**



*“The solution developed by TENTE is a superlative precision switching system which has exceeded our expectations.”*

**Kyosuke Kimura** President and CEO of PARAMOUNT BED







# ADVANTAGE PARTS TRACKING

Being able to trace parts offers numerous advantages: It ensures excellent production transparency, simplifies reordering and repair processes and reduces operating costs. On request, we can label your products with an individual Data Matrix Code (DMX) containing all of the relevant information required. If problems should arise, it is then possible to determine exactly which model year is affected and which products need to be replaced. This allows a targeted recall action to be initiated.

Another advantage of traceability is the stored data relating to the production process. This allows a scanner to automatically identify the production order, order number and production quantity of the part in question. The digital process improves transparency, simplifies subsequent identification and allocation and facilitates un-complicated data acquisition and processing. Traceability also makes it easier to re-order spare parts or parts needed for repairs. The product codes can also provide information about the materials used, the components and the specific characteristics of the product.

What is the hardness of the tread? Is the castor conductive? And how is the spring force adjusted? In this way, if the need arises, we can quickly and easily supply you with precisely the right castor that has identical properties.

If you too would like to implement parts tracking solutions, we can equip your products accordingly.



# APPLICATION- OPTIMISED OVERALL HEIGHTS

When it comes to the driving characteristics of a castor, the following rule generally applies: The larger the wheel, the better. However, many applications require a low overall height. In such cases, it is important to achieve an intelligent compromise between wheel size and overall height. A flatter version can be achieved with a well thought-out overall design in which the fixing of the castor is set particularly low. This reduces the overall height without changing the wheel diameter.

A low overall height plays a vital role in various fields of application: These include logistics, the medical and industrial sectors, as well as office furnishings and equipment. Machines, equipment and furniture with castors that have a low overall height allow optimum utilisation and organisation of the space available. A low overall height also ensures that the centre of gravity is lower. This reduces the tilting moment, increases stability and ultimately improves the safety of the application.



# RESPONSIBLE TREATMENT OF THE ENVIRONMENT IS ALWAYS A CENTRAL CONCERN FOR OUR COMPANY.

“Sustainability” is one of our most important keywords here. Our solutions are designed to protect ecological resources, prevent waste and minimise all forms of pollution – starting with reducing CO<sub>2</sub> emissions and preventing noise through to dispensing with hazardous substances in a proper manner. We achieve these goals by combining technically sophisticated developments with state-of-the-art materials made from the highest quality raw materials. The sustainable solutions not only comply with the strictest environmental norms, but also take into account the relevant conditions in the countries of use.

**They are quiet, save energy  
and help reduce waste.**



# A CASTOR THAT HELPS US MAKE A SPECIAL PARTNER HAPPY: THE ENVIRONMENT

We would like to introduce you to a special number: 11,000,000. What does it represent? The number of litres of kerosene that a leading German airline saves each year with the help of the TENTE Aviana light castor. This castor reduces the weight of service trolleys and thus ensures a reduction in fuel consumption. Now we have another number for you: 28,000 tonnes. This represents the reduction achieved in carbon emissions thanks to the decrease in kerosene consumption and demonstrates that a smart solution can really give wings to climate protection.

## THE STARTING POINT

In aviation, lightweight construction plays a decisive role, in both passenger transport and logistics, particularly when it comes to a responsible attitude to the environment. Every kilogram that a major airline can save in its fleet saves 31,000 litres of kerosene per year and thus avoids around 78,000 kilograms of CO<sub>2</sub> emissions. The companies are therefore constantly on the lookout for new potential savings, as well as partners who know how to achieve them.



## THE SERVICE TROLLEY – A WEIGHTY CHALLENGE

Service trolleys have become an indispensable feature in aeroplanes. They are used to stow away snacks, drinks and consumer articles, as well as manoeuvre them through the aisles. SPIRIANT GmbH produces such solutions and decided to put their trolleys to the test. The goal: lighter models whose reduced weight helps cut down on aircraft fuel consumption and CO<sub>2</sub> emissions. With this in mind, the company contacted TENTE and asked if we could fit the new service trolleys with suitable castors. Our answer? With pleasure!

## OUR SMART MOBILITY SOLUTION

We had already developed an impressively low-weight castor at the turn of the millennium: the TENTE Aviana. So, in close cooperation with SPIRIANT GmbH and a leading German airline, we set about making the castor even better for use in aircraft fleets. The wheel, fork and bearings were modified using ultralight synthetic material, while aluminium was introduced for the fixings. The result: The 0.35 kilogram TENTE Aviana light. Achieving minimal weight was only one of our focus points though. Our engineers considered it essential to tackle the challenge from a holistic point of view. Since high standards of hygiene, stability, safety and design also had to be met. The synthetic material used to manufacture the castor fork, for example, is particularly stable, yet still





guarantees a high degree of flexibility. The contours of the fork were designed to allow effortless manoeuvrability in the service kitchen and the narrow aisles of the aircraft. Our engineers also designed the locking system of the castor with flight operations in mind, so the trolley stands firm and secure even in turbulence and when climbing and descending. Of course, we left nothing to be desired with regard to corporate design either. We also supplied the TENTE Aviana light in the typical corporate colours of the leading German airline.

#### **LOWER KEROSENE CONSUMPTION AND SIGNIFICANTLY REDUCED CO<sub>2</sub> EMISSIONS**

With our smart solution we were able to improve the mobility of the service trolley. The TENTE Aviana light ensures excellent stability, effortless manoeuvrability and has an impressively low weight.

The German airline profits from a saving of 1.3 kg per set of castors and service trolley. What is remarkable though, is that a small castor can positively influence the overall result of the sustainability report of one of the largest aviation groups in the world.

**In the meantime, the German airline relies on 30,000 of the new ultra-light service trolleys fitted with the TENTE Aviana light. The castors save the company 11 million litres of kerosene per year and protect the environment with a 28 million kilogram reduction in CO<sub>2</sub>.**



*“TENTE has exploited every possibility to the full in achieving a reduction in weight.”*

**Joachim Frösche**  
 Manager Engineering of SPIRIANT GmbH, Member of LSG Group



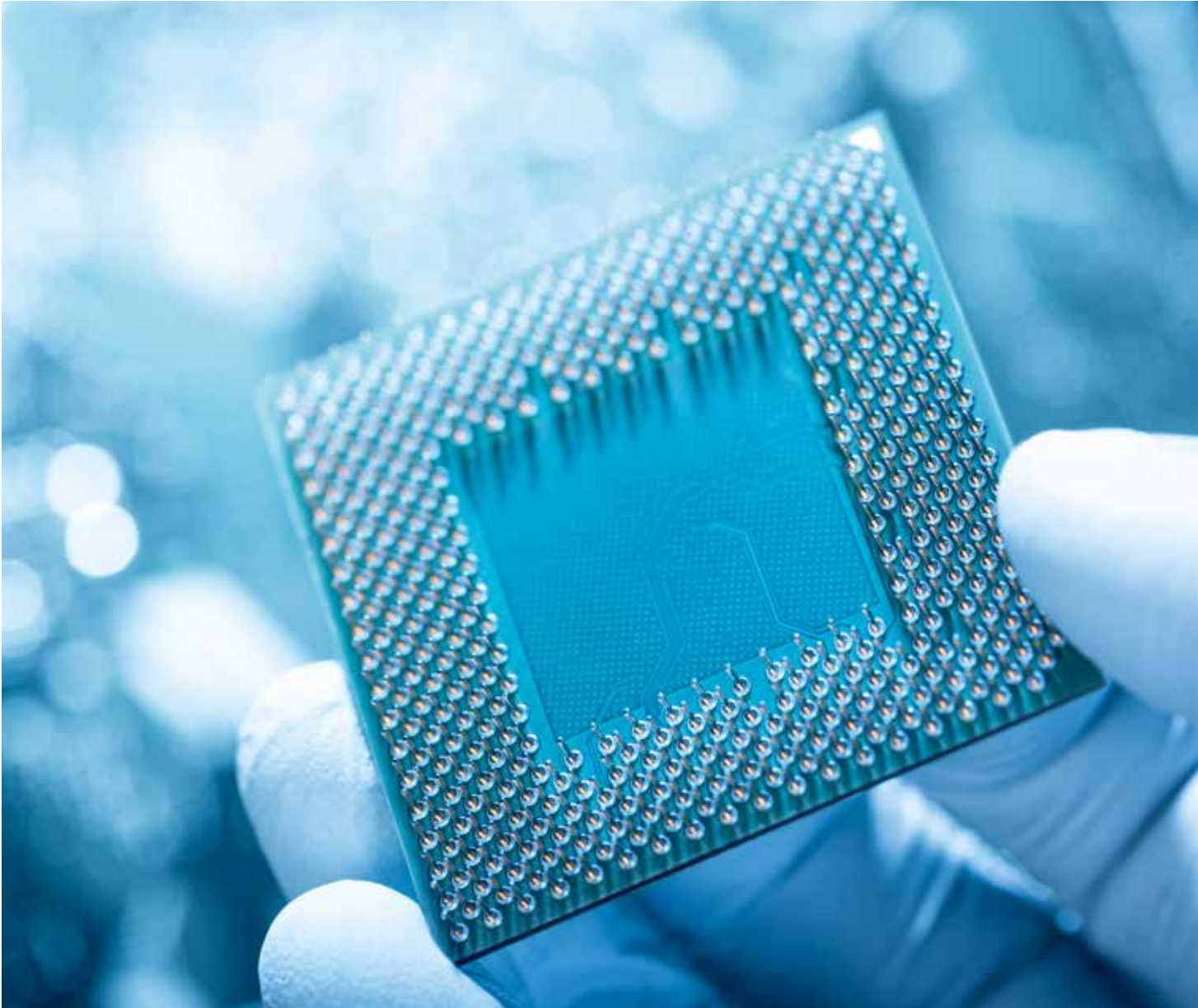


# LESS IS MORE: LIGHTWEIGHT CONSTRUCTION

Lightweight construction offers decisive competitive advantages in various industries and service sectors. In aviation, intra-logistics, mechanical engineering, transport, medical technology or trade – essentially, wherever something needs to be moved – lightweight solutions open up wide-ranging benefits. For example, Vehicles require less drive power, which significantly reduces energy consumption, carbon dioxide and operating costs for companies.

In addition, a reduction in weight ensures effortless handling and thus relieves the physical strain on employees. We make it possible for you to use these benefits to their full effect. We have the expertise to manufacture particularly lightweight solutions and to substitute them for existing materials – as in the case of the TENTE Aviana. Here we first improved the fork by making the housing smaller. By making clever changes to the geometry, we were also able to reduce both volume and weight.

The next step involved taking various components made of stainless steel and replacing them with aluminium parts. Even the smallest components were put to the test here – right down to the balls in the ball bearings. In this way, we successively reduced the weight of the castor from 520 to 350 grams, making it more than 30 percent lighter.



# SOLUTIONS FOR EXACTING ENVIRONMENTS

In cleanrooms in the electrical and semiconductor industry, as well as in the automotive sector and in numerous other industries, strict regulations apply with regard to the permissible particle concentration in the air. When castors are to be used in such sensitive areas, quite a few companies require a certificate verifying that all of the individual components of the mobility solution are silicone-free.

With us, you are always on the safe side. This is because none of our products contain silicone – the granules of the processed synthetic material, the surfaces, seals and ball bearings are all silicone-free. We know that even the smallest particles can have undesirable effects. Especially for use in cleanrooms, we offer you perfectly adapted solutions which are conductive, rustproof and have sealed bearings. In most cases, a castor with smooth surfaces is the castor of choice.

We also offer ESD castors and wheels. ESD stands for Electrostatic Discharge. ESD solutions prevent damage and the negative effects caused by rapid electrostatic discharges.



# NOISE GENERATION HALVED – EVEN AT A CONSTANT LOAD CAPACITY

When a supermarket is supplied using roll containers, it can soon become very noisy – but this is not how it should be. After all, intense noise is not only an unpleasant disturbance of the peace, but above a certain level also impacts health. The logistics specialist GEBHARDT therefore relies on our Duratech silent wheels. These wheels combined with their high load capacity are significantly quieter than ordinary wheels – ten decibels quieter, to be precise.

## THE STARTING POINT

Developing and producing efficient logistic solutions for trade and industry are the hallmarks of GEBHARDT Logistic Solutions GmbH. The company is successfully managed as a family business in its sixth generation now and can look back on a more than 185-year history engraved with tradition.

GEBHARDT employs around 500 people worldwide at five production sites and has established itself as the market leader in warehousing and transport solutions.

## REMIT TO REDUCE EMISSIONS

When it comes to supplying supermarkets, hotels or restaurants, as well as transporting goods in residential areas, roll containers not only have to withstand a lot, they must also be as quiet as possible. No matter whether they are empty or loaded or are moved over uneven ground. Especially when deliveries are made at night and in the early morning hours, the loud noise of containers being wheeled along often leads to complaints. But noise is not only a nuisance, it also has a harmful effect on the health of local residents and employees: Exposure to noise of more than 50 decibels can increase the risk of developing high blood pressure and cardiovascular problems. For GEBHARDT, reducing noise therefore plays an important role and the company takes

a variety of measures to avoid it. Starting with the insulation and suspension of the container's base plate, through the use of stretch film when attaching the goods to be transported and right up to low-noise wheels from us – GEBHARDT's containers need to remain as quiet as possible.

## OUR SMART MOBILITY SOLUTION

After comprehensive analysis, we combined our proven sheet steel castors with modern Duratech silent wheels for GEBHARDT. Thanks to these, the noise level of a loaded roll container can be reduced by an impressive ten decibels, which is perceived as halving the volume.

The load carrying capacity, which is identical to that of conventional wheels, remained completely unaffected. The trick behind it: our Duratech silent hybrid wheel. The wheel body and base are made of polyamide, while the core is made of elastic solid rubber. This allows us to combine the advantages of a hard tread with the strengths of a soft wheel. The combination of the two materials results in optimum damping properties and thus significantly reduced noise emission.





This also convinced the customers of the logistics expert. For example, the whole-sale company Transgourmet mentions the low-noise delivery of goods in its sustainability brochure and highlights it as a special quality. However, our cooperation with GEBHARDT focused not only on running noises. Due to our holistic view of the logistics challenges and the Duratech silent wheels, we also scored highly in terms of stability. After all, the specialist for logistic solutions puts its products to the test and simulates real conditions through extensive trials. For example, heavily loaded roll pallets overcome thresholds and obstacles, such as forklift trucks bump into them. The wheels also have to withstand cold and heat, dirt and rainwater, as well as show no signs of weakness even in snow. Our Duratech silent wheels have passed all of these tests.

#### **LONGER DURABILITY AND REDUCED COSTS**

The wheel has a service life more than twice that of conventional castors, which are used for an average of only two years. In contrast, the Duratech silent wheel is often used for up to five years.

**This saves costs both in purchasing and maintenance and is another decisive reason why GEBHARDT relies on long-term cooperation with our company.**



*“Close communication and an understanding of market requirements are very important to us. TENTE was also able to fully convince me on these points.”*

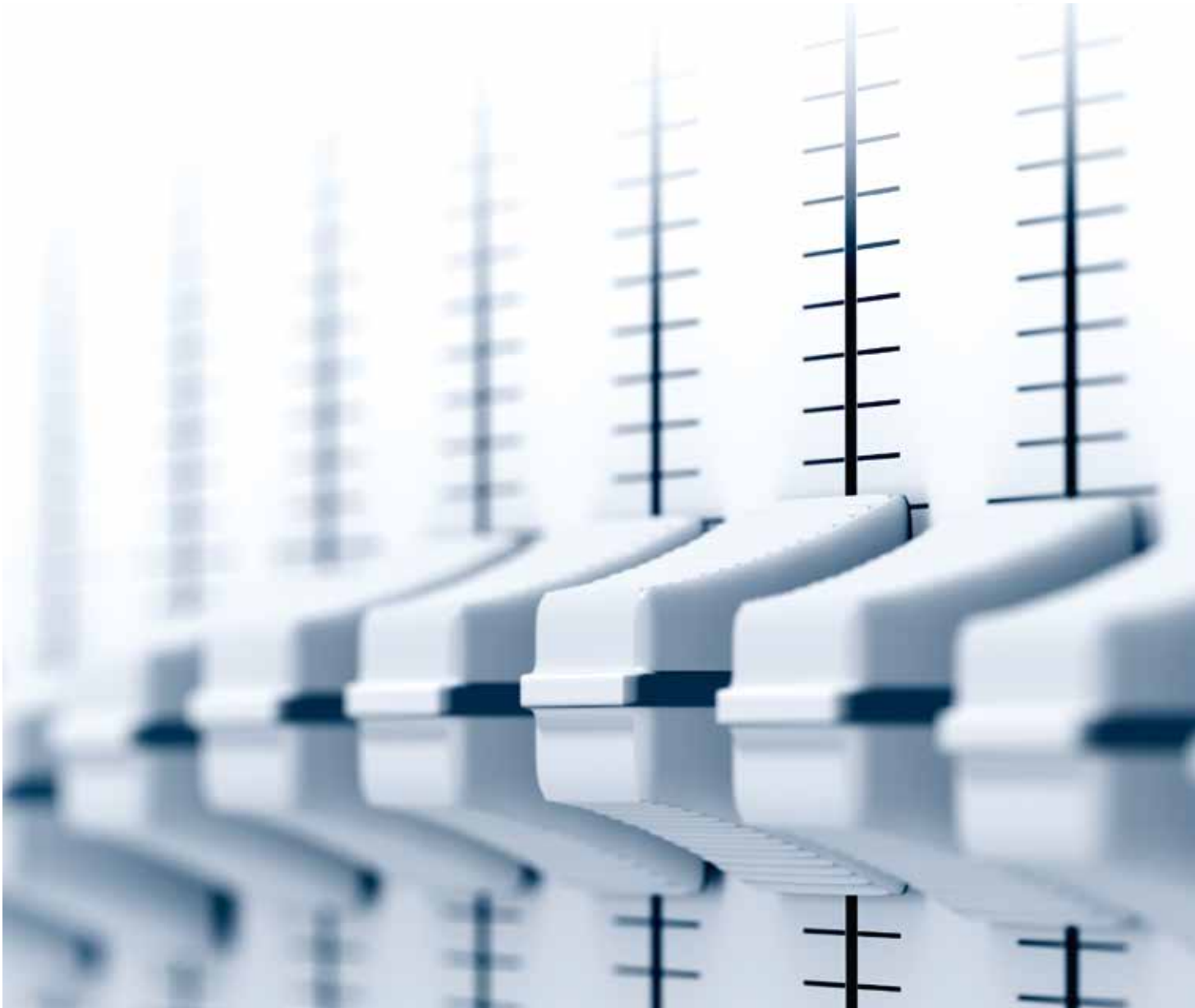
**Dr. Andreas Sachs** Managing Director of GEBHARDT



*“For more than 30 years, we have been using TENTE’s professional expertise.”*

**Norbert Götz** Purchasing Manager at GEBHARDT





# NOISE REDUCTION FOR QUALITY OF LIFE

Noise has been proven to have an influence on our well-being. Noise and unpleasant sounds caused by transport and work equipment in the various fields of application can affect our quality of life, annoy third parties and, in extreme cases, even have health consequences.

Noise reduction is therefore one of the most important disciplines in our product development process. Where castors are concerned, various acoustic sources come into play – starting with the running noises of the wheel and mechanical sounds caused by the operation of brakes, through to noises caused by steering movements.

The connection between the castor and the transport device is also relevant from an acoustics point of view. At this connection, vibration transmission and corresponding resonance noises can occur. During our development process, we keep all these parameters in mind and take targeted action to ensure an optimal sound design.

By selecting the perfect mix of materials and the right running surfaces and by adjusting the wheel geometry, we are able to influence the noise of the moving wheels. The use of appropriate high-quality components, such as wheel bearings with excellent running and damping properties, also makes a contribution.

With regard to the operation, our focus is on reducing the noise of the mechanical elements. Improvements include the installation of dampening spring elements as well as the use of form-fit instead of force-locking wheel brakes. We counteract any possible resonance in the wheel body or in the castor housing by including vibration dampers, which demonstrably reduce the drum effect. Finally, we also develop solutions to effectively decouple vibration transmission at the point where the castor connects to the transport system. Please feel free to contact us for advice on this topic. We are at your disposal.

