

we innovate

Blickle solutions for **intralogistics**



Ergonomics

Healthy employees
for a healthy company

Efficiency

Intelligent design for
sustainable load lifting

Safety

Quality you can
rely on



JUST BETTER

The wheel is one of the most important inventions of mankind.

The simple, basic principle has been continuously developed throughout history. Today, wheels and castors are high-tech products that provide mobility in a wide variety of industries.

Blickle, which is still a family owned firm, has grown from a small craft business into a leading global manufacturer of wheels and castors in just two generations. For us progress is a tradition. Our commitment to values such as trustworthiness, reliability, innovation and a sense of responsibility has only grown over the decades. We attach a great deal of importance to closeness to our customers, serving as a competent partner in a wide variety of applications. Today, more than 1,200 employees worldwide ensure that Blickle wheels and castors in “made in Germany” quality are used wherever mobility is required. Customers are impressed by the high quality of the products, which are practically maintenance free, and also by their durability and fast availability.

Despite increasingly complex logistical processes with increased digitalisation and greater use of robots, wheels and castors are still often at the heart of intralogistics. That is why particular reliability is required in this regard. Blickle products ensure an ever faster and more efficient internal material flow, while at the same time helping to create ergonomic workplaces and prevent accidents. In this magazine you will discover innovative solutions that we have found for a wide variety of challenges in intralogistics.

I wish you an enjoyable read and some interesting insights.



Reinhold Blickle
Managing Partner

PS: We look forward to each new challenge. Contact us today!

WE THINK FUTURE

Robotics

Industry 4.0

When markets become more complex, digitalisation becomes a challenge as well as a useful tool, and we shouldn't lose sight of the people involved – so the basics have to be right. This makes the quality and properties of wheels and castors particularly important. Only reliable functioning of this hardware guarantees that processes, supply chains and flows of goods will intermesh smoothly – like a well-oiled mechanism.

Digitalisation, automation and individualisation – these global megatrends are also having a lasting impact on intralogistics. Intelligent information systems such as telematics, robotics and sensors as well as innovative hardware solutions such as automated guided vehicles (AGVs) or trolley trains help ensure that the in-house material flow can be optimally managed.

The challenges here are enormous, as ever larger flows of goods have to be moved ever faster – all without sacrificing efficiency or allowing disruptions. In combination with modern technologies, transport equipment is the backbone of intralogistics.

Blickle wheels and castors play an important role in a number of different intralogistics processes to ensure that materials are transported efficiently, safely and reliably within a company. Integrating wheels and castors into a wide variety of logistical processes with increasing travel speeds and high demands on occupational safety and ergonomics means that today's wheels and castors often have to be high-tech products. As a supplier of running gear components, we have followed this development in a wide variety of industries for many decades. With our extensive product portfolio as a wheel and castor specialist, we offer a solution for almost any challenge.

When developing customer-specific solutions, we can draw on many years of know-how with countless customer projects all over the world. Numerous well-known manufacturers of logistics equipment around the world, such as forklifts, crane systems, trolley trains and order picking trolleys, rely on Blickle products.



Digitalisation

Sustainability

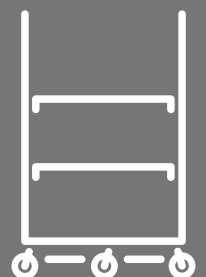


Global supply chains

Ergonomic workplaces


Just in time

Autonomous transport systems



TO BE THE BEST AND CASTOR MANUFACTURER TO WORK WITH

Dr. Sarah Blicke-Fenner, David Blicke
Managing Partner



WHEEL MANUFACTURER

We want to be the best. In products and solutions, in service and partnership, in research and innovation. In consultation with our customers, we develop high-quality, long-lasting, user-friendly and innovative wheel and castor solutions for people around the world. Goods, machines and transport systems of all kinds can be moved safely, efficiently and ergonomically.