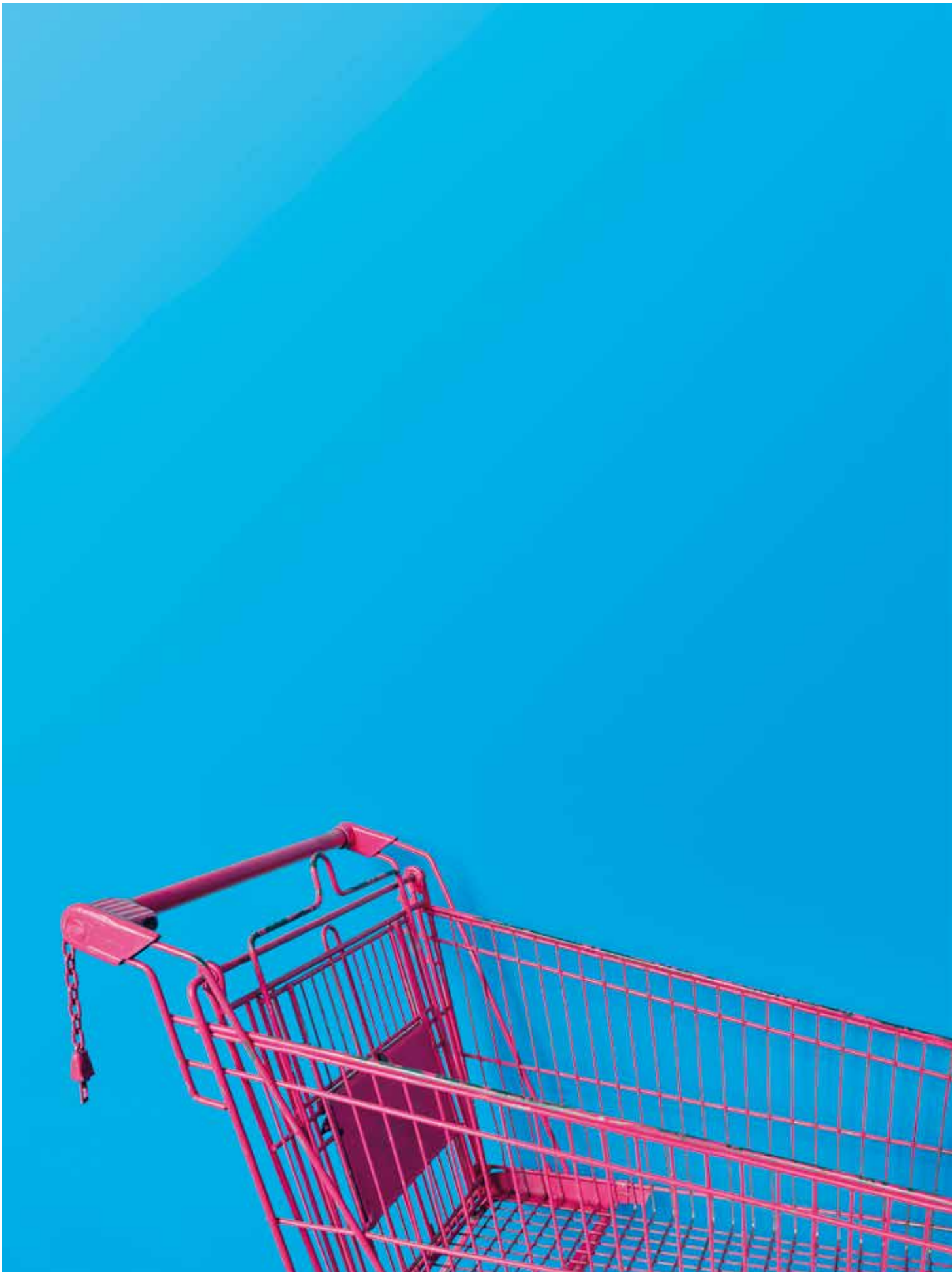


# TREAD GEOMETRY AND DRIVE CHARACTERISTICS

Especially in areas where heavily loaded transport equipment has to be moved manually, ergonomic considerations focus on rolling resistance and swivel resistance. The lower these values are, the easier and safer it is to move the transport equipment. The two factors can be influenced by the shape and the selection of appropriate materials. Flat treads have a wide contact area. This results in better stability and a lower and therefore more floor-friendly surface pressure compared to crowned running surfaces. On the other hand, the contact area of crowned treads is considerably smaller, so that this design is notable for its lower swivel and rolling resistance.

However, this can change if (excessively) high loads occur. As soon as the contact pressure increases, the force transfer across the tread increases. The result: When the wheel is in motion, the loaded tread material deforms and the rolling and swivel resistances increase. Therefore, for heavy loads, flat tread profiles are usually preferred.

Our experts are ready to help you find exactly the right design to suit your specific requirements – and will also be happy to develop a completely individual tread geometry.



# CASTORS WITH A SIGNIFICANT COMPONENT: SUSTAINABILITY

A single shopping trolley covers thousands of kilometres in the ten years of its service life. Therefore, its castors are subject to significant wear and tear. When carrying out necessary maintenance, the aim should be to conserve valuable resources and reduce the burden on the environment. For this reason, we provide our customer ShopBox with castors that make it possible to replace only those parts that really need renewing. The result: improved sustainability and lower costs.

## THE STARTING POINT

ShopBox Group GmbH from Heilbronn, Germany, specialises in the cleaning, disinfection and repair of shopping trolleys. The company serves supermarkets in ten European countries. ShopBox employees maintain and repair soiled grids, jammed child seats and of course, shopping cart castors that squeak, block or drive in the wrong direction. ShopBox will clean, repair and if necessary, replace these components so that the shopping experience is once again trouble-free.

## ENVIRONMENTAL IMPACT AND HIGH COSTS

In the German market alone, there are more than 20 million shopping trolleys in use, which all require regular maintenance. Therefore, when designing the castors, it is important to focus on environmental factors and on how resources are used. Usually, the shopping trolley's wheels and forks are riveted together. This makes it impossible to continue to use intact components if part of the unit is defective. So that means the entire castor has to be replaced unnecessarily. Replacement of the whole castor is only really necessary in about 30 percent of maintenance cases. In the remaining 70 percent, the replacement of the wheel is sufficient to restore mobility. The reason for this is the longer life cycle of the wheel fork. If a wheel needs replacing and the fork is riveted to the wheel, then there is no alternative but to dispose of the fork along with the defective wheel.

This results in unnecessary waste, the squandering of resources, and increased costs. However, the alternative is to use castors made by TENTE.



### OUR SMART MOBILITY SOLUTION

ShopBox uses our shopping trolley castors for its maintenance work. The special feature are the fork and the wheel are not riveted together, but connected with a bolt. This enables the company to order and replace the components separately. If only the wheel is damaged, the fork can still be used.

The bolted connection offers further advantages, for example, when attaching the castor to the shopping trolley. Since the fork is not riveted to the wheel, it allows easier access for fixing. The castor can be attached and removed more easily and quickly. The same also applies to cleaning. The wheel and fork can be cleaned more easily when separated, as the dirty areas are then easier to reach.

Once maintenance is complete and the castor has been reassembled, the advantages of our solution becomes clear: the bolted connection is more flexible and environmentally friendly than the riveting.

### CONSERVING RESOURCES AND SAVING COSTS

Our solution is valued by ShopBox and its customers for its sustainability, ease of maintenance and cost efficiency. With 40,000 serviced castors per year, this is a considerable advantage for ShopBox. In addition, the solution also improves the maintenance process because the wheel and fork can be removed individually, maintenance is quicker, easier and more efficient.

**Not only are resources conserved and the burden on the environment noticeably reduced, but also two thirds of the costs are saved.**



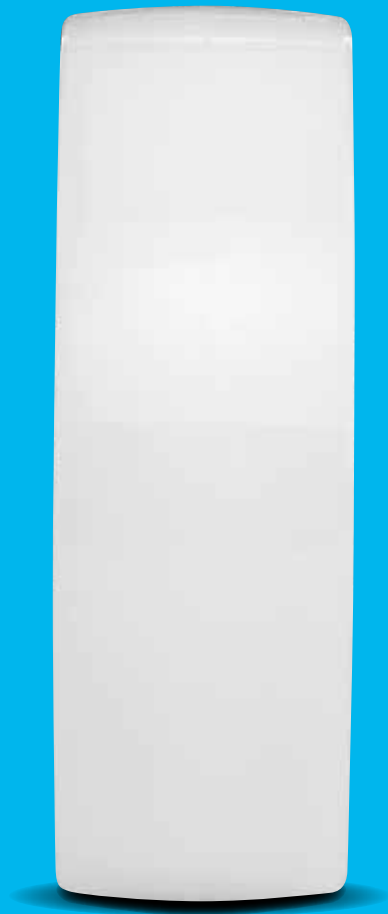
*“With TENTE, we save two thirds of the costs and protect the environment.”*

Hans-Peter Vetvicka General Manager of ShopBox





**OUR  
PRODUCT  
FAMILIES**



# ON THE JOB EVERYWHERE: OUR WHEELS

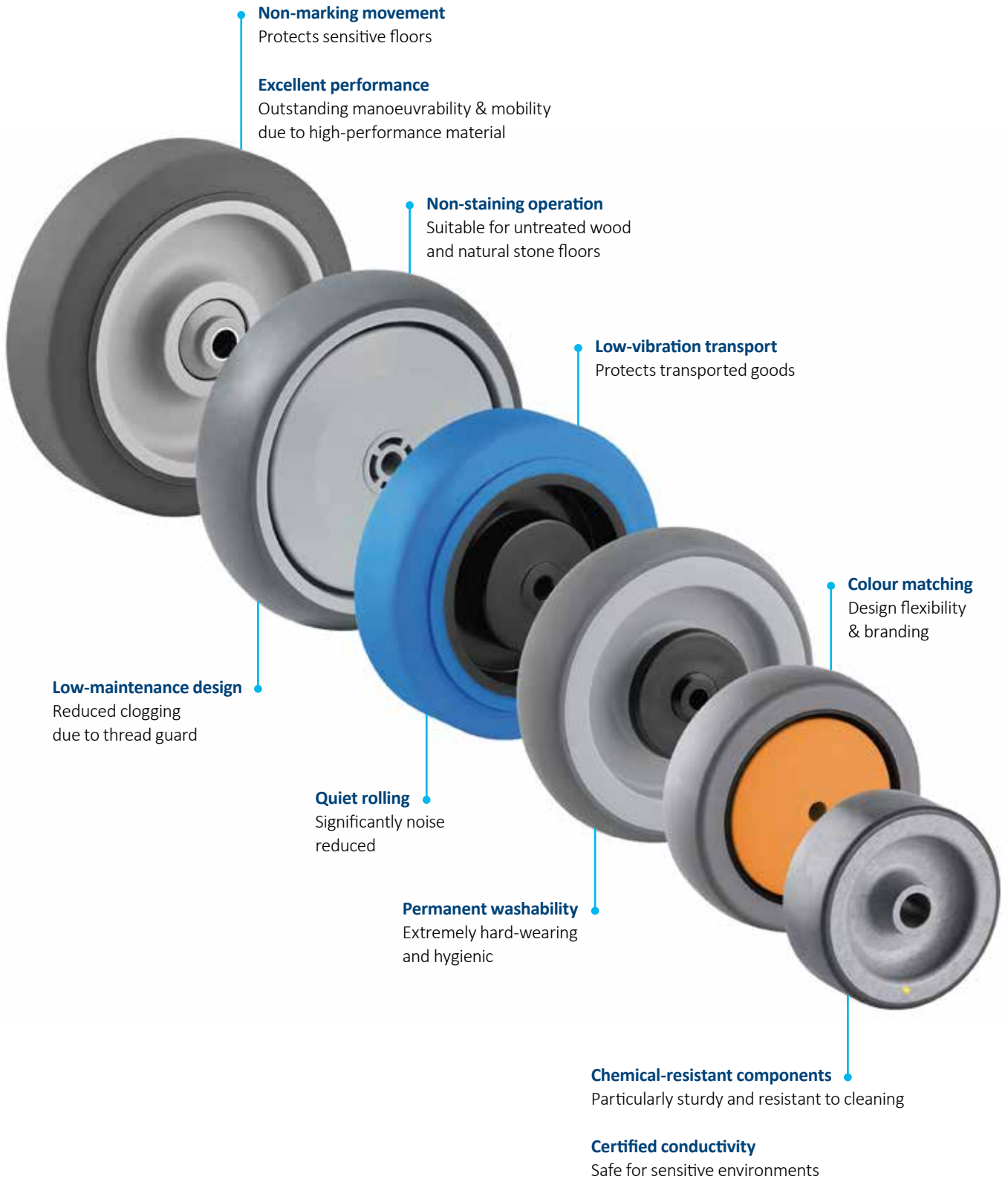
The characteristics of our wheel families are as diverse as their uses. Being precisely adapted to the required parameters, they provide optimal mobility with perfectly matched components, even under the most extreme conditions.

On numerous wheels, the type of bore centres, can be individually customised, ranging from ranging from plain to precision ball bearings and even keyway for driven applications. When combined with an appropriate housing and mounting parts, most wheels are also available as complete castors.

**Our wheels are the reliable centrepiece of all TENTE mobility solutions as a key functional element in contact with the ground, regardless of whether they are used alone or as a complete castor.**