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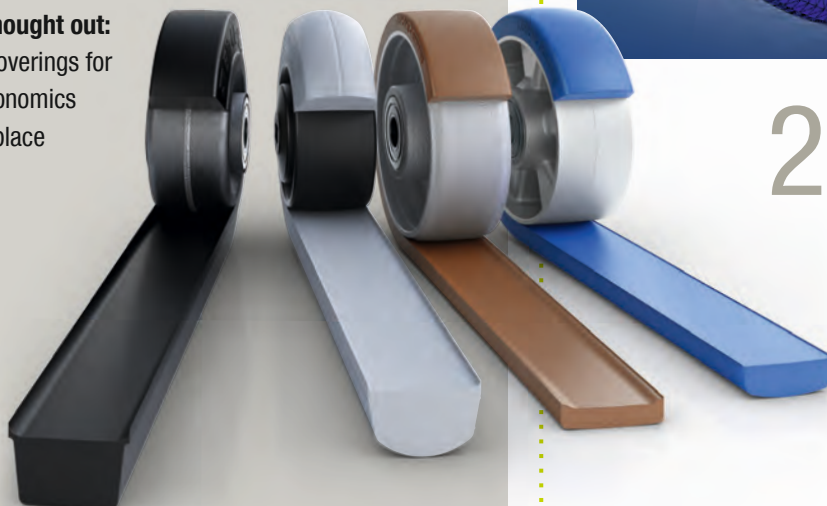
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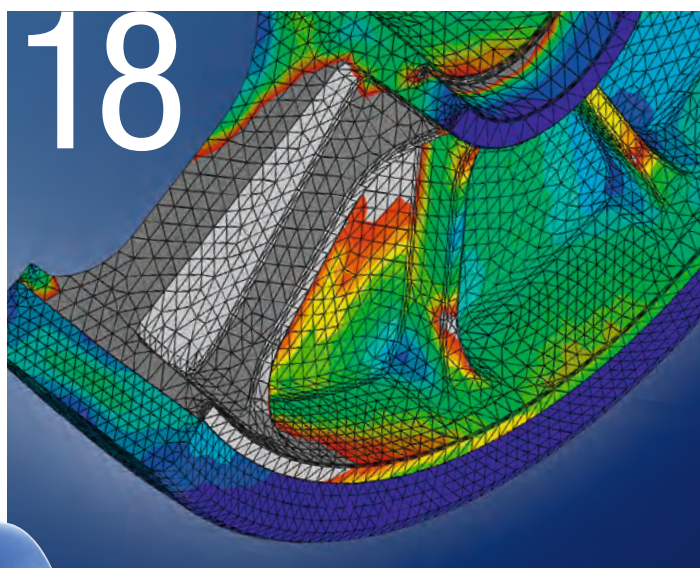
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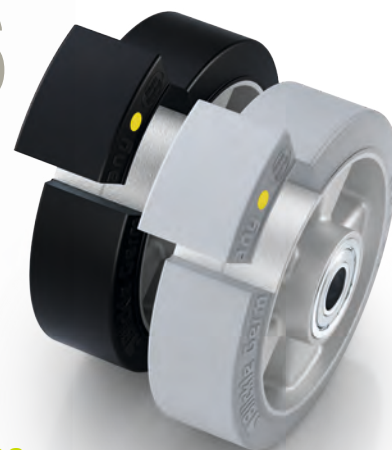