# SUPRATECH

Smooth-running all-rounder  
with thermoplastic rubber tread



# BASETECH

Hard-wearing lightweight  
polypropylene wheels





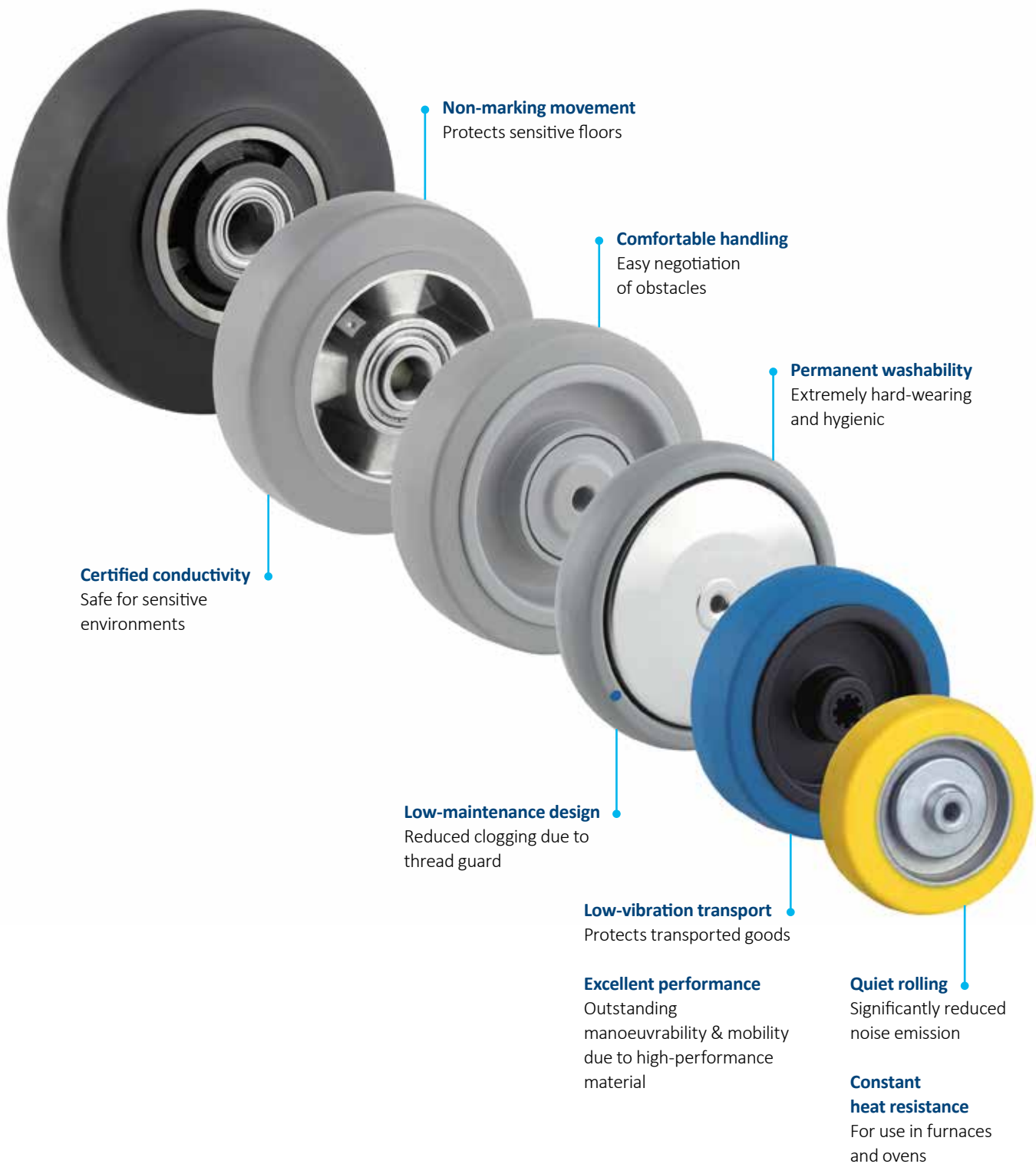
# PURETECH

Robust standard with rubber tread for versatile use



# ELASTECH

Quiet-running elastic and silicone rubber  
for smoothest handling properties



# DURATECH

Stable and indestructible, made of polyamide and thermosetting plastic



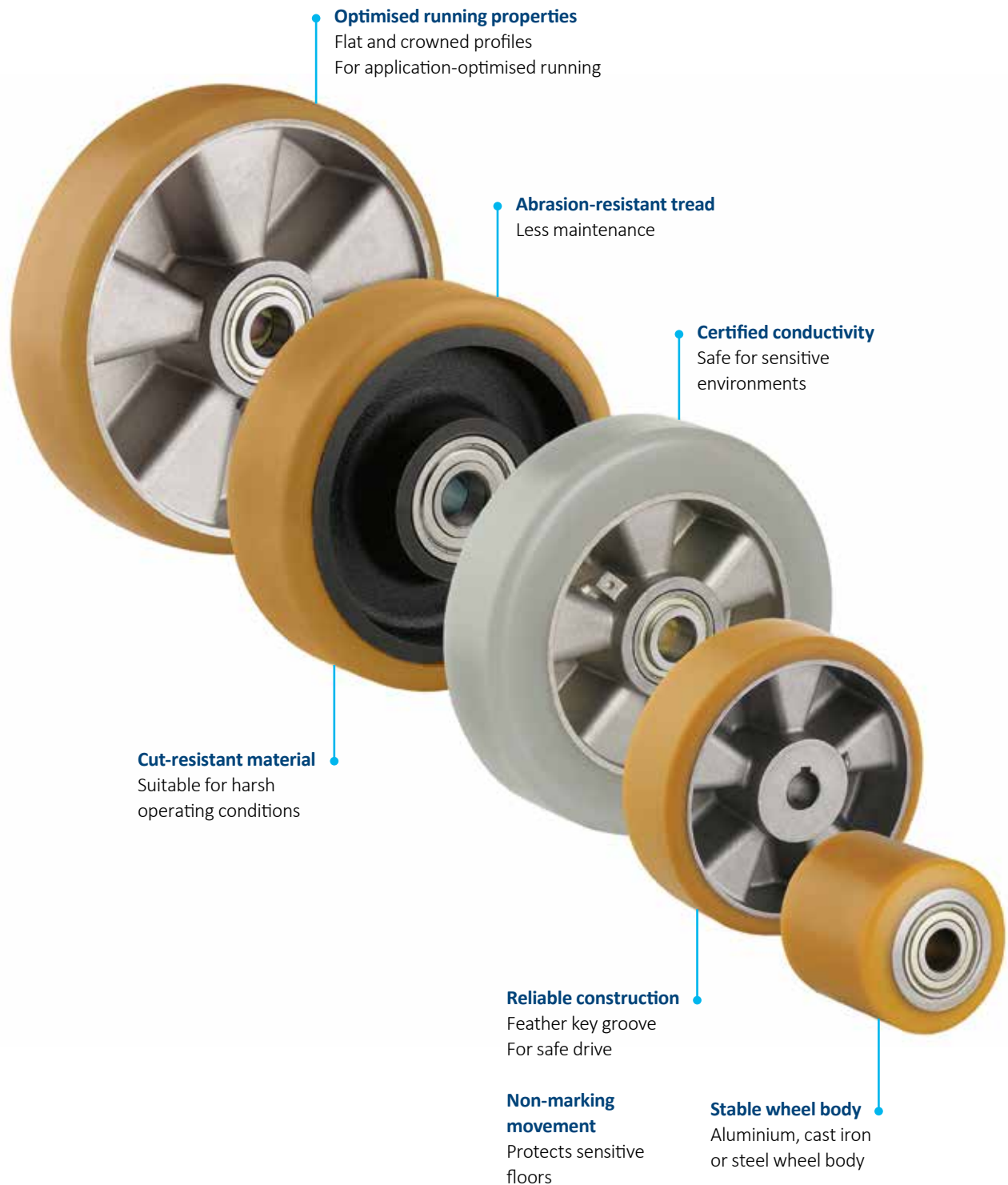
# MAXTECH

Perfect for functional design,  
injection-moulded polyurethane



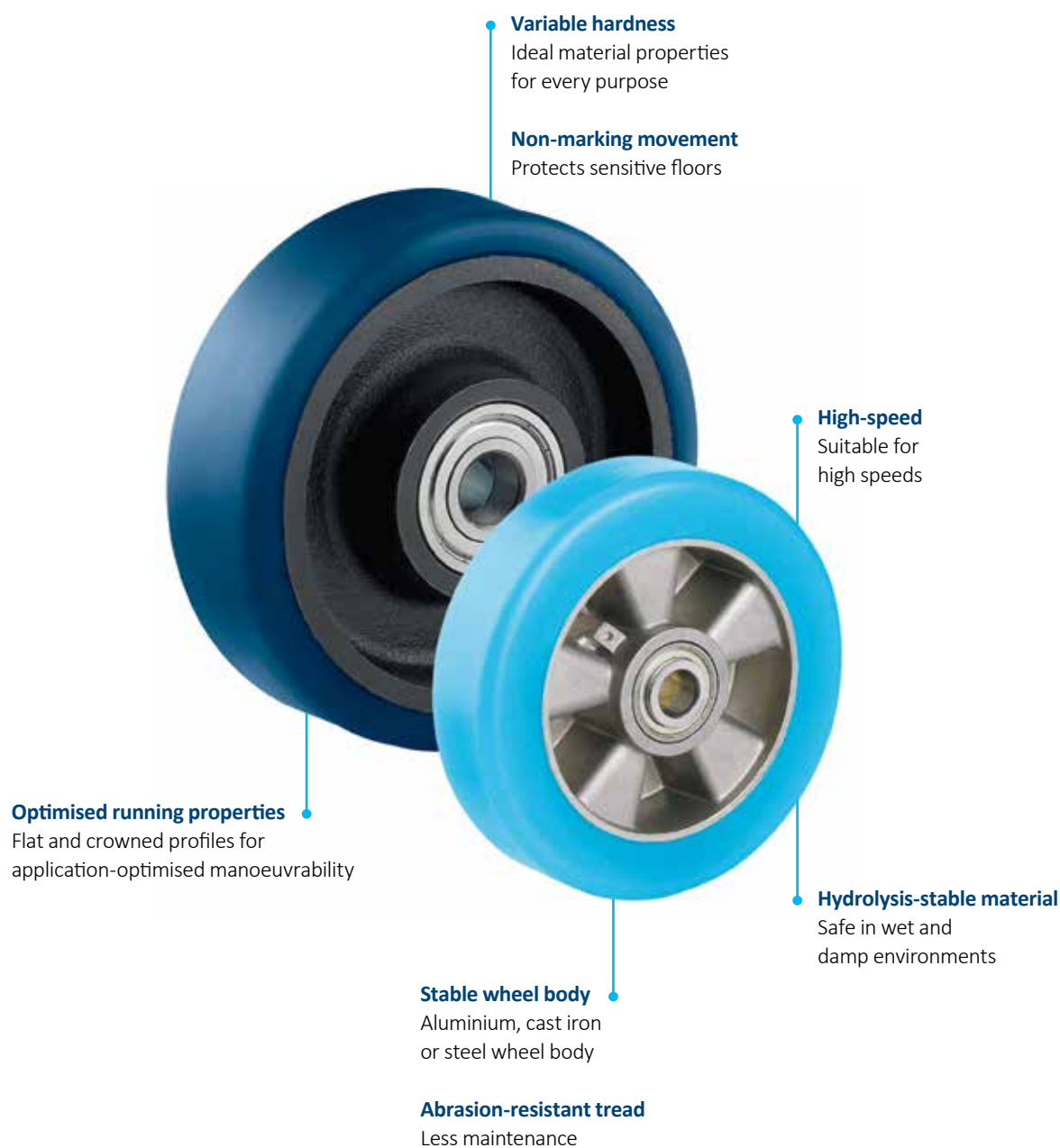
# NOVATECH

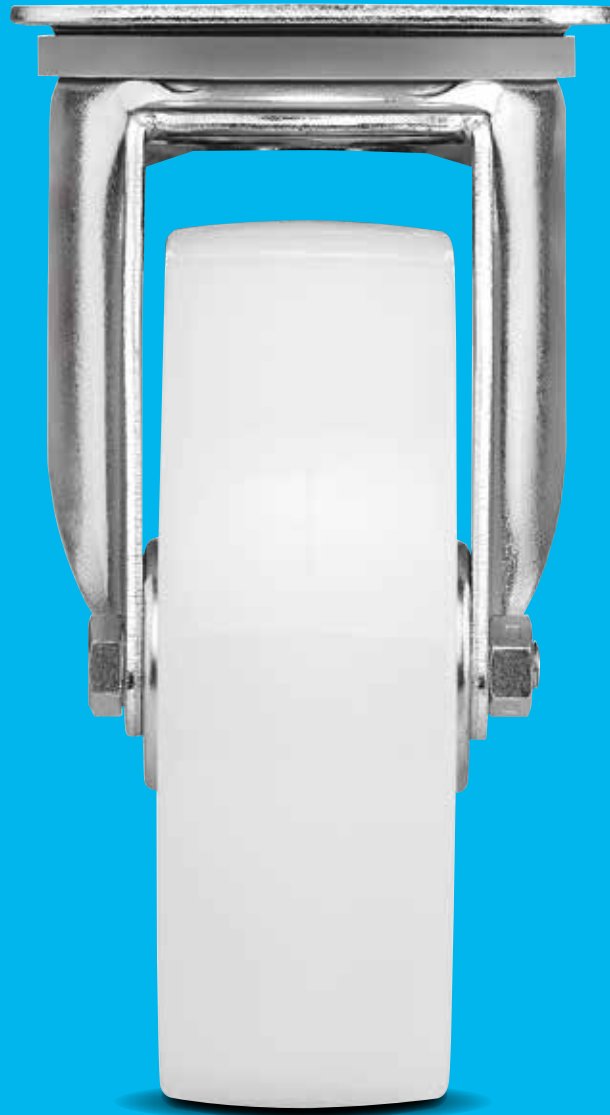
Highly resilient classics  
with cast polyurethane coating



# ULTRATECH

Outstanding performance  
through premium polyurethane





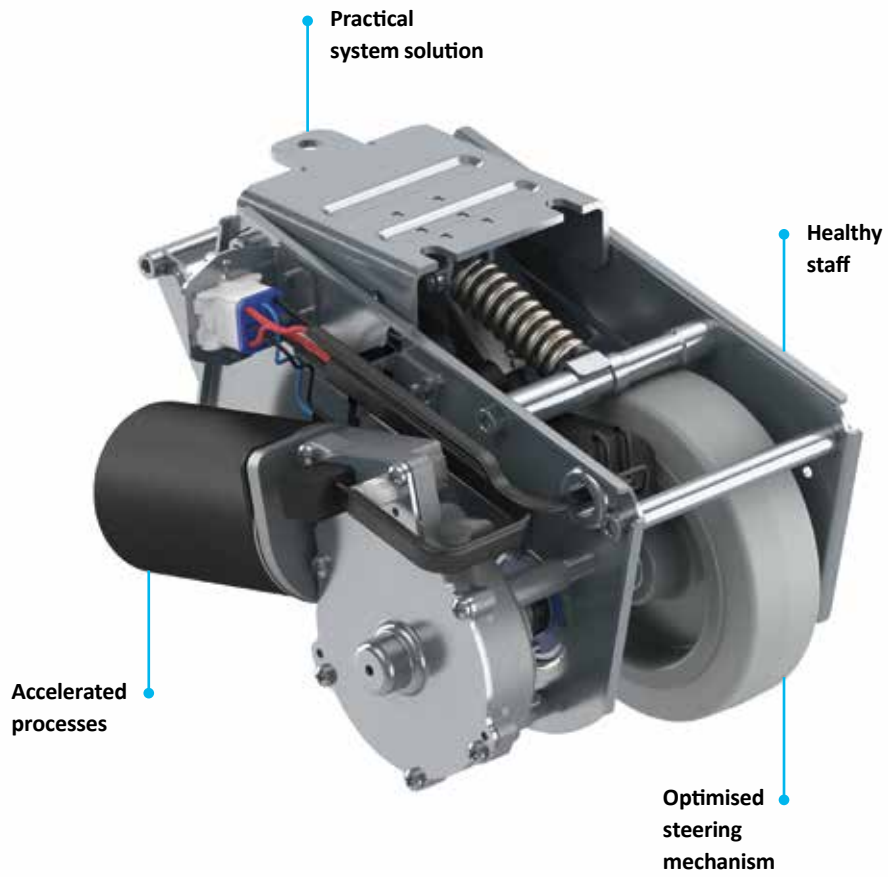
# DIVERSITY WITH A SYSTEM: OUR CASTORS

Each of our product families is united by specific criteria. The focus can lie on a high design standard, a special area of application or an exceptional load capacity. Based on this defined profile of characteristics, a system of design variations is available for each particular model – from the correct dimensioning and technical specifications to the required configuration.

**Whatever you need –  
our product families offer the ideal solution.**



# E-DRIVE



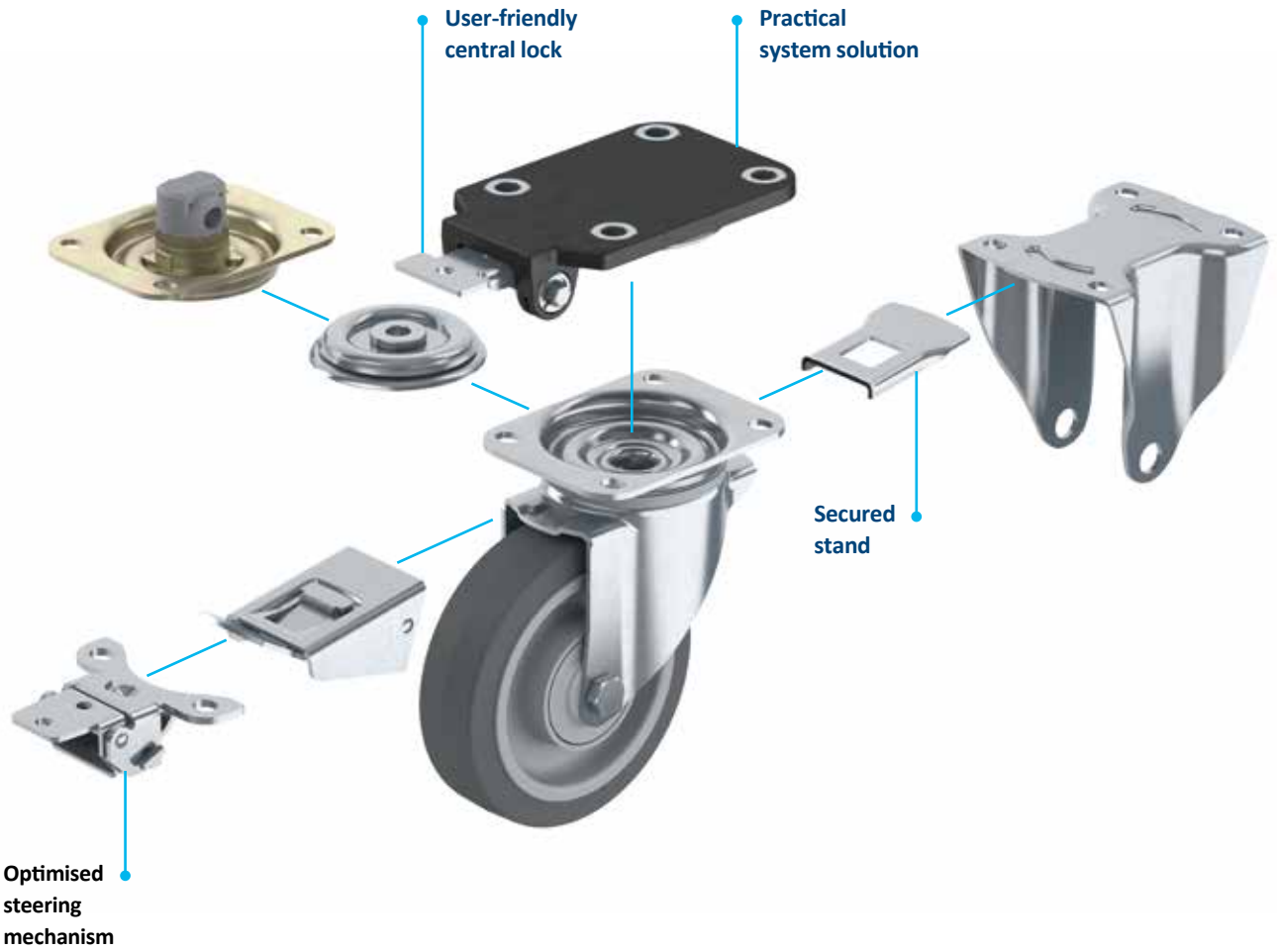
## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber

<p><b>Optimised steering mechanism</b></p> <p>As fifth wheel for improved steering in curves and driving in a straight line for long distances.</p>	<p><b>User-friendly assembly</b></p> <p>Hand-held control unit can be attached flexibly in a vertical or horizontal position.</p>	<p><b>Practical system solution</b></p> <p>Easily integrated system solution consisting of a drive unit, control module, hand-held control unit, battery, charger and mounting set.</p>	<p><b>Flexible use</b></p> <p>Thanks to lifting motor, can be switched on as required. No ground contact in standby position.</p>	<p><b>Ergonomic operation</b></p> <p>Ergonomically designed hand control unit with system and battery status LED display. One-button operation.</p>	<p><b>Accelerated processes</b></p> <p>Faster start-up with heavy loads to accelerate operating processes.</p>	<b>PRODUCTIVITY</b>
<p><b>Certified operating reliability</b></p> <p>Standard conformity according to DIN EN ISO 13849</p>	<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Reliable electronics</b></p> <p>Infinitely variable speed regulation (forward and reverse) through safety-tested drive switches.</p>	<p><b>Reduced absences due to illness</b></p> <p>Rapid return on investment through fewer illness-related absences.</p>	<p><b>Healthy staff</b></p> <p>Heavy loads can be moved effortlessly. Prevents physical ailments to the neck, back, shoulders and wrists.</p>		
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>						<b>DESIGN</b>
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Solid housing</b></p> <p>Made of pressed steel, zinc plated.</p>	<p><b>Standardised maintenance</b></p> <p>USB interface for firmware updates.</p>	<p><b>Durable construction</b></p> <p>Complete protection against spray water (IPX4).</p>	<p><b>Long life operation</b></p> <p>With standard batteries, approx. 200 start-up cycles at maximum load.</p>	<p><b>Optimal ground contact</b></p> <p>High contact force between the wheel and the floor with a compensating function for uneven floors.</p>	
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods.</p>	<p><b>Resource-conserving part replacement</b></p> <p>Threaded axles allow effortless wheel change.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>		<b>ENVIRONMENTAL</b>

# ALPHA



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic rubber



**BASETECH**  
Polypropylene



**PURETECH**  
Rubber



**ELASTECH**  
Elastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane injected



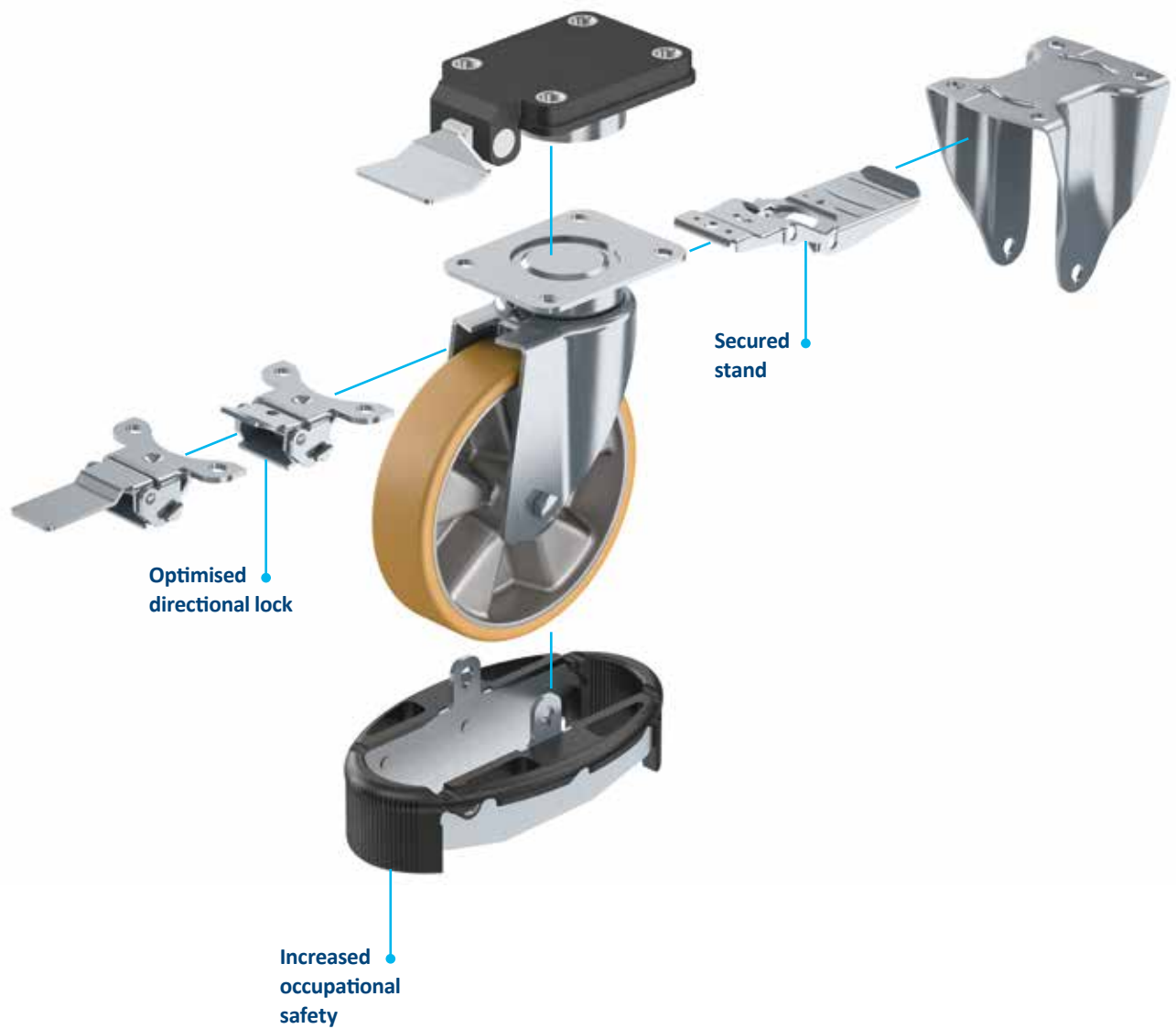
**NOVATECH**  
Polyurethane casted



**ULTRATECH**  
Premium polyurethane casted

<p><b>Optimised steering mechanism</b> Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>Easy steering</b> Double ball bearing swivel head.</p>	<p><b>User-friendly central lock</b> Simultaneous locking of more than one castor using a central actuation lever.</p>	<p><b>Practical system solution</b> Practical system solution with all technical components for central locking.</p>	<p><b>Variable fitting options</b> Different fitting dimensions for a large range of applications.</p>	<b>PRODUCTIVITY</b>	
<p><b>Low-vibration transport</b> Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Certified conductivity</b> Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Secured stand</b> Total lock for simultaneously locking the wheel and swivel housing.</p>	<p><b>Ergonomically friendly use</b> Wheels with optimised roll resistance to lighten the load for the user.</p>			<b>SAFETY</b>
<p><b>Colour matching</b> Colours can be adapted to match the product design.</p>					<b>DESIGN</b>	
<p><b>Tested quality</b> Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Low wear and tear wheels</b> Durable wheels with extremely low wear and tear properties.</p>	<p><b>Uninterrupted use</b> Swivel bearing with dust ring for continuous, uninterrupted movement.</p>	<p><b>Constant heat resistance</b> Wheels made of heat resistant material for use in extreme environments.</p>	<p><b>Permanent washability</b> All metal components made of stainless steel.</p>		<p><b>Protective seal</b> Wheels with sealed bearings to protect against spray water and dirt.</p>
<p><b>Quiet rolling</b> Noise reduced wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b> Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b> Non-staining on contact with floors during long standing periods.</p>	<p><b>Resource-conserving part replacement</b> Threaded axles allow effortless wheel change.</p>	<p><b>Low-maintenance wheels</b> Thread guards for unobstructed operation with minimal cleaning effort.</p>	<p><b>Non-hazardous materials</b> Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<b>ENVIRONMENTAL</b>

# DELTA



## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane injected



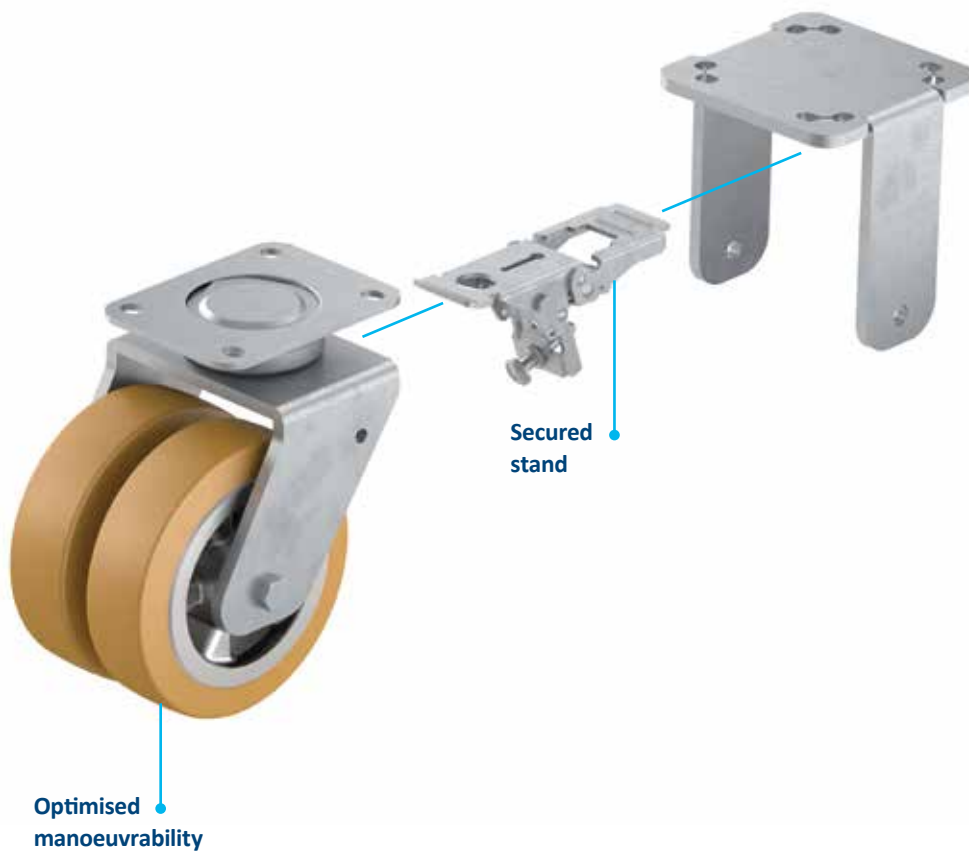
**NOVATECH**  
Polyurethane casted



**ULTRATECH**  
Premium polyurethane casted

<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>Easy steering</b></p> <p>Swivel head with precision ball bearing.</p>	<p><b>User-friendly central lock</b></p> <p>Simultaneous locking of more than one castor using a central actuation lever.</p>	<p><b>Practical system solution</b></p> <p>Practical system solution with all technical components for central locking.</p>	<p><b>Flexible lock function</b></p> <p>Use of two independent actuation systems in one castor.</p>	<p><b>Optimised directional lock</b></p> <p>Directional lock can be adjusted to your requirements to 2x180° or 4x90°.</p>	<b>PRODUCTIVITY</b>	
<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>	<p><b>Ergonomically friendly use</b></p> <p>Wheels with optimised roll resistance to lighten the load for the user.</p>	<p><b>Increased occupational safety</b></p> <p>Partially elastic foot protection to reduce accidents. Also used on uneven floors.</p>				<b>SAFETY</b>
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>						<b>DESIGN</b>	
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Low wear and tear wheels</b></p> <p>Durable wheels with extremely low wear and tear properties.</p>	<p><b>Uninterrupted use</b></p> <p>Sealed swivel bearing for continuous, uninterrupted movement.</p>	<p><b>Strong construction</b></p> <p>Housing made of heavy steel for high load capacity.</p>				<b>DURABILITY</b>
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods.</p>	<p><b>Resource-conserving part replacement</b></p> <p>Threaded axles allow effortless wheel change.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>			

# DELTA TWIN



## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane  
injected



**NOVATECH**  
Polyurethane  
casted

**Easy steering**

Swivel head with precision ball bearing.