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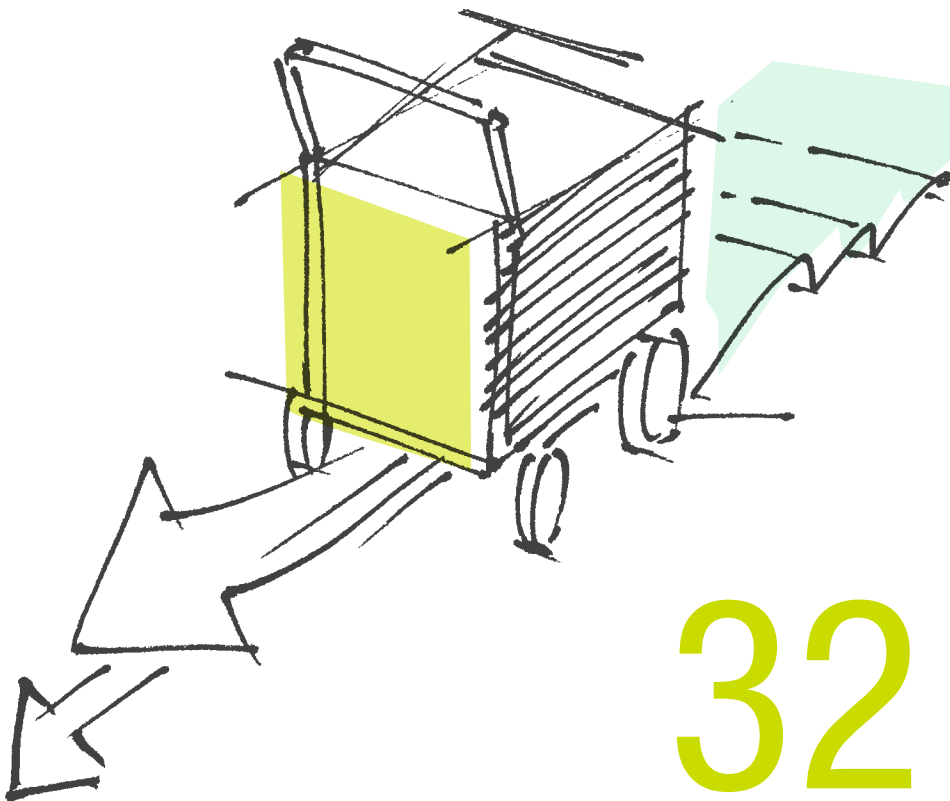
Head of Development and Design

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Publisher


Blicke[®]
we innovate mobility

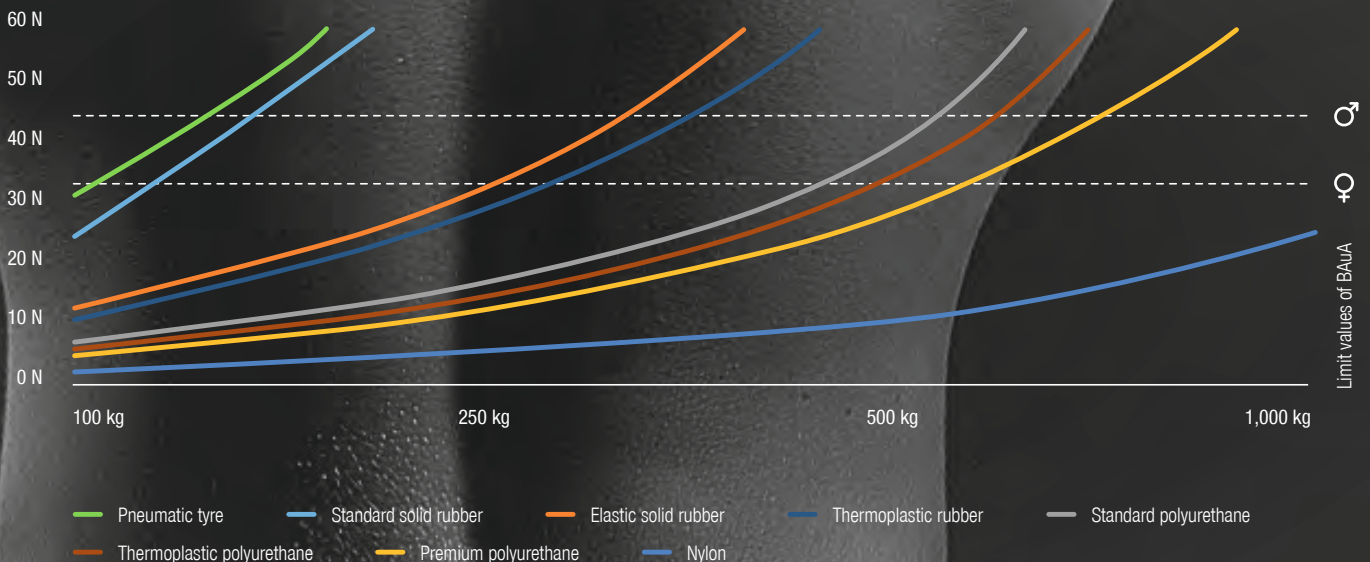
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Lighter, simpler, smoother –
this is how you keep employees fit and motivated

HEALTH!

Only healthy employees are motivated and efficient employees. Did you know that every employee who does not show up for work costs you around EUR 500 a day? Unfortunately, transport devices with excessively high starting and rolling resistance are often the cause of illness-related absences resulting from musculoskeletal disorders. Worldwide, these most frequently lead to incapacity for work, severe disability, limited ability to work and premature disability (source: BAuA – Federal Institute for Occupational Safety and Health) – a topic that has to be dealt with, especially in times of a shortage of skilled workers. Physical stress when pulling and pushing can easily be reduced by choosing the right castors. We at Blicke have been addressing this issue for many years.

Rolling resistance of various treads



Test conditions: Values determined under laboratory conditions on a flat, level surface, wheels with Ø 200 mm and ball bearings.

Comparison of the rolling and swiveling resistance of different polyurethane wheels (wheel Ø 200 mm)

- ALTH series
- Thin tread
- Tread radius R300
- Tread hardness 92 Shore A



Standard polyurethane (Extrathane®)

Rolling resistance 0.9%

Swivel resistance 2.9%

- ALBS series
- Thick tread
- Tread radius R90
- Tread hardness 75 Shore A



Premium polyurethane (Besthane® Soft)

Rolling resistance 0.8%

Swivel resistance 2.5%

- ALB series
- Thin tread
- Tread radius R100
- Tread hardness 92 Shore A



Premium polyurethane (Besthane®)

Rolling resistance 0.7%

Swivel resistance 1.7%

Test conditions: Testing in new condition under laboratory conditions with a load of 300 kg and identical bracket.

Every day around 4% of all employees in Germany report sick (source: German Federal Ministry of Health, BMG). This incurs gigantic costs for the economy: EUR 87.6 billion in production downtime costs (wage costs) and EUR 148.7 billion in gross value added loss in 2019 in Germany (sources: Statista, BAuA). For a company, this means that valuable employees are missing, processes are held up and the remaining employees are under more strain, thus increasing the risk of accidents and the threat of further sick leave.

The subject of ergonomics is very important to us. The various Blicke wheel treads can help prevent employee absences due to illness and thereby reduce the follow-up costs caused by absences. Choosing the right tread can reduce rolling resistance by up to 90 percent (see graphic), and the limit values recommended by BAuA for long-term loads can be achieved with the right wheels and rollers. With Blicke Besthane®, Blicke Besthane® Soft, Blicke EasyRoll and Blicke SoftMotion, you have the choice between exclusive treads that are specially designed for low rolling resistance and set standards in terms of rolling, swiveling and starting resistance even with high loads.

Better Blicke

- The right treads prevent sickness-related absences.
- The starting and rolling resistance are decisive factors in ergonomics.
- Even with high loads, our treads set standards in terms of rolling, swiveling and starting resistance.



Want to know more?
Simply scan the QR code
and immerse yourself in the
Blicke world of innovations.

TOTALLY THOUGHT OUT

When we talk about ergonomics, rolling resistance is the most important factor. At Blicke, we can proudly say that our products have the best rolling resistance in all classes. Years of experience in many different areas have given us a high level of expertise in material development. But to stay the best, you have to keep getting better – a large part of our development work therefore focuses on researching new tread materials.