**Optimised manoeuvrability**

Twin wheel castor with high manoeuvrability due to differential effect.

PRODUCTIVITY

**Low-vibration transport**

Extra soft wheels with good shock-absorbing properties.

**Secured stand**

Total lock for simultaneously locking the wheel and swivel housing.

**Ergonomically friendly use**

Wheels with optimised roll resistance to lighten the load for the user.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Robust housing**

Twin wheel castor for high load capacity and low height.

**Low wear and tear wheels**

Durable wheels with extremely low wear and tear properties.

**Uninterrupted use**

Sealed swivel bearing for continuous, uninterrupted movement.

**Strong construction**

Housing made of heavy steel for high load capacity.

DURABILITY

**Quiet rolling**

Soft wheel versions for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods.

**Resource-conserving part replacement**

Threaded axles allow effortless wheel change.

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

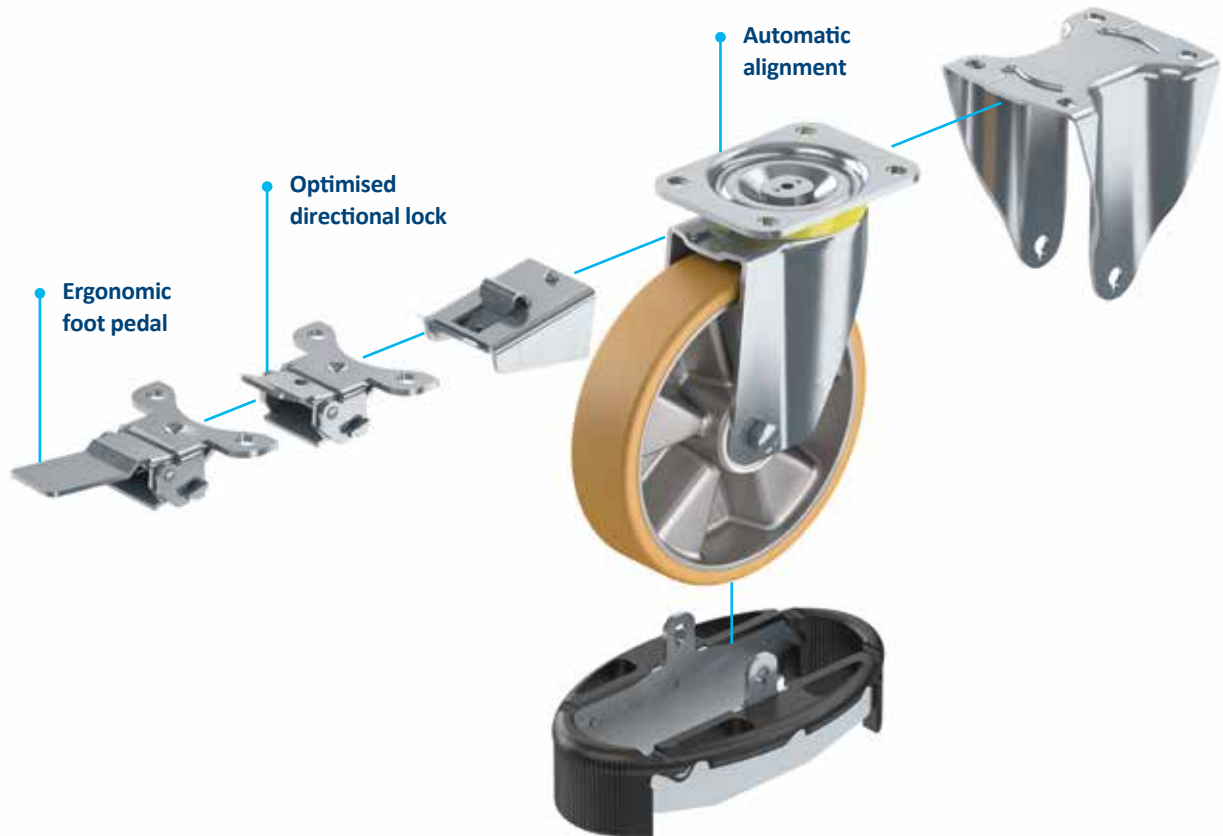
**Protect floors with load distribution**

Two wheels distribute the load and minimise floor impressions.

ENVIRONMENTAL



# ZETA



## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane injected



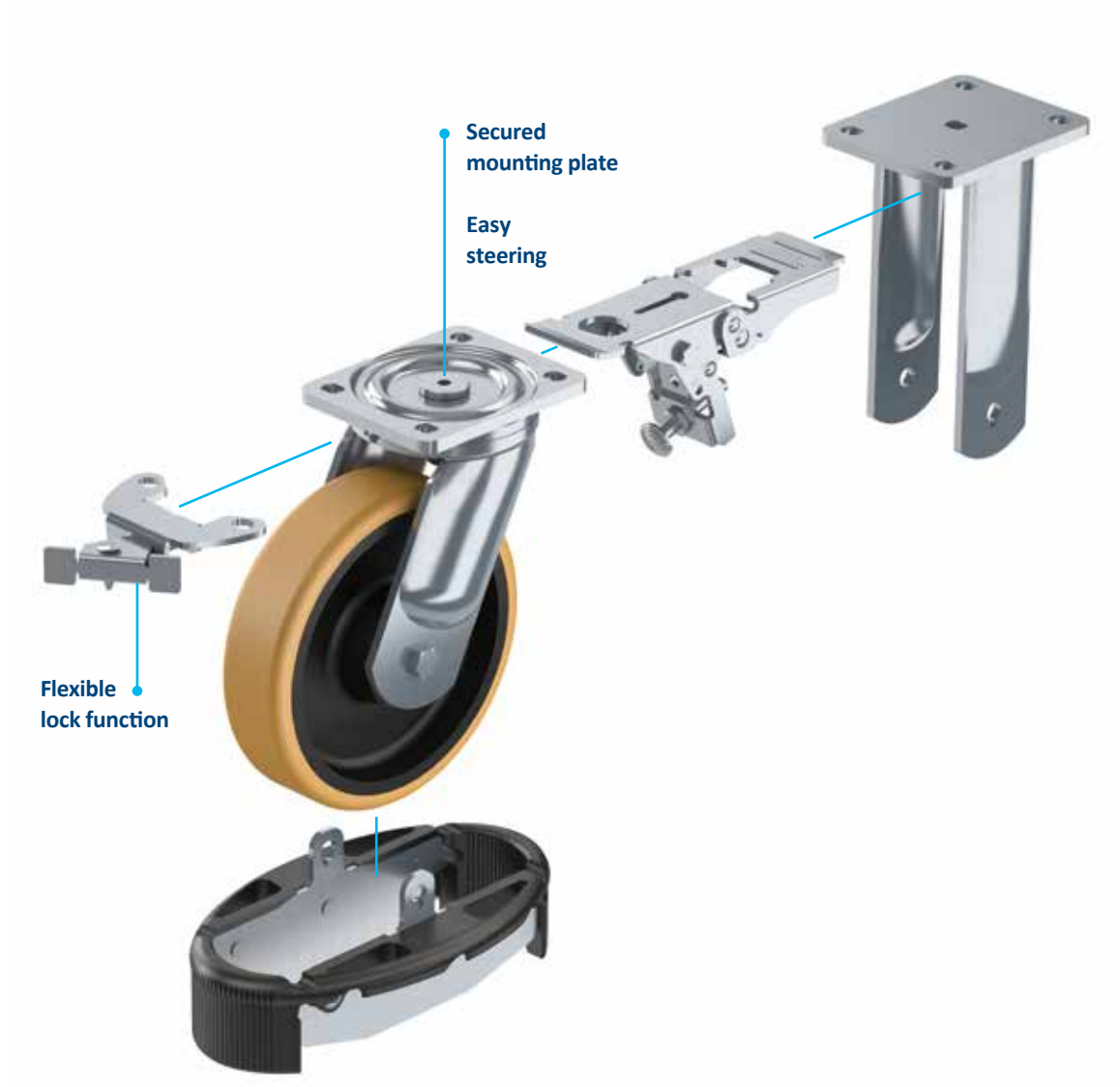
**NOVATECH**  
Polyurethane casted



**ULTRATECH**  
Premium polyurethane casted

<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for tugger trains.</p>	<p><b>Quick maintenance</b></p> <p>Swivel bearings lubricated with long-life grease and fitted with grease nipple for easy maintenance.</p>	<p><b>Optimised directional lock</b></p> <p>Directional lock can be adjusted to your requirements to 2x180°.</p>	<p><b>Easy steering</b></p> <p>Double ball bearing swivel head.</p>	<p><b>Ergonomic foot pedal</b></p> <p>Easily accessible and extra long XL operating pedal for manual directional lock.</p>		<b>PRODUCTIVITY</b>
<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Reliable traction</b></p> <p>Traction-optimised treads for secure grip on wet and slippery floors.</p>	<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>	<p><b>Ergonomically friendly use</b></p> <p>Wheels with optimised roll resistance to lighten the load for the user.</p>	<p><b>Increased occupational safety</b></p> <p>Partially elastic foot protection to reduce accidents. Also used on uneven floors.</p>	<p><b>Automatic alignment</b></p> <p>When picked up, the castor is automatically aligned in the direction of travel.</p>	<b>SAFETY</b>
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>						<b>DESIGN</b>
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Heavy duty construction</b></p> <p>Extra heavy steel housing for high load capacity.</p>	<p><b>Low wear and tear wheels</b></p> <p>Durable wheels with extremely low wear and tear properties.</p>	<p><b>Hardened swivel head</b></p> <p>Reinforced and heat-treated ball covers.</p>	<p><b>Uninterrupted use</b></p> <p>Swivel bearing with dust ring for continuous, uninterrupted movement.</p>	<p><b>Permanent washability</b></p> <p>All metal components made of stainless steel.</p>	<b>DURABILITY</b>
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods.</p>	<p><b>Resource-conserving part replacement</b></p> <p>Threaded axles allow effortless wheel change.</p>	<p><b>Low-maintenance wheels</b></p> <p>Thread guards for unobstructed operation with minimal cleaning effort.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<b>ENVIRONMENTAL</b>

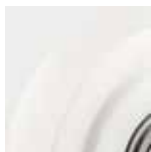
# KAPPA



## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber



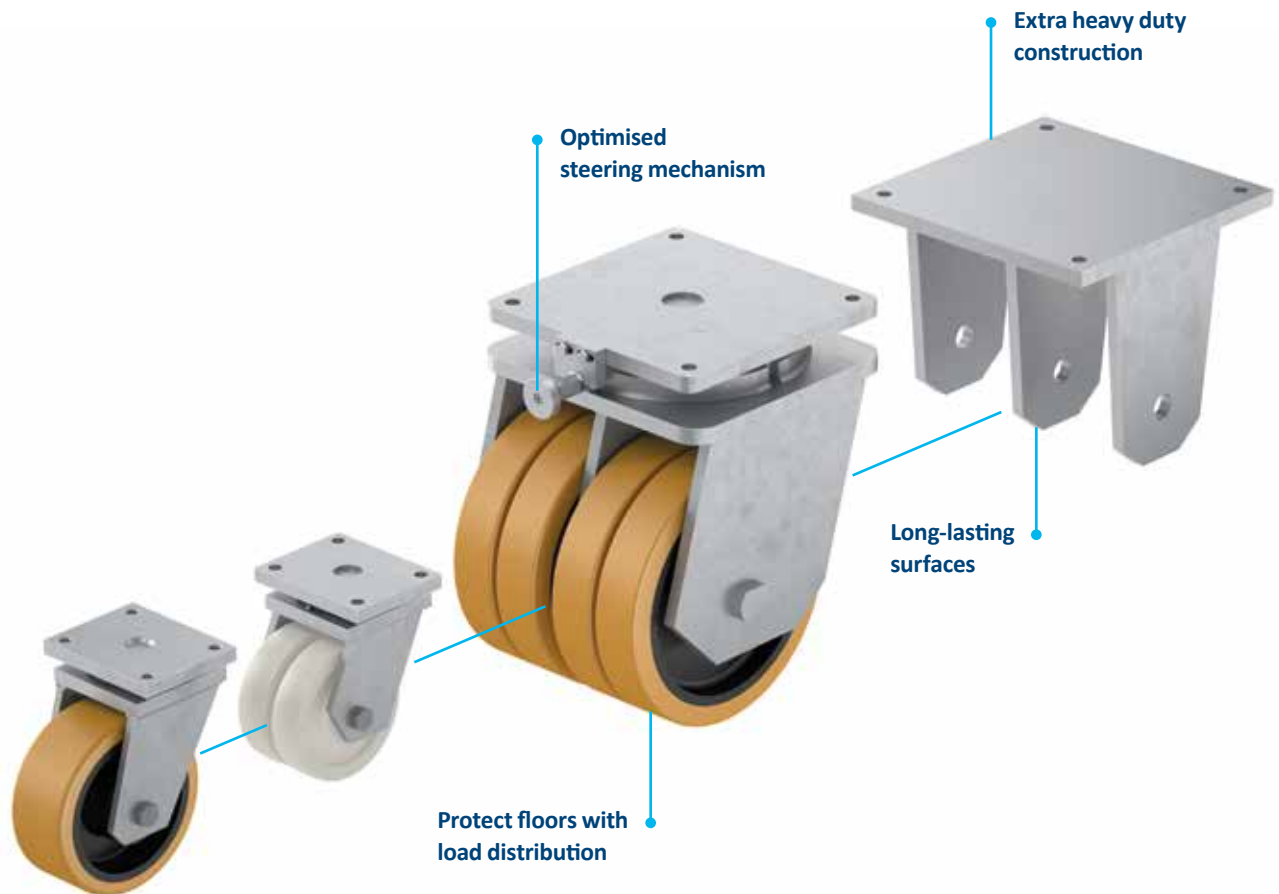
**DURATECH**  
Polyamide



**NOVATECH**  
Polyurethane  
casted

<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>Flexible lock function</b></p> <p>Use of two independent actuation systems in one castor.</p>	<p><b>Quick maintenance</b></p> <p>Swivel bearings lubricated with long-life grease and fitted with grease nipple for easy maintenance.</p>	<p><b>Optimised directional lock</b></p> <p>Directional lock can be adjusted to your requirements to 2x180° or 4x90°.</p>	<p><b>Easy steering</b></p> <p>Swivel bearing with dual purpose bearing and tapered roller bearing for excellent swivelling properties under high loads.</p>	<b>PRODUCTIVITY</b>	
<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Reliable traction</b></p> <p>Traction-optimised treads for secure grip on wet and slippery floors.</p>	<p><b>Secured mounting plate</b></p> <p>Mounting plate secured with nut &amp; bolt kingpin.</p>	<p><b>Ergonomically friendly use</b></p> <p>Wheels with optimised roll resistance to lighten the load for the user.</p>	<p><b>Increased occupational safety</b></p> <p>Partially elastic foot protection to reduce accidents. Also used on uneven floors.</p>		<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>	<p><b>Individual branding</b></p> <p>Engraved, casted or printed.</p>				<b>DESIGN</b>	
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Extra heavy duty construction</b></p> <p>Welded solid steel construction for highest load capacity.</p>	<p><b>Low wear and tear wheels</b></p> <p>Durable wheels with extremely low wear and tear properties.</p>	<p><b>Hardened double ball raceways</b></p> <p>Two hardened double ball raceways guarantee exceptional stability.</p>	<p><b>Uninterrupted use</b></p> <p>Swivel bearing with dust ring for continuous, uninterrupted movement.</p>		<b>DURABILITY</b>
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods.</p>	<p><b>Resource-conserving part replacement</b></p> <p>Threaded axles allow effortless wheel change.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<b>ENVIRONMENTAL</b>	

# OMIKRON



## WHEEL MATERIALS



### DURATECH

Polyamide



### NOVATECH

Polyurethane  
casted

**Optimised steering mechanism**

Directional lock for improved steering around bends, as well as moving in a straight line for long distances.

**Variable fitting options**

Different fitting dimensions for a large range of applications.

**Easy steering**

Swivel bearing with dual purpose bearing and tapered roller bearing for excellent swivelling properties under high loads.

**Quick maintenance**

Swivel bearings lubricated with long-life grease and fitted with grease nipple for easy maintenance.

**Optimised manoeuvrability**

Twin wheel castor and four wheel castor with high manoeuvrability due to differential effect.

PRODUCTIVITY

**Reliable traction**

Traction-optimised treads for secure grip on wet and slippery floors.

**Secured mounting plate**

Mounting plate secured with solid nut & bolt kingpin.

**Ergonomically friendly use**

Wheels with optimised roll resistance to lighten the load for the user.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

**Individual branding**

Engraved, casted or printed.

DESIGN

**Extra heavy duty construction**

Welded solid steel construction for highest load capacity.

**Long-lasting surfaces**

Extra high-quality galvanising for a long service life under harsh operating conditions.

**Robust housing**

Twin wheel castor and four wheel castor for highest load capacity and low height.

**Low wear and tear wheels**

Durable wheels with extremely low wear and tear properties.

**Uninterrupted use**

Swivel bearing with dust ring for continuous, uninterrupted movement.

DURABILITY

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods.

**Resource-conserving part replacement**

Threaded axles allow effortless wheel change.

**Protect floors with load distribution**

Up to four wheels distribute the load and minimise floor impressions.

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL

# RADIATA



## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane  
injected



**NOVATECH**  
Polyurethane  
casted

**Quick maintenance**

Swivel bearings lubricated with long-life grease and fitted with grease nipple for easy maintenance.

**Easy steering**

Deep groove ball thrust bearing and tapered roller bearing for excellent swivelling properties under high load.

**Optimised manoeuvrability**

Up to three twin wheel castors with high manoeuvrability due to differential effect.

PRODUCTIVITY

**Low-vibration transport**

Extra soft wheels with good shock-absorbing properties.

**Ergonomically friendly use**

Wheels with optimised roll resistance to lighten the load for the user.

**Secured stand**

Minimise tip-over of top heavy loads.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Solid construction**

Solid steel plate for maximum load capacity.

**Uninterrupted use**

Swivel bearing with dust ring for continuous, uninterrupted movement.

**Robust housing**

Three twin wheel castors for highest load capacity and low height.