The formula of the polyurethane material and how it is processed are the main factors affecting the quality of the finished product. They have a significant impact on tread and tyre hardness, rebound resilience, abrasion resistance, load capacity, rolling resistance and low-temperature flexibility. In cooperation with renowned scientific institutes and using the most modern methods, our developers are constantly improving the existing recipes and finding the best combinations between the tread, cushion thickness and tread contour. In addition to the properties of different tread materials, the extent to which they adhere to the wheel centre also plays a significant role in the quality of the product. That is why wheels and their treads are extensively tested during development so that we can guarantee you a consistently high level of quality over the long term.



Blicke EasyRoll

- 65 Shore A
- Top performance rubber
- Up to 65% lower rolling resistance compared to standard solid rubber

ergonomic
product

tested and recommended by

IGR Institut
für Gesundheit
und Ergonomie

www.igr-ev.de

The IGR Institute of Health and Ergonomics (IGR Institut für Gesundheit und Ergonomie e.V.) has awarded the Blicke Besthane®, Besthane® Soft and SoftMotion tread series its “ergonomic product” quality seal. Wheels and castors equipped with these treads contribute to an ergonomically optimal transport of goods. The tests performed by the IGR were based around the DIN 33 419 / EN ISO 15537 standards.

Blicke SoftMotion

- 55 Shore A
- Top performance soft rubber
- Up to 55% lower rolling resistance compared to standard soft rubber

Blicke Besthane®

- 92 Shore A
- Top performance polyurethane
- Up to 30% lower rolling resistance compared to standard polyurethane