DURABILITY

**Quiet rolling**

Soft wheel versions for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods.

**Resource-conserving part replacement**

Threaded axles allow effortless wheel change.

**Protect floors with load distribution**

Up to three twin wheel castors distribute the load and minimise floor impressions.

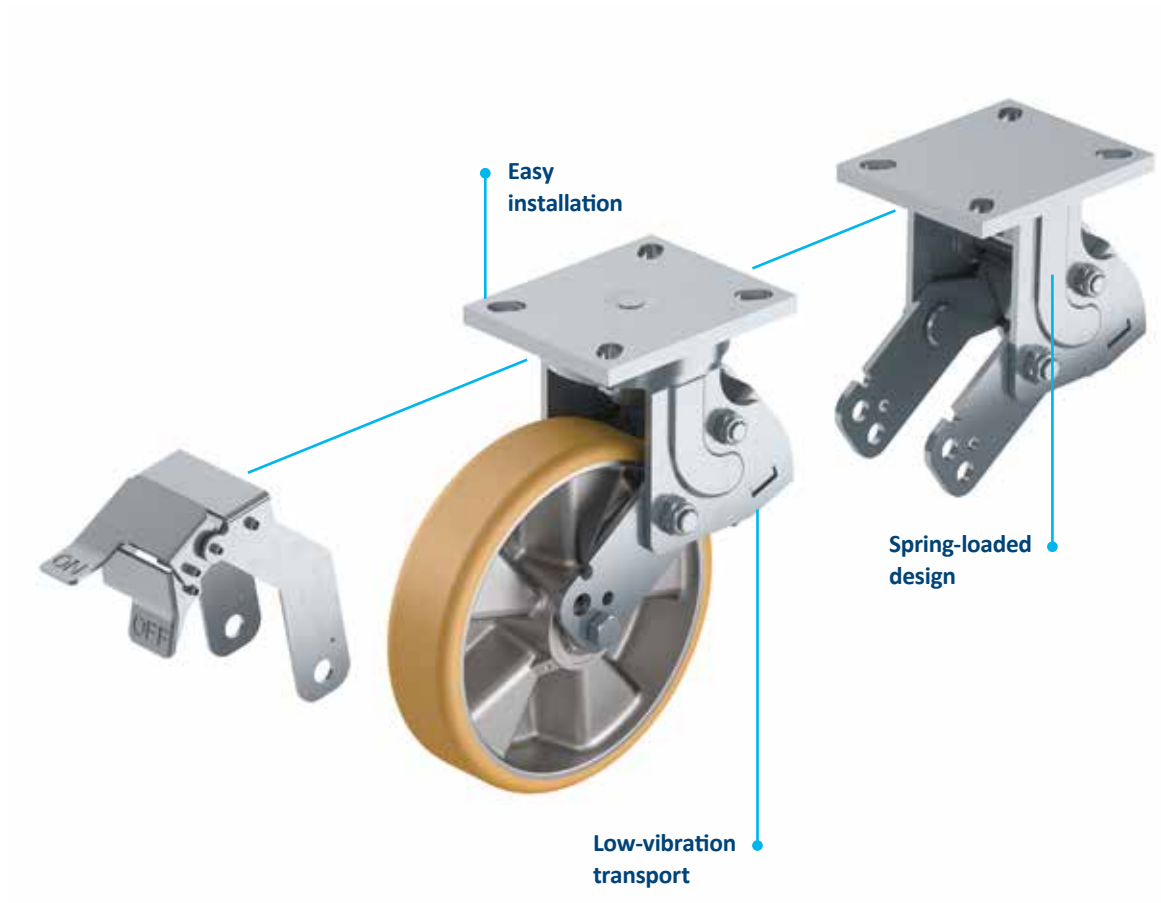
**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL



# KAPPA FLEX



## WHEEL MATERIALS



**ELASTECH**  
Elastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane  
injected



**NOVATECH**  
Polyurethane  
casted

**Optimised steering mechanism**

Directional lock for improved steering around bends, as well as moving in a straight line for long distances.

**Easy steering**

Swivel bearing with dual purpose bearing and tapered roller bearing for excellent swivelling properties under high loads.

**Quick maintenance**

Swivel bearings lubricated with long-life grease and fitted with grease nipple for easy maintenance.

**Easy installation**

Mounting plate with slotted holes for easy installation.

PRODUCTIVITY

**Reliable traction**

Traction-optimised treads for secure grip on wet and slippery floors.

**Low-vibration transport**

Spring loaded housing construction for a smooth transport of fragile goods.

**Overcome obstacles**

Integrated spring to compensate for uneven ground.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Solid construction**

Welded solid steel construction for highest load capacity.

**Long-lasting surfaces**

Extra high-quality galvanising for a long service life under harsh operating conditions.

**Uninterrupted use**

Swivel bearing with dust ring for continuous, uninterrupted movement.

**Spring-loaded design**

Spring is adjustable for individual load requirements.

DURABILITY

**Quiet rolling**

Soft wheel versions for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

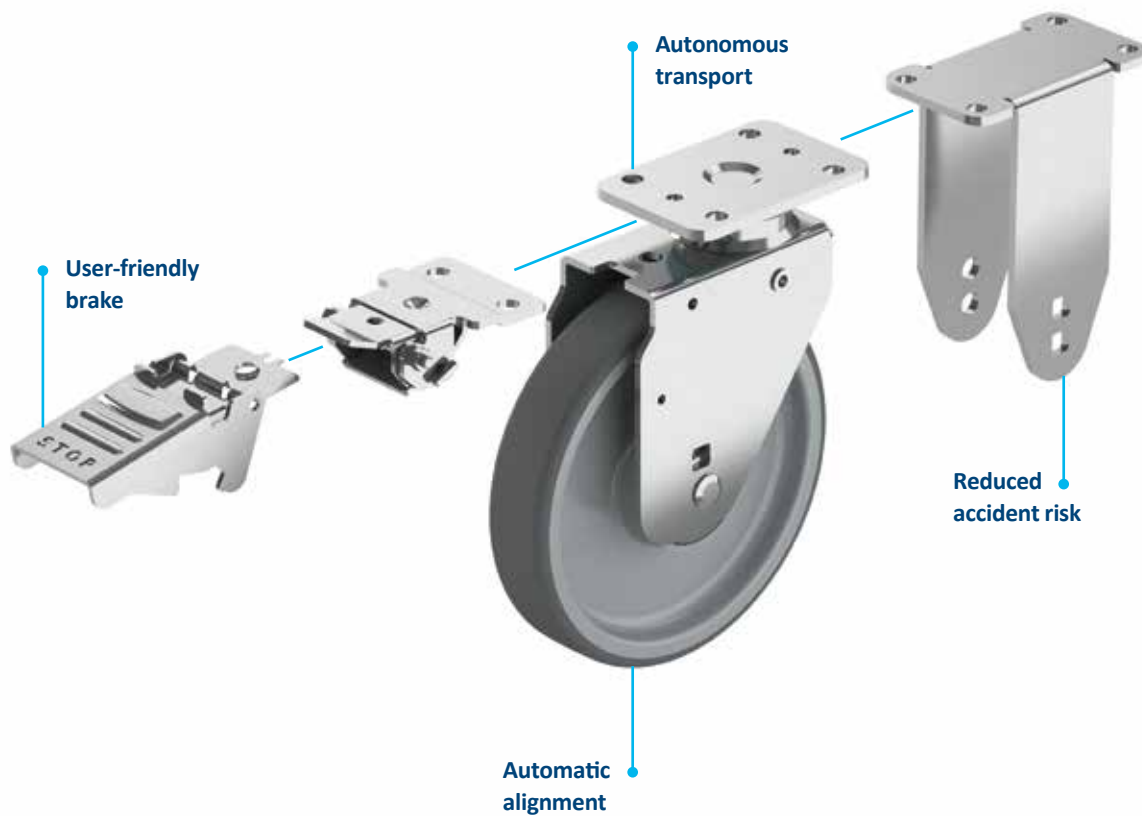
Non-staining on contact with floors during long standing periods.

**Resource-conserving part replacement**

Threaded axles allow effortless wheel change.

ENVIRONMENTAL

# SCOUT



## WHEEL MATERIALS



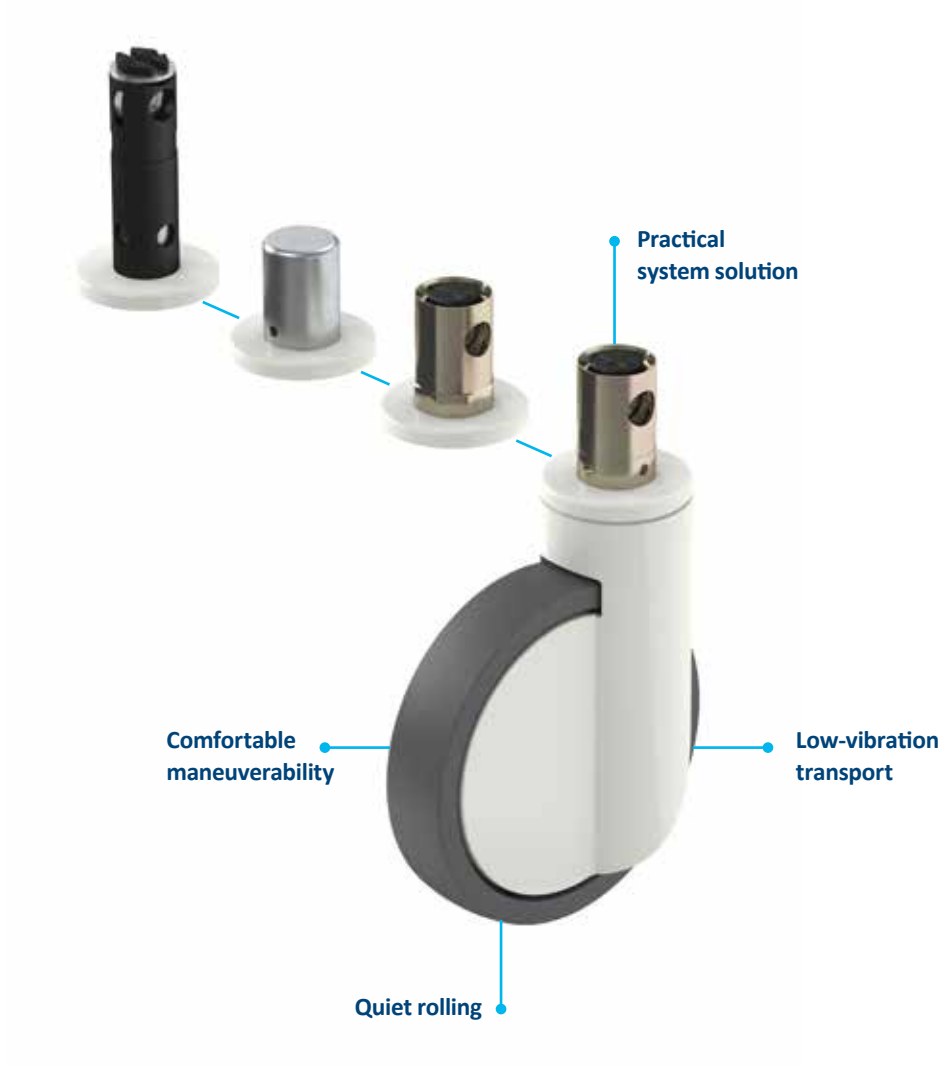
**ELASTECH**  
Elastic rubber



**MAXTECH**  
Polyurethane  
injected

<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>Flexible lock function</b></p> <p>Use of two independent actuation systems in one castor.</p>	<p><b>Easy steering</b></p> <p>Precision ball bearing in swivel head for excellent swivelling properties under high loads.</p>	<p><b>User-friendly brake</b></p> <p>Simple ball-pen operation to engage, or disengage, the wheel brake.</p>	<p><b>Quick maintenance</b></p> <p>Swivel bearing lubricated with long-life grease and fitted with grease nipple for easy maintenance.</p>		PRODUCTIVITY
<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Ergonomically friendly use</b></p> <p>Wheels with optimised roll resistance to lighten the load for the user.</p>	<p><b>Reduced accident risk</b></p> <p>Slim design to avoid collisions in narrow passages.</p>	<p><b>Automatic alignment</b></p> <p>When picked up, the castor is automatically aligned in the direction of travel.</p>	<p><b>Certified conductivity</b></p> <p>Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>	SAFETY
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>	<p><b>Individual branding</b></p> <p>Engraved, casted or printed.</p>					DESIGN
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Permanent washability</b></p> <p>All metal components made of stainless steel.</p>	<p><b>Protective seal</b></p> <p>Wheels with sealed bearings to protect against spray water and dirt.</p>	<p><b>Autonomous transport</b></p> <p>Optimised for the high demands of automatic guided vehicles.</p>	<p><b>Uninterrupted use</b></p> <p>Swivel bearing with dust ring for continuous, uninterrupted movement.</p>		DURABILITY
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods.</p>	<p><b>Resource-conserving part replacement</b></p> <p>Threaded axles allow effortless wheel change.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<p><b>Low-maintenance wheels</b></p> <p>Thread guards for unobstructed operation with minimal cleaning effort.</p>	ENVIRONMENTAL

# INTEGRAL





## WHEEL MATERIALS

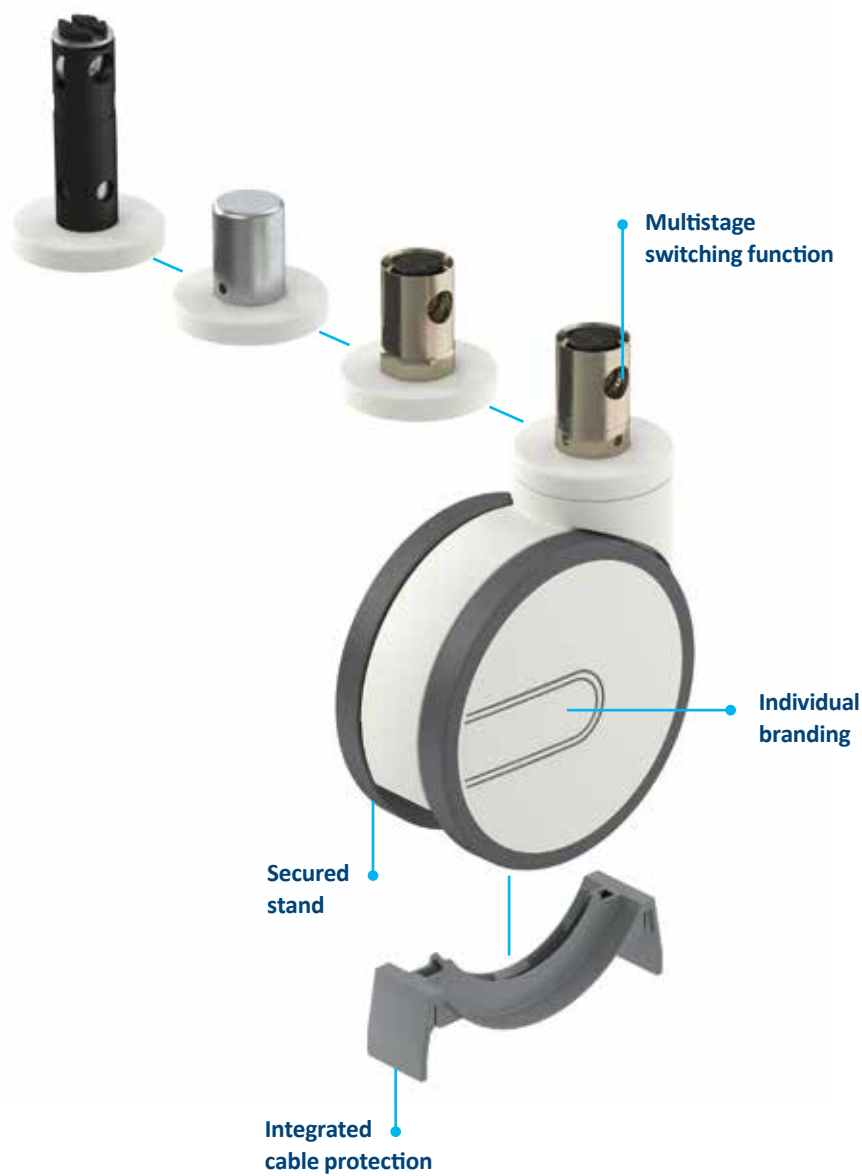


### MAXTECH

Polyurethane injected

<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>User-friendly central lock</b></p> <p>Simultaneous locking of more than one castor using a central actuation lever.</p>	<p><b>Practical system solution</b></p> <p>Practical system solution with all technical components for central locking.</p>	<p><b>Easy steering</b></p> <p>Precision ball bearing in swivel head.</p>	<p><b>Comfortable maneuverability</b></p> <p>Easily move across obstacles with large wheels and elastic wheel centers.</p>	<p><b>Multistage switching function</b></p> <p>Up to three locking positions: directional lock, total lock or free mobility.</p>	<b>PRODUCTIVITY</b>	
<p><b>Certified conductivity</b></p> <p>Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Low-vibration transport</b></p> <p>Wheels with extra soft tread centre and good shock-absorbing properties.</p>	<p><b>Certified safety</b></p> <p>TÜV Süd certified performance standard.</p>	<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>				<b>SAFETY</b>
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>	<p><b>Individual branding</b></p> <p>Can be printed with a logo.</p>	<p><b>Individual cover</b></p> <p>Shape of the housing cover can be customised.</p>	<p><b>Award-winning design</b></p> <p>Awarded with prestigious prizes by international juries.</p>	 <p>reddot design award</p>  <p>product design award</p>			
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Permanent washability</b></p> <p>All metal components made of stainless steel.</p>	<p><b>Extremely strong construction</b></p> <p>Load bearing steel housing for heavy load.</p>	<p><b>Chemical-resistant components</b></p> <p>Insensitive to many cleaning agents and chemical substances.</p>	<p><b>Protective seal</b></p> <p>Wheels with sealed bearings to protect against spray water and dirt.</p>			<b>DURABILITY</b>
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods.</p>	<p><b>Reduced cleaning</b></p> <p>Due to mainly smooth surfaces, the castors are quick and easy to clean.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>			

# INTEGRAL TWIN



## WHEEL MATERIALS



### SUPRATECH

Thermoplastic rubber

### MAXTECH

Polyurethane injected

**Optimised steering mechanism**

Directional lock for improved steering around bends, as well as moving in a straight line for long distances.

**User-friendly central lock**

Simultaneous locking of more than one castor using a central actuation lever.

**Practical system solution**

Practical system solution with all technical components for central locking.

**Easy steering**

Precision ball bearing in swivel head.

**Multistage switching function**

Up to three locking positions: directional lock, total lock or free mobility.

**Optimised manoeuvrability**

Twin wheel castor with high manoeuvrability due to differential effect.

PRODUCTIVITY

**Certified conductivity**

Conductive version to protect users and electrical devices from electrostatic discharge.

**Certified safety**

TÜV Süd certified performance standard.

**Secured stand**

Total lock for simultaneously locking the wheel and swivel housing.

**Integrated cable protection**

Integrated cable pusher to protect cables lying on the floor.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

**Individual branding**

Can be printed with a logo.

**Award-winning design**

Awarded with prestigious prizes by international juries.



Deutscher Designer Club

reddot  
design  
award

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Permanent washability**

All metal components made of stainless steel.

**Strong stand**

Extreme torsional rigidity ensures that operating tables or heavy applications have a secured stand.

**Chemical-resistant components**

Insensitive to many cleaning agents and chemical substances.

**Protective seal**

Wheels with sealed bearings to protect against spray water and dirt.

**Extremely strong construction**

Load bearing steel housing for heavy load.

DURABILITY

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods.

**Reduced cleaning**

Due to mainly smooth surfaces, the castors are quick and easy to clean.