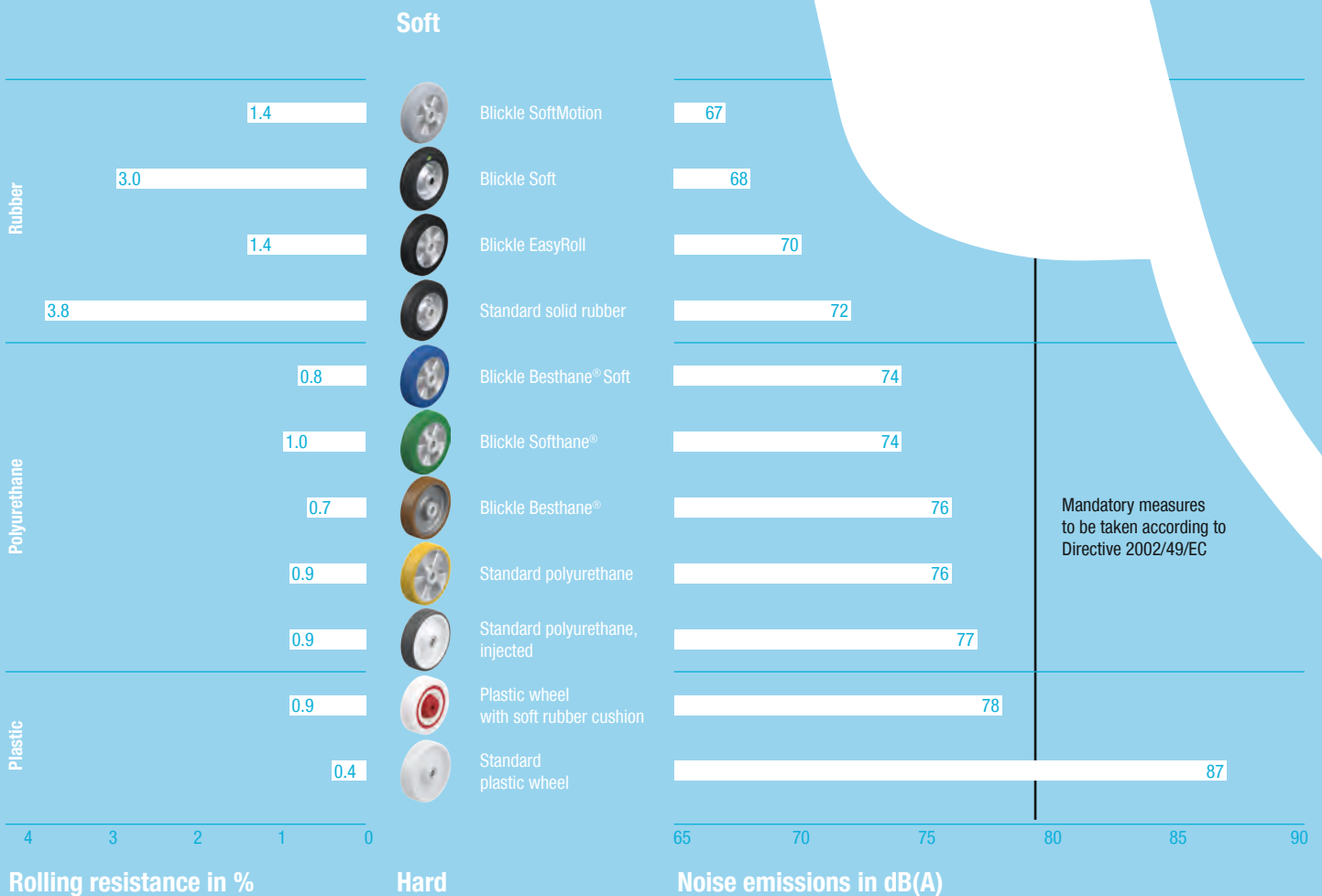
Blicke Besthane® Soft

- 75 Shore A
- Top performance polyurethane, soft
- Up to 25% lower rolling resistance compared to standard polyurethane

Noise can cause illness. No employer, least of all in intralogistics, can afford that. In intralogistics, however, it is common for the transport of goods to cause high noise emissions. Many think they have to choose: Hard and therefore noisy wheels with little rolling resistance or the soft, quiet treads that are harder to push. There is another way, though, as we at Blickle prove day in and day out.

Noise protection is human protection

PSSSST!





Want to know more?
Simply scan the QR code
and immerse yourself in the
Blickle world of innovations.

Better Blickle

- Noise increases stress and the risk of accidents while decreasing performance.
- Quiet treads also run more smoothly.
- Blickle Besthane® Soft: Minimal noise emission, high load capacity, low rolling resistance.

Noise in the workplace is not only disagreeable; it also leads to increased sick leave. In Germany, four to five million employees are exposed to noise that is harmful to their hearing (source: BAuA – Federal Institute for Occupational Safety and Health). This causes stress, concentration is disturbed, the risk of accidents increases and performance decreases.

The choice of running gear and wheels play an important role in reducing noise emissions. The long-uncontested statement that soft wheels cause little noise but have a high rolling resistance has always bothered us at Blickle. That is why we have developed specialist treads. Ones that have low noise emissions while also meeting a wide variety of requirements concerning factors such as load-bearing capacity, wear resistance and rolling resistance. The best example of this is the Blickle Besthane® Soft tread, which performs well thanks to low noise emissions, high load-bearing capacity and low rolling resistance (see graphic).

The seal of approval of the IGR Institute for Health and Ergonomics was awarded to Besthane due to the extremely low starting, rolling and swiveling resistance of the Blickle tread series Besthane® und Besthane® Soft. This is made possible by the high elasticity of the polyurethane material. This material ensures that hardly any energy is lost when wheels and castors with Besthane® tread are in motion, making it much easier to push and pull a trolley.



Test conditions: Rolling resistance: Testing in new condition under laboratory conditions with a load of 300 kg, wheels with Ø 200 mm and identical bracket.

Test conditions: Noise emissions: Average noise emission when transporting metal parts on chequer plate floor, trolley weight 300 kg, wheels with Ø 125 mm.





Automobile and engine production in the Czech Republic

SOFT MOTION – SUCCESS COMES QUIETLY

Silent castors. Greater manoeuvrability. Lower rolling and swivel resistance. Optimised foot guard. We even have a standard product for all of these requirements.