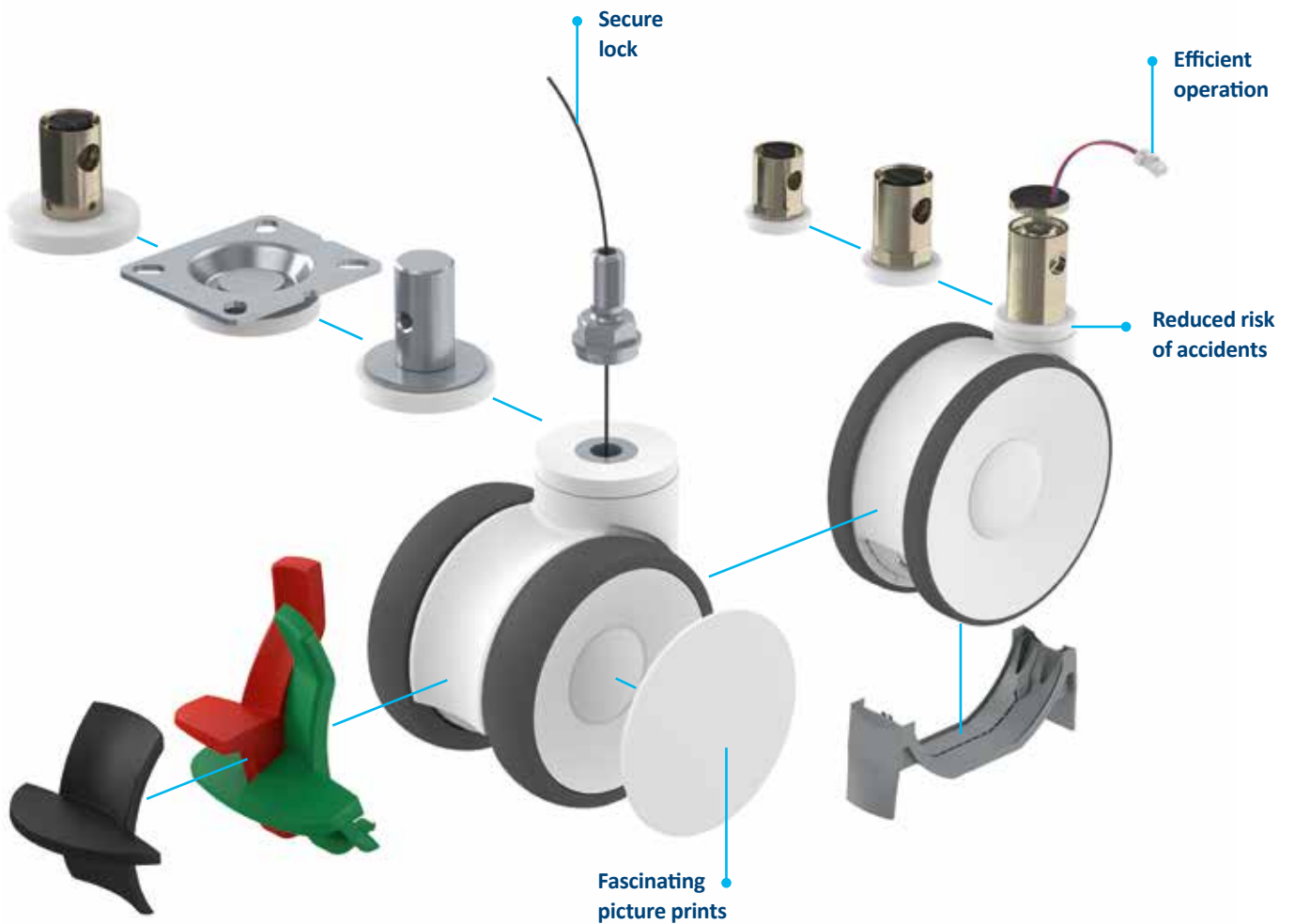
**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL



# LINEA



## WHEEL MATERIALS






**SUPRATECH**  
Thermoplastic rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane injected

<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>User-friendly central lock</b></p> <p>Simultaneous locking of more than one castor using a central actuation lever.</p>	<p><b>Practical system solution</b></p> <p>Practical system solution with all technical components for central locking.</p>	<p><b>Efficient operation</b></p> <p>Central locking at the touch of a button for the ultimate in comfort.</p>	<p><b>Ergonomic foot pedal</b></p> <p>“Kick-Pedal” for quick and easy operation with any kind of footwear.</p>	<p><b>Optimised manoeuvrability</b></p> <p>Twin wheel castor with high manoeuvrability due to differential effect.</p>	<b>PRODUCTIVITY</b>
<p><b>Certified conductivity</b></p> <p>Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Certified safety</b></p> <p>TÜV Süd certified performance standard for hospital bed castors.</p>	<p><b>Reliable scanning</b></p> <p>Antimagnetic for security scanners and magnetic resonance tomography.</p>	<p><b>Reduced risk of accidents</b></p> <p>Extremely low height to reduce the risk of accidents when used under hospital beds.</p>	<p><b>Secure lock</b></p> <p>Only starts rolling when a lever or handle is activated by the user. Unintentional movement is effectively prevented.</p>	<p><b>Integrated cable protection</b></p> <p>Integrated cable pusher to protect cables lying on the floor.</p>	
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>	<p><b>Individual branding</b></p> <p>Can be printed with a logo. On request, customers can also apply different prints themselves.</p>	<p><b>Painted surface</b></p> <p>Gold, chrome or glossy coloured.</p>	<p><b>Fascinating picture prints</b></p> <p>Entire wheel caps printable with almost every theme.</p>	<p><b>Award-winning design</b></p> <p>Awarded with prestigious prizes by international juries.</p>	 <p>Deutscher Designer Club</p>  	<b>DESIGN</b>
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Permanent washability</b></p> <p>All metal components made of stainless steel.</p>	<p><b>Strong stand</b></p> <p>Extreme torsional rigidity ensures that operating tables or heavy applications have a secured stand.</p>	<p><b>Robust housing</b></p> <p>Twin wheel castor for high load capacity and low height.</p>	<p><b>Chemical-resistant components</b></p> <p>Insensitive to many cleaning agents and chemical substances.</p>	<p><b>Protective seal</b></p> <p>Wheels with sealed bearings to protect against spray water and dirt.</p>	
<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.</p>	<p><b>Reduced cleaning</b></p> <p>Due to mainly smooth surfaces, the castors are quick and easy to clean.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>		<b>ENVIRONMENTAL</b>	

# AVIANA



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic  
rubber



**PURETECH**  
Rubber

**Easy steering**

Double ball bearing swivel head.

**User-friendly central lock**

Simultaneous locking of more than one castor using a central actuation lever.

**Optimised manoeuvrability**

Twin wheel castor with high manoeuvrability due to differential effect.

PRODUCTIVITY

**Prevents unintended movement**

Wheel lock for manual operation.

**Certified flame resistance**

Certificate according FAR / JAR 25.853.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

**Award-winning design**

Awarded with prestigious prizes by international juries.



Deutscher Designer Club



red dot  
design  
award

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Robust housing**

Twin wheel castor for high load capacity and low height.

**Chemical-resistant components**

Insensitive to many cleaning agents and chemical substances.

**Low maintenance materials**

All metal components made of Aluminum or rust-free stainless steel.

DURABILITY

**Quiet rolling**

Soft wheel versions for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

**Reduced cleaning**

Due to mainly smooth surfaces, the castors are quick and easy to clean.

**Low weight**

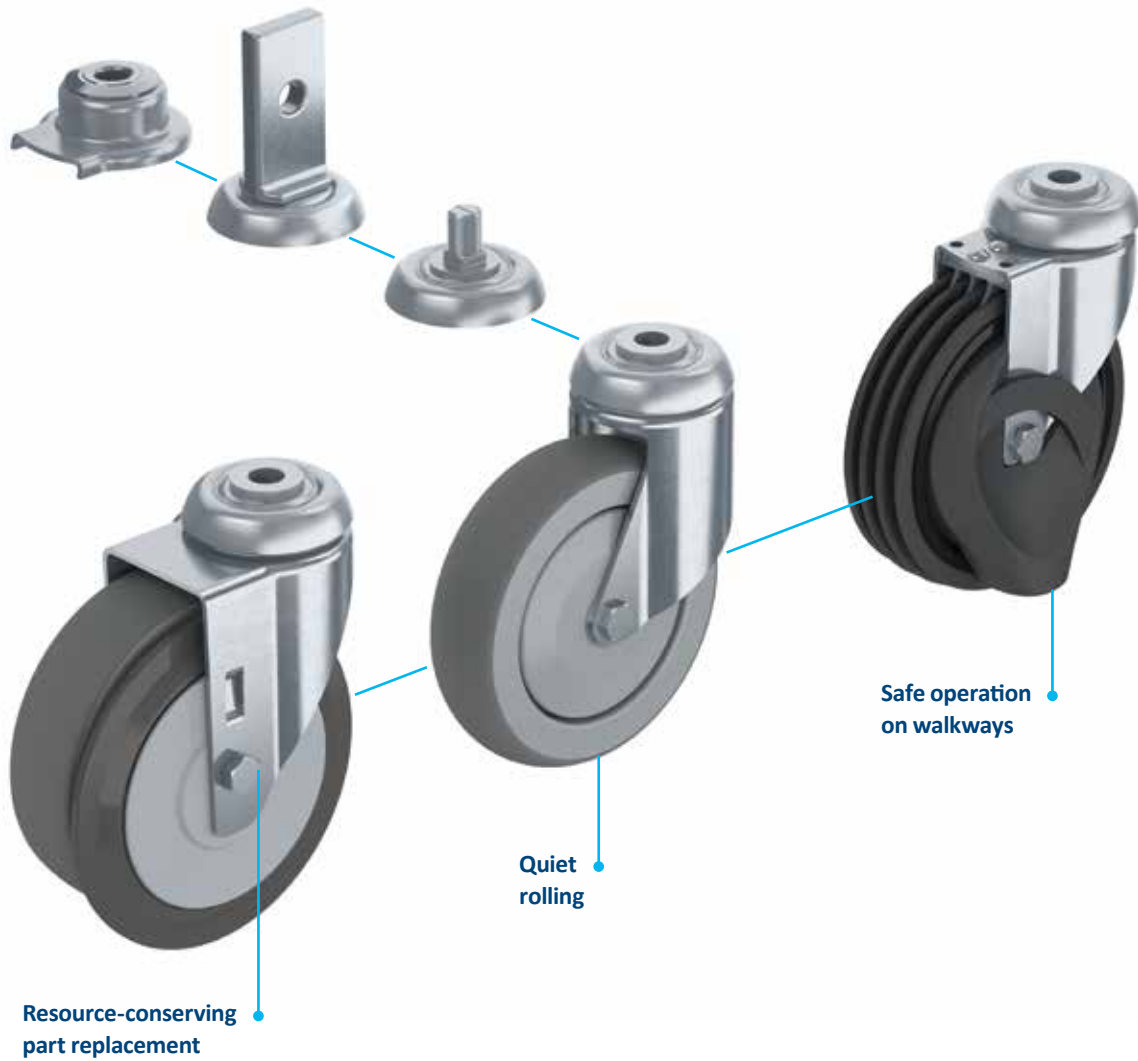
Extremely lightweight construction.

ENVIRONMENTAL



<p><b>Optimised steering mechanism</b></p> <p>Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>User-friendly central lock</b></p> <p>Simultaneous locking of more than one castor using a central actuation lever.</p>	<p><b>Practical system solution</b></p> <p>Practical system solution with all technical components for central locking.</p>	<p><b>Fast assembly</b></p> <p>Faster assembly process with use of plug-in fittings.</p>	<p><b>Variable fitting options</b></p> <p>Different fitting dimensions for a large range of applications.</p>	<p><b>Optimised manoeuvrability</b></p> <p>Twin wheel castor with high manoeuvrability due to differential effect.</p>	<p><b>PRODUCTIVITY</b></p>
<p><b>Certified conductivity</b></p> <p>Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>	<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>	<p><b>Sterile cleaning</b></p> <p>Wheels for steam sterilisation in autoclaves used in sterile areas.</p>			
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>	<p><b>Painted surface</b></p> <p>Black housing with bump and scratch resistant cathode immersion paint.</p>					<p><b>DESIGN</b></p>
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Constant heat resistance</b></p> <p>Duratech wheels made of heat resistant material for use in extreme environments.</p>	<p><b>Permanent washability</b></p> <p>All metal components made of stainless steel.</p>	<p><b>Protective seal</b></p> <p>Wheels with sealed bearings to protect against spray water and dirt.</p>	<p><b>Robust housing</b></p> <p>Twin wheel castor for high load capacity and low height.</p>	<p><b>Compliant version</b></p> <p>For use in commercial kitchens (DIN 18867 Part 8).</p>	<p><b>DURABILITY</b></p>
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.</p>	<p><b>Low-maintenance wheels</b></p> <p>Thread guards for unobstructed operation with minimal cleaning effort.</p>	<p><b>Resource-conserving part replacement</b></p> <p>Threaded axles allow effortless wheel change.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<p><b>ENVIRONMENTAL</b></p>

# STORA



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic rubber



**PURETECH**  
Rubber



**MAXTECH**  
Polyurethane injected

**Variable fitting options**

Different fitting dimensions for a large range of applications.

**Easy steering**

Swivel head with precision ball bearing or double ball bearing.

**Efficient self-cleaning**

Walkway castors with automatically self-cleaning tracks.

PRODUCTIVITY

**Reliable antistatic**

Antistatic version to protect users from electrostatic discharge.

**Certified conductivity**

Conductive version to protect users from electrostatic discharge.

**Low-vibration transport**

Extra soft wheels with good shock-absorbing properties.

**Safe operation on walkways**

Standing function or flanged wheel for a secure stand on moving walkways.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

**Unique shape**

Housing with integrated brake shoe.

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Robust housing**

Suitable for heavy transport trolleys.

**Chemical-resistant components**

Insensitive to many cleaning agents and chemical substances.

DURABILITY

**Quiet rolling**

Soft wheel versions for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.

**Low-maintenance wheels**

Thread guards for unobstructed operation with minimal cleaning effort.

**Resource-conserving part replacement**

Threaded axles allow effortless wheel change.

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL



# MONO



## WHEEL MATERIALS



### SUPRATECH

Thermoplastic rubber

**Fast assembly**

Faster assembly thanks to easy plug-in fittings.

**Variable fitting options**

Wide range of fittings in various sizes.

**Ergonomic foot pedal**

Easily accessible pedal for manual wheel lock.

PRODUCTIVITY

**Certified conductivity**

Conductive version to protect users and electrical devices from electrostatic discharge.

**Prevents unintended movement**

Wheel lock with pedal for manual operation.

**Reliable scanning**

Antimagnetic for security scanners and magnetic resonance tomography.

**Low-vibration transport**

Extra soft wheels with good shock-absorbing properties.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

**Painted surface**

Aluminium or glossy coloured.

**Individual branding**

Can be printed with a logo.

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

**Chemical-resistant components**

Insensitive to many cleaning agents and chemical substances.

**Permanent washability**

All metal components made of stainless steel.

DURABILITY

**Quiet rolling**

Particularly soft wheel versions and noise-reduced fittings for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.

**Non-hazardous materials**

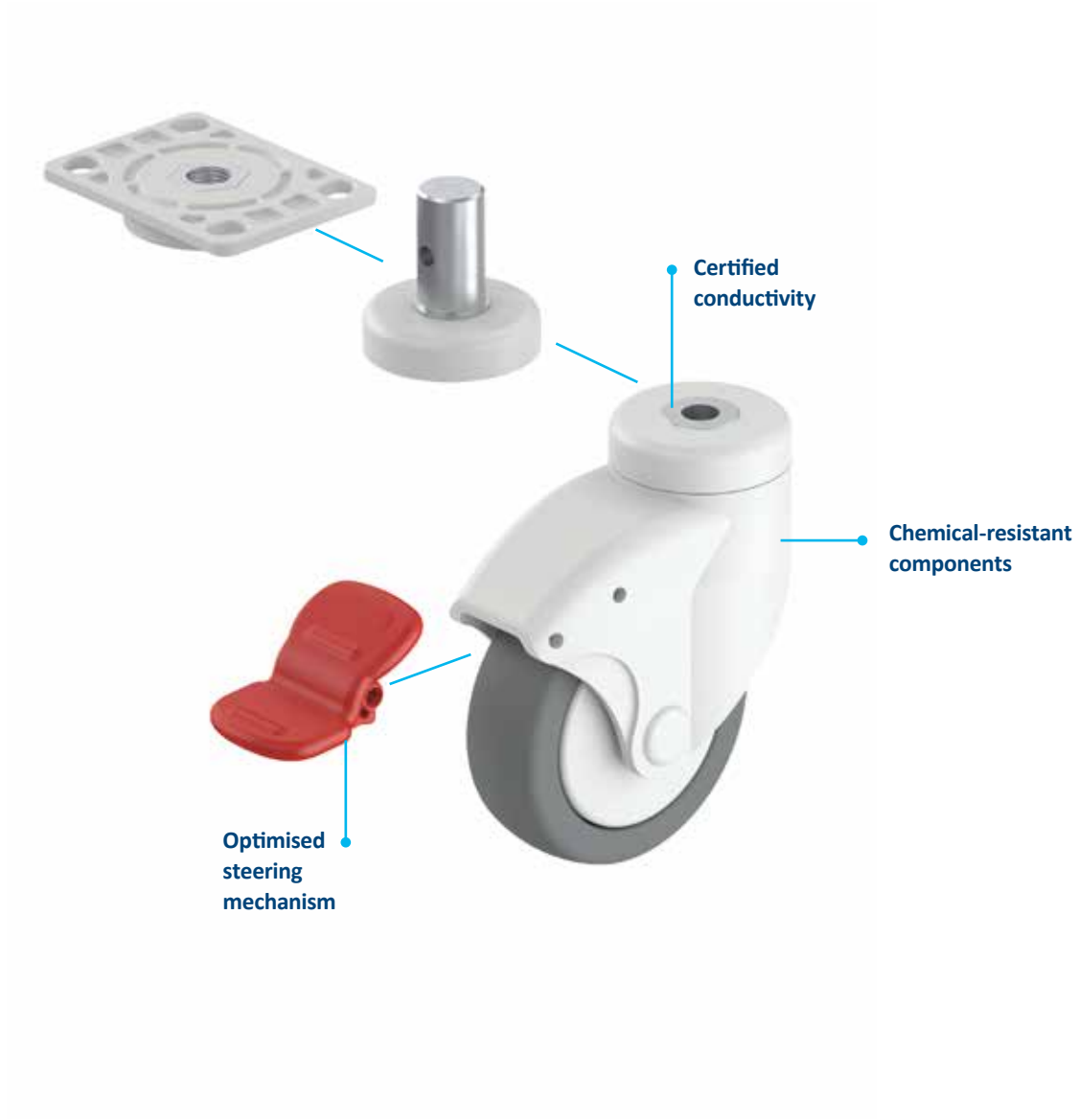
Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

**Low-maintenance wheels**

Thread guard for unobstructed rolling and minimal cleaning effort.

ENVIRONMENTAL

# GALEA



## WHEEL MATERIALS



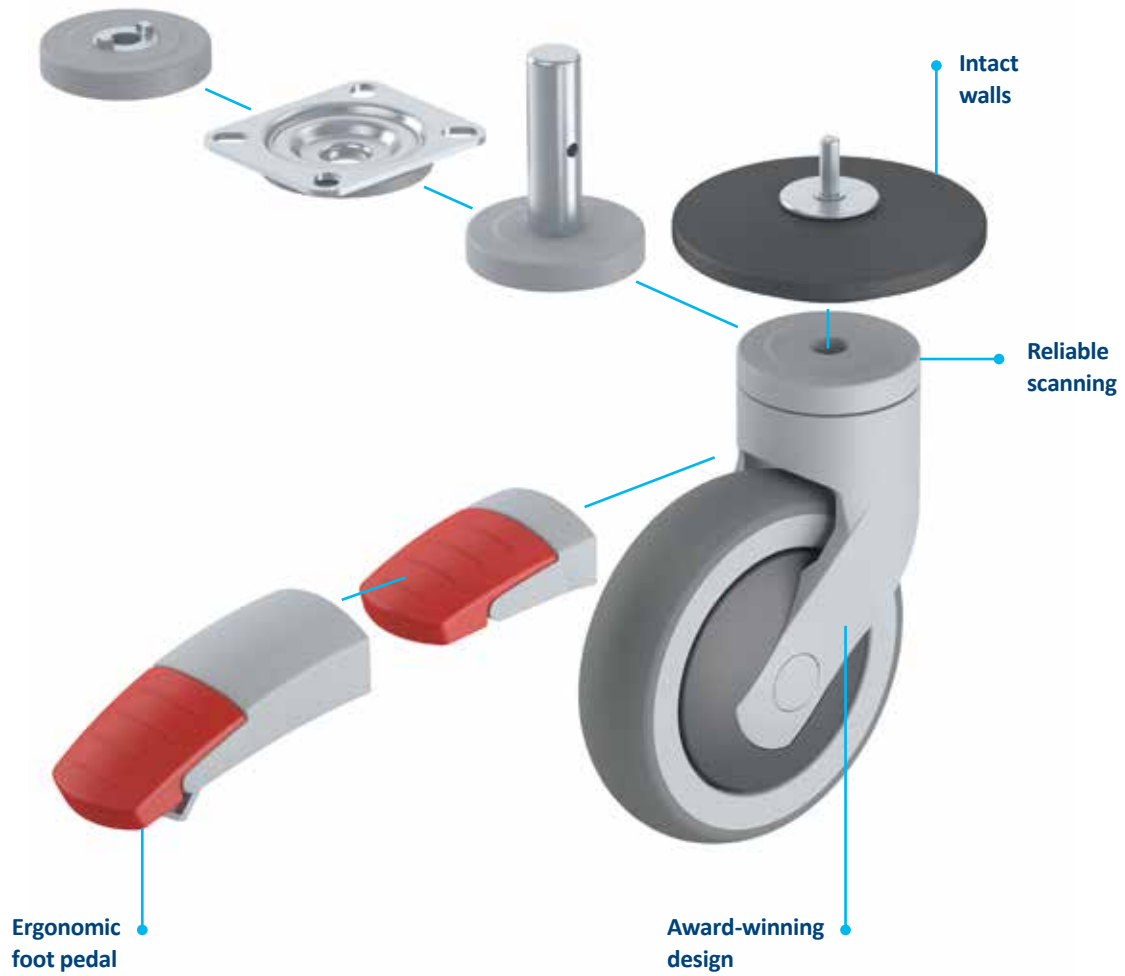
**SUPRATECH**  
Thermoplastic rubber



**PURETECH**  
Rubber

<p><b>Fast assembly</b></p> <p>Faster assembly thanks to easy plug-in fittings.</p>	<p><b>Easy steering</b></p> <p>Double ball bearing swivel head.</p>	<p><b>Ergonomic foot pedal</b></p> <p>Easily accessible pedal for manual wheel lock.</p>	<p><b>Optimised steering mechanism</b></p> <p>Directional lock and fixed castors for improved steering in curves and driving in a straight line for long distances.</p>	<p><b>User-friendly colour scheme</b></p> <p>Green kickstop pedal for directional lock and red kickstop pedal for total lock.</p>	<b>PRODUCTIVITY</b>
<p><b>Certified conductivity</b></p> <p>Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Prevents unintended movement</b></p> <p>Wheel lock with pedal for manual operation.</p>	<p><b>Secured stand</b></p> <p>Total lock for simultaneously locking the wheel and swivel housing.</p>	<p><b>Low-vibration transport</b></p> <p>Extra soft wheels with good shock-absorbing properties.</p>		
<p><b>Colour matching</b></p> <p>Colours can be adapted to match the product design.</p>	<p><b>Individual branding</b></p> <p>Can be printed with a logo.</p>	<p><b>Painted surface</b></p> <p>Gold, chrome or glossy coloured.</p>			<b>DESIGN</b>
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Chemical-resistant components</b></p> <p>Insensitive to many cleaning agents and chemical substances.</p>	<p><b>Permanent washability</b></p> <p>All metal components made of stainless steel.</p>	<p><b>Protective seal</b></p> <p>Wheels with sealed bearings to protect against spray water and dirt.</p>	<p><b>Conforming to standards</b></p> <p>Applicable in the food industry (Lerpac-Approval).</p>	
<p><b>Quiet rolling</b></p> <p>Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<p><b>Low-maintenance wheels</b></p> <p>Thread guard for unobstructed rolling and minimal cleaning effort.</p>	<b>ENVIRONMENTAL</b>

# LEVINA



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic rubber



**PURETECH**  
Rubber



**MAXTECH**  
Polyurethane injected

<p><b>Fast assembly</b> Faster assembly thanks to easy plug-in fittings.</p>	<p><b>Easy steering</b> Double ball bearing swivel head.</p>	<p><b>Ergonomic foot pedal</b> Easy to reach actuation pedal and extra long housing for manual operation.</p>	<p><b>Optimised steering mechanism</b> Directional lock for improved steering around bends, as well as moving in a straight line for long distances.</p>	<p><b>User-friendly colour scheme</b> Green kickstop pedal for directional lock and red kickstop pedal for total lock.</p>	<p><b>Variable fitting options</b> Wide range of fittings in various sizes.</p>	<p><b>PRODUCTIVITY</b></p>
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<p><b>Certified conductivity</b> Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Prevents unintended movement</b> Wheel lock with pedal for manual operation.</p>	<p><b>Secured stand</b> Total lock for simultaneously locking the wheel and swivel housing.</p>	<p><b>Reliable scanning</b> Antimagnetic (completely metalfree) for security scanners and magnetic resonance tomography.</p>	<p><b>Low-vibration transport</b> Spring loaded stem-fittings and extra soft wheels with good shock-absorbing properties.</p>	<p><b>Anti-twist fitting</b> Anti-twist protection for castors with directional lock.</p>	<p><b>SAFETY</b></p>
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<p><b>Colour matching</b> Colours can be adapted to match the product design.</p>	<p><b>Unique shape</b> Housing with integrated thread guard.</p>	<p><b>Award-winning design</b> Awarded with prestigious prizes by international juries.</p>			<p><b>DESIGN</b></p>
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<p><b>Tested quality</b> Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Chemical-resistant components</b> Insensitive to many cleaning agents and chemical substances.</p>	<p><b>Permanent washability</b> All metal components made of stainless steel.</p>	<p><b>Protective seal</b> Wheels with sealed bearings to protect against spray water and dirt.</p>	<p><b>Unbreakable construction</b> Extremely high shock absorbing.</p>	<p><b>Compliant version</b> Used in commercial kitchens (DIN 18867 Part 8) and for food industry (Lerpac-approval).</p>	<p><b>DURABILITY</b></p>
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<p><b>Quiet rolling</b> Soft wheel versions for a quiet working environment.</p>	<p><b>Non-marking movement</b> Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b> Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.</p>	<p><b>Non-hazardous materials</b> Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	<p><b>Low-maintenance wheels</b> Thread guards for unobstructed operation with minimal cleaning effort.</p>	<p><b>Intact walls</b> Bumper to avoid damage to walls and the equipment.</p>	<p><b>ENVIRONMENTAL</b></p>
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# LUMINA



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic rubber

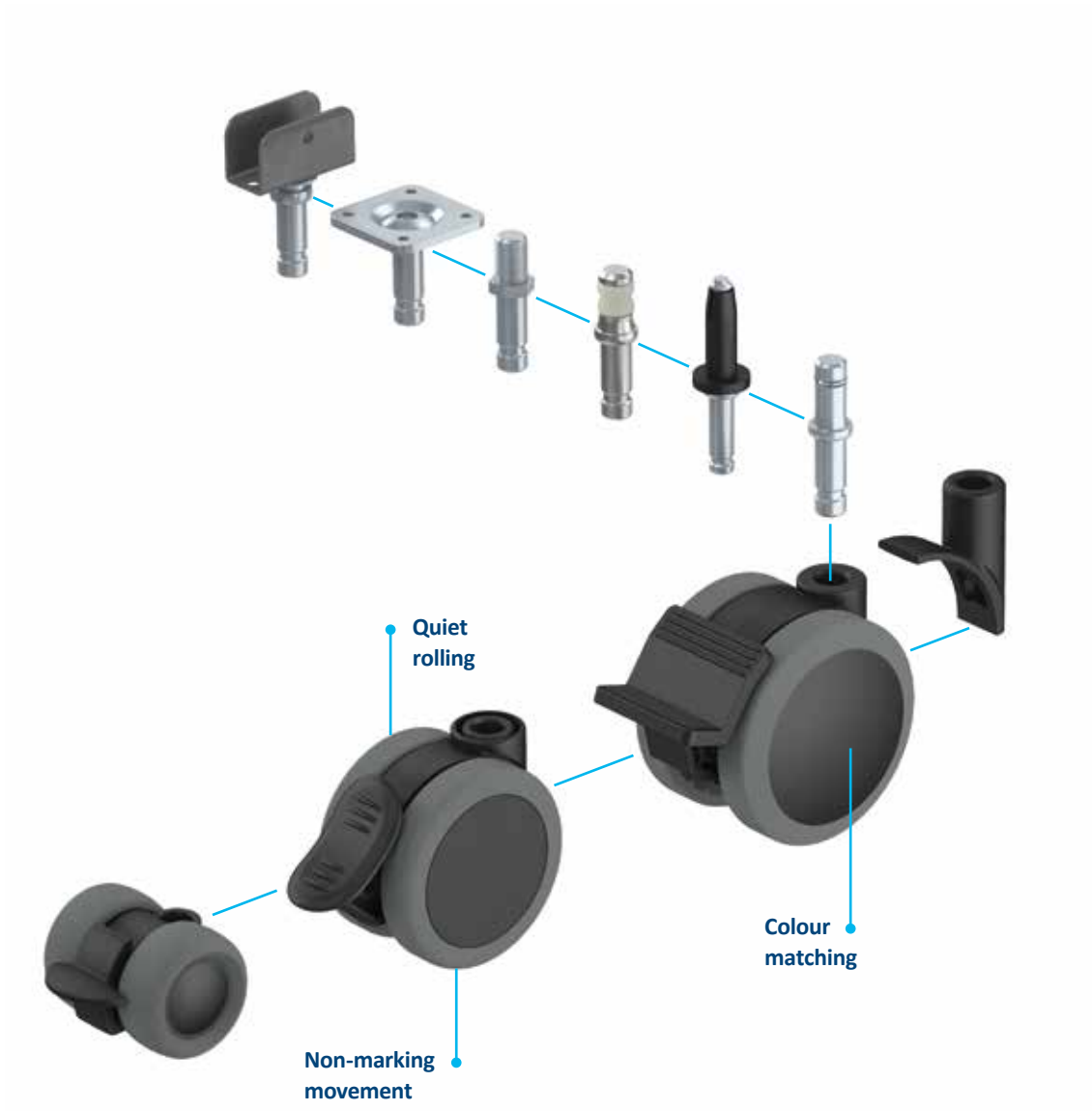


**BASETECH**  
Polypropylene

<p><b>Fast assembly</b></p> <p>Faster assembly thanks to easy plug-in fittings.</p>	<p><b>Variable fitting options</b></p> <p>Wide range of fittings in various sizes.</p>	<p><b>Optimised manoeuvrability</b></p> <p>Twin wheel castor with high manoeuvrability due to differential effect.</p>	<p><b>Ergonomic foot pedal</b></p> <p>Easily accessible pedal for manual wheel lock.</p>	<b>PRODUCTIVITY</b>	
<p><b>Certified conductivity</b></p> <p>Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Reduced risk of accidents</b></p> <p>Automatic load-dependent wheel brake to prevent accidents with office chairs.</p>	<p><b>Prevents unintended movement</b></p> <p>Wheel lock with pedal for manual operation.</p>			<b>SAFETY</b>
<p><b>Colour matching</b></p> <p>The colour of solid material can be adapted to the product design.</p>	<p><b>Individual branding</b></p> <p>Can be printed with a logo.</p>	<p><b>Visual integration</b></p> <p>Different dome diameters for a perfect transition from the castor to the application.</p>	<p><b>Painted surface</b></p> <p>Gold, chrome or glossy coloured.</p>	<b>DESIGN</b>	
<p><b>Tested quality</b></p> <p>Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Robust housing</b></p> <p>Twin wheel castor for high load capacity and low height.</p>	<p><b>Chemical-resistant components</b></p> <p>Insensitive to many cleaning agents and chemical substances.</p>	<p><b>Robust cover</b></p> <p>Cover made of solid die-cast zinc or synthetic material.</p>		<b>DURABILITY</b>
<p><b>Quiet rolling</b></p> <p>Particularly soft wheel versions and noise-reduced fittings for a quiet working environment.</p>	<p><b>Non-marking movement</b></p> <p>Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b></p> <p>Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.</p>	<p><b>Reduced cleaning</b></p> <p>Due to mainly smooth surfaces, the castors are quick and easy to clean.</p>	<p><b>Non-hazardous materials</b></p> <p>Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	



# STYLEA



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic  
rubber



**DURATECH**  
Polyamide



**MAXTECH**  
Polyurethane  
injected

<p><b>Fast assembly</b> Faster assembly thanks to easy plug-in fittings.</p>	<p><b>Variable fitting options</b> Wide range of fittings in various sizes.</p>	<p><b>Optimised manoeuvrability</b> Twin wheel castor with high manoeuvrability due to differential effect.</p>	<p><b>Ergonomic foot pedal</b> Easily accessible pedal for manual wheel lock.</p>	<b>PRODUCTIVITY</b>	
<p><b>Certified conductivity</b> Conductive version to protect users and electrical devices from electrostatic discharge.</p>	<p><b>Reduced risk of accidents</b> Automatic load-dependent wheel brake to prevent accidents with office chairs.</p>	<p><b>Prevents unintended movement</b> Wheel lock with pedal for manual operation.</p>			<b>SAFETY</b>
<p><b>Colour matching</b> The colour of solid material can be adapted to the product design.</p>	<p><b>Individual branding</b> Can be printed with a logo.</p>	<p><b>Visual integration</b> Different dome diameters and lengths for a perfect transition from the castor to the application.</p>	<p><b>Painted surface</b> Gold, chrome, aluminium or glossy coloured.</p>	<b>DESIGN</b>	
<p><b>Tested quality</b> Tested in our own test laboratory for compliance with European standards.</p>	<p><b>Robust housing</b> Twin wheel castor for high load capacity and low height.</p>	<p><b>Chemical-resistant components</b> Insensitive to many cleaning agents and chemical substances.</p>			<b>DURABILITY</b>
<p><b>Quiet rolling</b> Particularly soft wheel versions and noise-reduced fittings for a quiet working environment.</p>	<p><b>Non-marking movement</b> Wheels with reduced abrasion and little cleaning requirement.</p>	<p><b>Non-staining operation</b> Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.</p>	<p><b>Reduced cleaning</b> Due to mainly smooth surfaces, the castors are quick and easy to clean.</p>	<p><b>Non-hazardous materials</b> Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).</p>	

# SMILES



## WHEEL MATERIALS



**SUPRATECH**  
Thermoplastic rubber



**BASETECH**  
Polypropylene

**Fast assembly**

Faster assembly thanks to easy plug-in fittings.

**Variable fitting options**

Wide range of fittings in various sizes.

**Optimised manoeuvrability**

Twin wheel castor with high manoeuvrability due to differential effect.

PRODUCTIVITY

**Prevents unintended movement**

Wheel lock with pedal for manual operation.

SAFETY

**Colour matching**

The colour of solid material can be adapted to the product design.

**Individual branding**

Can be printed with a logo.

**Bright and colourful faces**

Bear, cow, cat and aeroplane. Any combination possible.

**Award-winning design**

Awarded with prestigious prizes by international juries.



reddot  
design  
award

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

DURABILITY

**Quiet rolling**

Particularly soft wheel versions and noise-reduced fittings for a quiet working environment.

**Non-marking movement**

Wheels with reduced abrasion and little cleaning requirement.

**Non-staining operation**

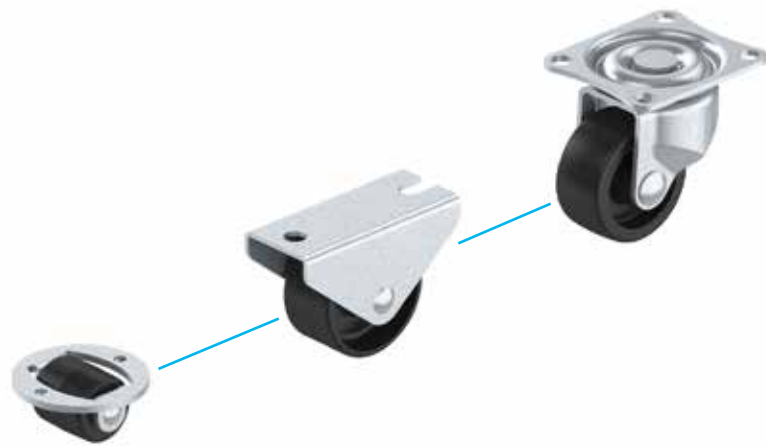
Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL

# COMPACTA



## WHEEL MATERIALS



**BASETECH**  
Polypropylene



**DURATECH**  
Polyamide

PRODUCTIVITY

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

DESIGN

**Tested quality**

Tested in our own test laboratory for compliance with European standards.

DURABILITY

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL

# GLIDE



**Fast assembly**

Faster assembly thanks to easy plug-in fittings.

**Smooth gliding**

Polypropylene gliding surface for soft floors and Teflon gliding surface for hard floors.

PRODUCTIVITY

**Certified conductivity**

Conductive version to protect users and electrical devices from electrostatic discharge.

SAFETY

**Colour matching**

Colours can be adapted to match the product design.

DESIGN

**Strong material**

Teflon coating for continuous use.

**Chemical-resistant components**

Insensitive to many cleaning agents and chemical substances.

DURABILITY

**Non-staining operation**

Non-staining on contact with floors during long standing periods. Can also be used for floors made of untreated wood and natural stone.

**Reduced cleaning**

Due to predominantly smooth surfaces, the glides are quick and easy to clean.

**Non-hazardous materials**

Complies with RoHS and REACH regulations. Does not contain polycyclic aromatic carbons or chromium(VI).

ENVIRONMENTAL





**OUR  
PROCESS  
SOLUTIONS**



# SERVICE THAT GETS THINGS MOVING

We support you with a wide range of services relating to our mobility solutions. We also fulfil the premise of simply being better: With tailor-made services, we provide the stimulation to optimise processes and measurably increase efficiency in the most diverse areas of your company.

No matter whether for purchasing, product development, marketing, logistics or sales, we keep an eye on all processes in the value chain to improve the overall result.

**Using our solutions you save resources, time and money, increase your flexibility and decision-making certainty, as well as reduce your risks. We would like to introduce our service solutions to you in more detail [here](#).**

# EXPERTISE THAT INSPIRES

## VOCATIONAL AND ADVANCED TRAINING – GROUNDBREAKING SKILLS

We lead the way when it comes to mobility. This stems from our in-depth specialist knowledge and the ability to control and manage a wide range of factors and requirements for each application. In developing individual mobility solutions, we bring together these complex environmental factors, adjust variable properties with utmost precision and integrate every functionality required. Not only that, but we cultivate and share this expertise. With the TENTE Campus, we have an inspiring training and information centre where we teach our expertise in a practical way and help our employees to develop their skills and train them to become experts for solutions. Whether in product development, manufacturing or sales – we place particular emphasis on excellent instruction, vocational training and advanced training in all areas.



## A NETWORK OF COMPETENCE – GLOBAL STANDARD

As an internationally established company, we pool the specialist knowledge and application expertise we have acquired worldwide. With the wealth of experience of our sector-specific focus groups, we can offer you up-to-the-minute consulting competence at the highest level. This enables you to derive maximum benefit from our solutions and increase your efficiency at all levels.

All this is available worldwide, at your location and in over 20 languages. This means you can always rely on outstanding professional advice thanks to our internal standards in terms of employee selection, training, service quality, and communication skills.

## STRONG ON THE GROUND – COMMUNICATION AT EYE LEVEL

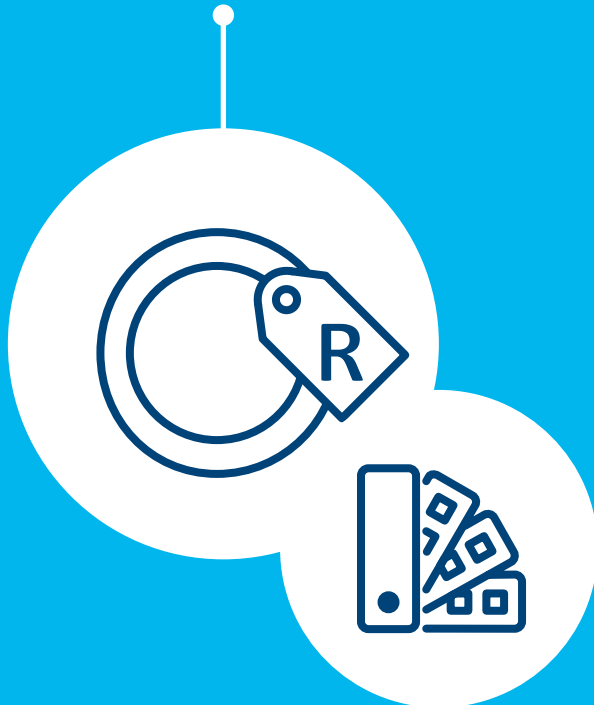
We foster a culture of dialogue in our company. Whether in intensive personal consultations on site or in exchange with our employees around the globe. Thanks to our worldwide presence and local partners, we have extensive knowledge of the relevant markets and specific cultural conditions. This not only offers you the closest possible proximity, but also results in solutions that are tailored to your individual requirements. Not to mention, this is the exact know-how that we like to deepen and pass on in close dialogue. This takes the form of comprehensive training measures for your staff geared to all corporate divisions involved in the development and application of improved mobility. Visit our inspiring TENTE Campus training and information centre and experience pioneering solutions in the truest sense of the word.



# SOLUTIONS FOR MARKETING AND SALES

## PRODUCT BRANDING – COMMUNICATING THE BRAND

Use our products as attractive ambassadors for your brand. With a pool of different manufacturing processes, we offer you a wide range of possibilities to implement your corporate design effectively. Whether it's a matter of the name, logo or corporate colour – thanks to our know-how you have the opportunity to design your own individual mobility solution. Please get in touch with us and allow us to advise you.



## CO-BRANDING – MUTUAL SUCCESS

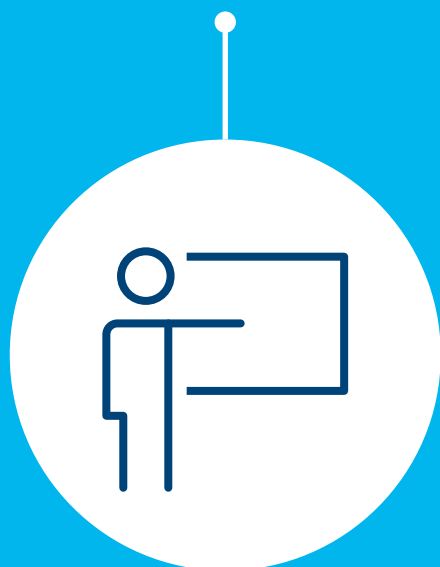
The TENTE brand stands for outstanding mobility solutions with premium quality worldwide. Numerous well-known manufacturers trust in our efficiency. Many of them rely on a strategic brand partnership that has existed for over decades.