The situation: high noise levels

The customer is a Czech car and engine manufacturer that belongs to a German automotive group. With around 33,000 employees in the Czech Republic alone, the car maker sells well over a million automobiles per year. The noise level in the car manufacturer's assembly plant was extremely high. Although the sequence vehicles for the in-house transport of automotive components travelled over a smooth concrete floor, this was

interrupted at regular intervals by expansion joints with cast iron gratings. The castors used up to now had non-marking grey elastic solid rubber wheels that had been in use for a long time. The rubber treads were relatively hard, the manoeuvrability was not optimal due to the relatively high rolling and swiveling resistance, and the noise produced during travel exceeded the specified noise protection standards. In addition, the foot guard



of the castors came into contact with the floor when crossing the joints, which significantly reduced the service life of this safety component. A new castor solution was therefore required with significantly lower rolling and swivel resistance as well as a tread with particularly low noise properties. The clearance of the foot guard had to prevent contact when crossing the thresholds.

Our solution from the standard range

Due to the outstanding damping characteristics and the noticeable noise reduction of the soft rubber tread "Blickle SoftMotion", the Blickle wheel series ALES offered the optimal solution for this application. The thick tread cushions in 55 Shore A, which are permanently fixed to the aluminium wheel centre, enable particularly quiet travel and are highly elastic, meaning low rolling resistance. The robust heavy duty bracket of the Blickle LH series and the stable steel foot guard with a ground clearance of 35 mm completed the optimal castor to form a solution that meets all the customer requirements.

The result

The Blickle castors of the LH-ALES series are characterised in regular operating tests by outstanding damping characteristics and significantly improved rolling and swivel resistance. The manoeuvrability has also been noticeably improved in this way.

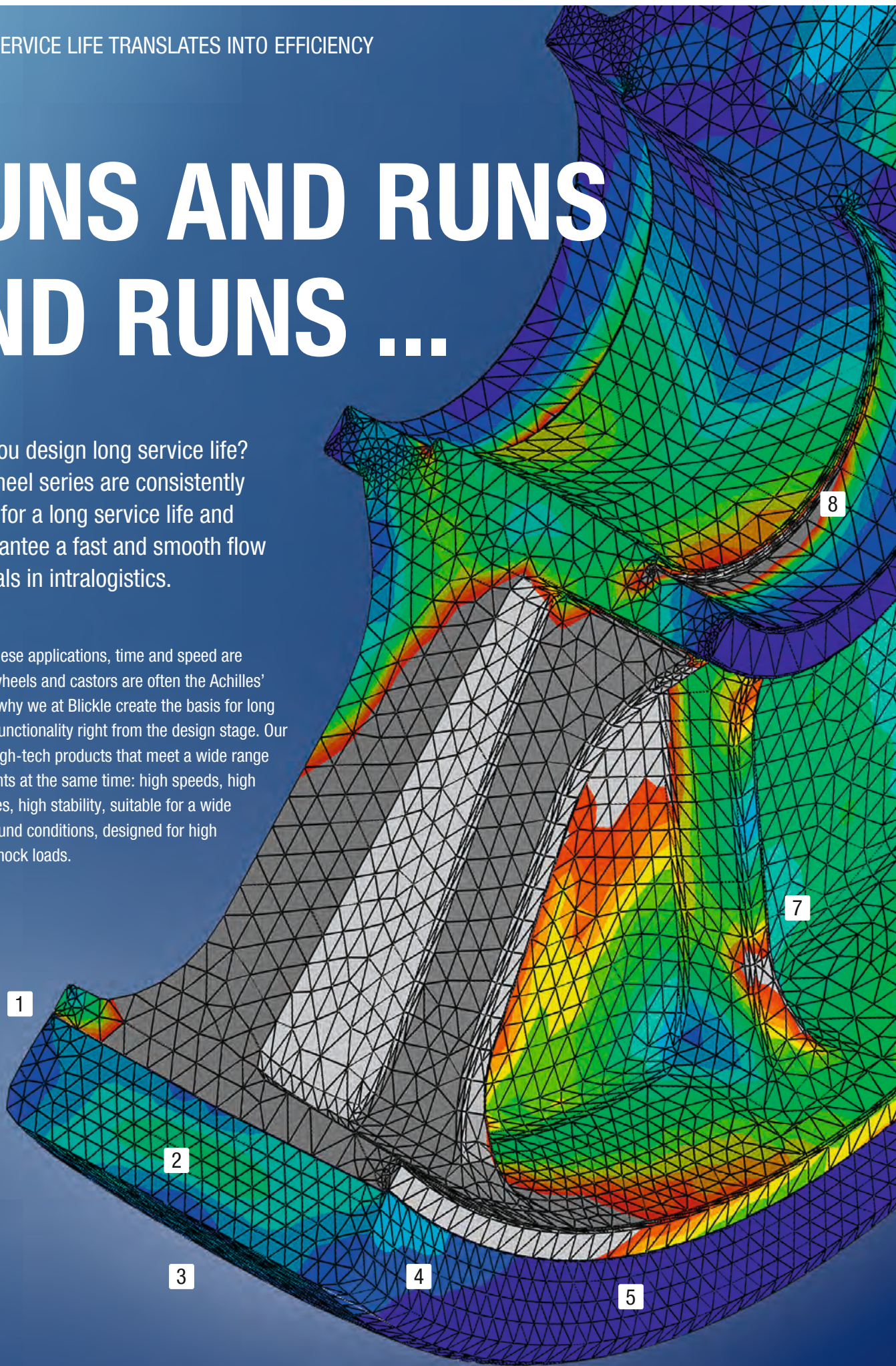
The foot guard no longer touches the ground when crossing thresholds. The castors and the floor are protected, lowering repair and replacement costs. Last, but not least, the car maker was also excited by the clearly noticeable noise reduction from the use of the elastic soft rubber wheels "Blickle SoftMotion".