Take advantage of our brand as a reference for your products and their marketing ability. Premium components are not only a decisive mark of quality and a distinguishing feature, they also offer you a positive and lasting image transfer.

## TRAINING – DEVELOPING COMPETENCE

Train your staff to become mobility specialists. Selecting, fitting and using castors, wheels and complete systems is a diverse and complex subject that requires numerous influential factors to be taken into account. For this reason, we offer instruction and training courses for planners and users which are specifically geared to the different areas of the company.

We would be pleased to conduct courses on your premises or centrally in our modern training and information centre. Our TENTE Campus brings innovative solutions to life and provides inspiration for better mobility.



## POINT-OF-SALE MARKETING – PERFECT CONSUMER APPEAL

We support you with a strong presentation at the point of sale. From cost-saving pre-labelling with barcode stickers to advising on and optimising special product ranges, to customer-oriented informational media and individual product presentations in the corporate image of your company, we can provide you with a variety of marketing solutions.

Take advantage of our wide range of services for merchandise management and sales promotion to fully exploit the potential.



# SOLUTIONS FOR RESEARCH AND DEVELOPMENT

## OUTSTANDING PRODUCT DESIGN – ADVANTAGE WITH A SYSTEM

The defining principle of our design is the system concept. Our product world is distinguished by a high degree of flexible possibilities for adaptation and integration. As an intelligent modular system, it offers great freedom for the individual implementation of your functional and formal requirements. Beyond this, our engineers are available as competent partners for efficient co-developments in order to design exclusive mobility solutions for the market of tomorrow.

With regard to the perfect combination of engineering and design, we have always been seen as a driving force. This is also reflected in the numerous awards our company has achieved again and again. These include (among others) the Red Dot Design Award, the universal design award and the iF Product Design Award.

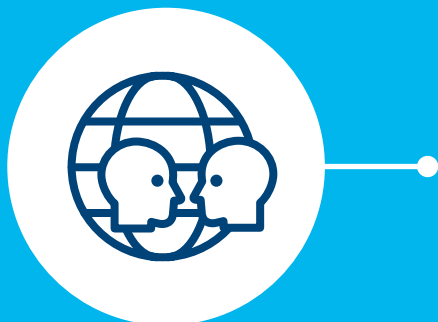


## OUR TEST CENTRE – EVERYDAY LIFE AS A BENCHMARK

The everyday use of castors and wheels doesn't hold itself to standards. Therefore, the testing requirements are often far above those of the specifications specific to the use. Whether it be wheel, castor or individual component, in our testing laboratory, every part must stand up to significantly higher requirements. For example, we test the samples in a temperature chamber. There, under extreme temperatures, the products are subjected to all kinds of tensile and compression tests. In addition, we also check the static and dynamic load capacity above the standard. The same applies to changing loads during continuous swivel and collision tests. We also test the interaction of the products with a wide variety of surfaces according to customer specifications.

Our castors and wheels must prove outstanding longevity and endurance during analysis of abrasion volume as well as in harsh salt spray tests. The result: solutions that impress with their premium quality and are proven to increase mobility in their applications.

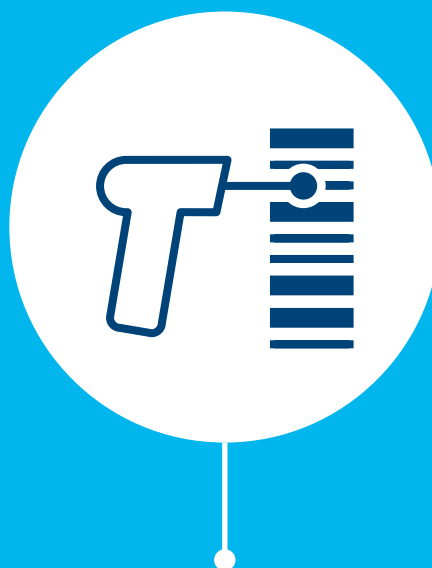
### GLOBAL SUPPORT – COMPLETELY PERSONAL



No matter where your company is located, we offer qualified support on five continents and are there for you on site. You can rely on our experienced solution experts, who know your country's cultural characteristics inside out and are able to provide you with perfect support as native speakers – especially if things aren't running smoothly. With our global network, we are capable of responding to your concerns quickly and with the highest problem-solving expertise – all over the world.

### CAD SERVICE – SIMPLY FASTER

With our CAD service, you save valuable working time and increase the efficiency of your development processes. On top of that, we also have the diverse TENTE product world which is available around the clock, quickly and conveniently in our online library. We can support your design and development department with several 2D and 3D data formats and can give you support through our teams if needed.



### INTELLIGENT PRODUCT IDENTIFICATION – MONITORING EX WORKS

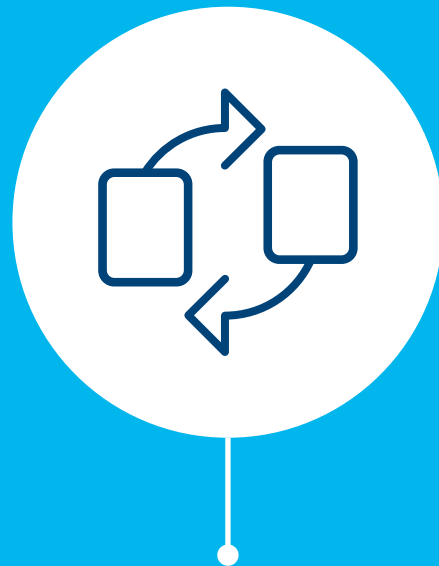
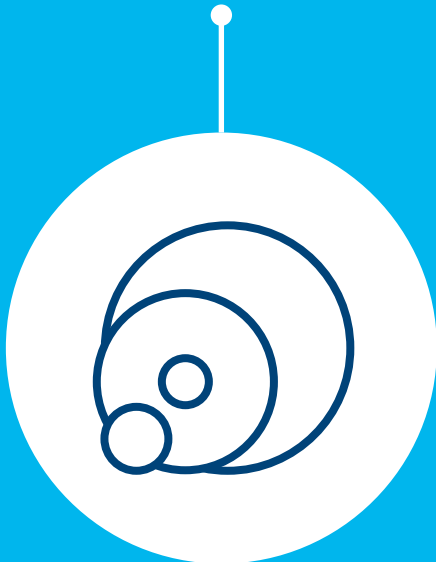
If you are looking to implement product identification solutions in order picking, process control or parts tracking, we are capable of equipping your products accordingly.

Take the opportunity to increase your manufacturing transparency, to simplify your reordering and repair processes and even lower your operational costs. On request, we can label your products with an individual Data Matrix Code (DMX) containing all relevant information. Digital identification with key data such as model year, production order or order number guarantees effortless data processing and ensures uncomplicated, long-term identification of the products.

# SOLUTIONS FOR PURCHASING AND LOGISTICS

## PRODUCT PROGRAMME – DIVERSITY WITH A SYSTEM

Are you looking for a manufacturer that can reliably match a wide range of specification profiles? Our modularly designed, diverse product landscape is the answer. From design-oriented mobility solutions to extreme load transport and drive systems, we have the expertise to put together your component and product portfolio as efficiently as possible. We offer you all advantages from a single source. This way, you can standardise your processes, streamline your warehousing and simplify your production.



## ELECTRONIC DATA EXCHANGE – EFFICIENCY CONNECTS

Lean processes are an important part of entrepreneurial success, both within the company and in business with customers. Within the framework of our cooperation we can implement a secure, reliable and fast exchange of information, data and documents with you. In addition to the usual EDI formats and standards, we also enable individual system and format-independent adaptation to your infrastructure. Thanks to intelligent networking, all steps along the entire value-added chain can be simplified and made leaner – from the order to the various confirmation processes and even warehousing and logistics.

The result: improved processing and significant savings in terms of resources, time and costs. Which solution would you like to implement?

## PRODUCTION CAPACITY – FREELY SCALABLE

Large series, small series or special construction – TENTE is represented with warehouses and production facilities on five continents. At the same time, we also have a large production capacity and a high degree of automation in order to react quickly, flexibly and reliably to your individual needs and requirements worldwide.

It is not without reason that we have been successfully proving our potential as a supplier of original equipment manufacturers for many years and enjoy the trust of numerous global players from a wide variety of industries.



## TRADE SUPPORT – QUALITY ON DEMAND

Our tried and tested standard products for the specialist trade are generally always in stock and available at short notice. In this way, you have access to the goods you need at all times. For the compilation of a lucrative product range, our competent sales employees with extensive market knowledge are at your side.

## SUPPLIER RANKING – MORE THAN JUST SATISFIED

In our company, everything is focused on making things better – products, processes and services. Along with excellent evaluations, our regular positions at the top of supplier rankings as a leading brand manufacturers, as well as smaller and medium-sized companies, show that we are very successful in this endeavour.

With our smart mobility solutions, we have established ourselves cross-industrially as a valued supplier and engaged partner. A basis upon which we are happy to work for you.





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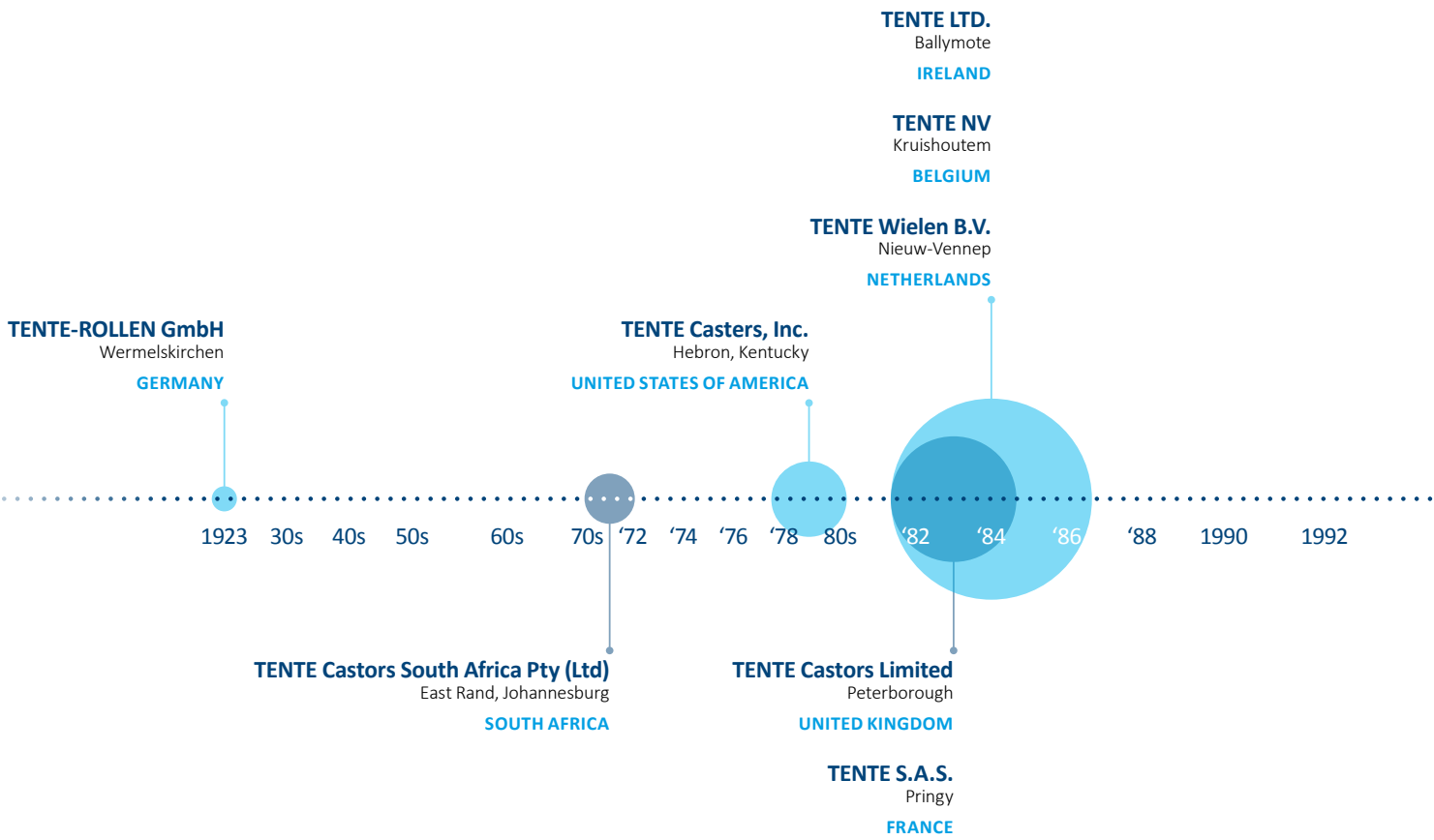
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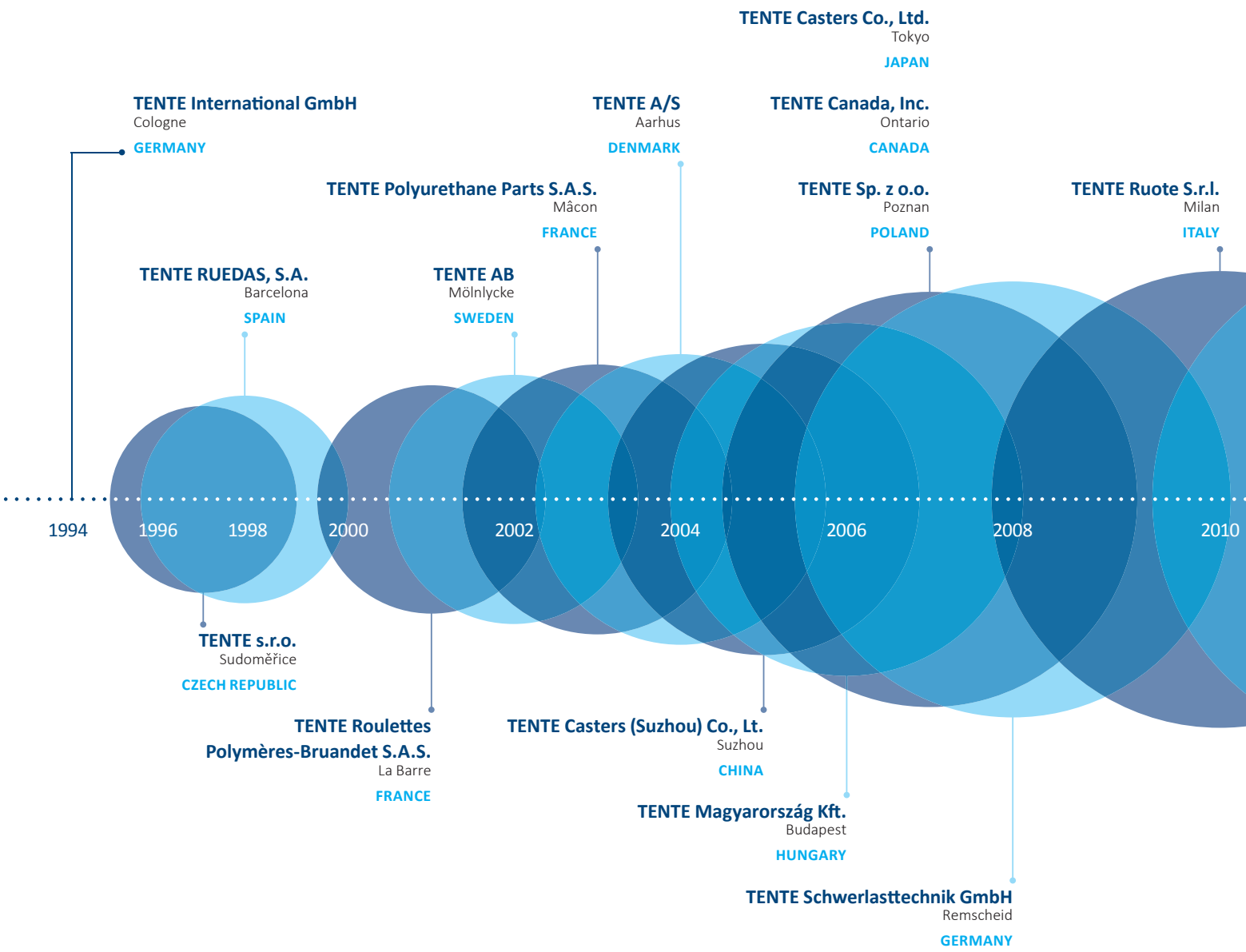
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Riga

**LATVIA**

**TENTE LTD**  
Moscow

**RUSSIA**

**TENTE Castors  
South Africa  
Pty (Ltd)**  
Pretoria

**SOUTH AFRICA**

**TENTE AG**  
Hünenberg

**SWITZERLAND**

**TENTE BEL PE**  
Minsk

**BELARUS**

**TENTE UKRAINE LLC**  
Kiev

**UKRAINE**

**TENTE Canada, Inc.**  
Quebec

**CANADA**

**Bestway Casters and Wheels LTD.**  
Ontario

**CANADA**

2011

2012

2013

2014

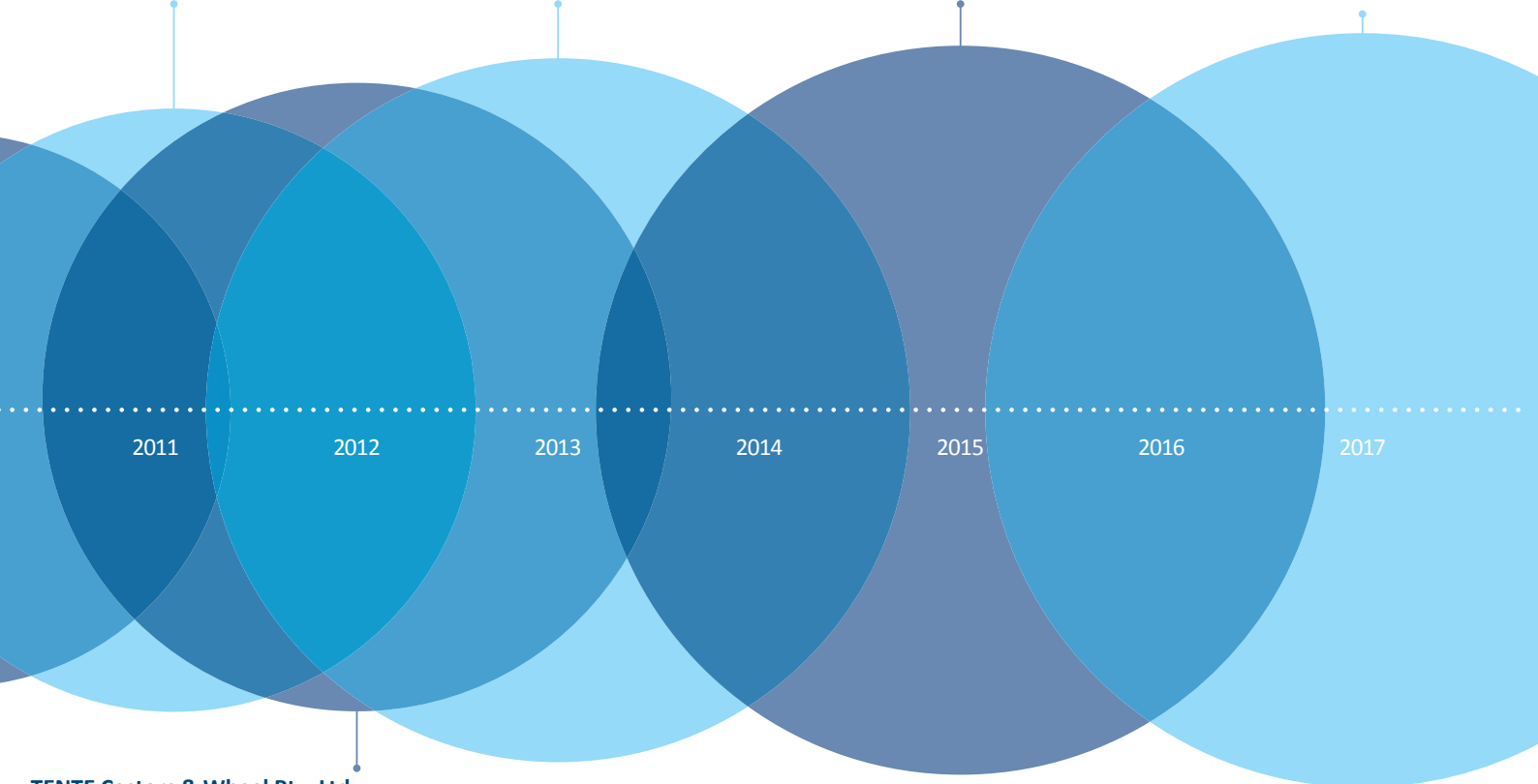
2015

2016

2017

**TENTE Castors & Wheel Pty. Ltd.**  
Sydney

**AUSTRALIA**



The TENTE logo is centered in a white rounded rectangle. The word "TENTE" is written in a bold, white, sans-serif font with a blue shadow effect. The background features a world map composed of various-sized blue and grey circles.

**TENTE**

2018

2019

2023

2024

**BETTER MOBILITY. BETTER LIFE.**