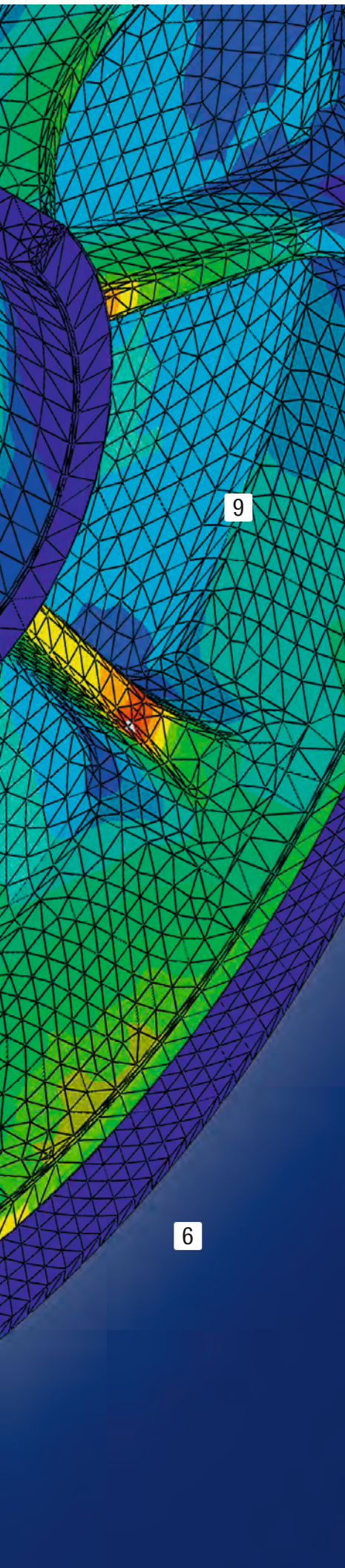
LONGER SERVICE LIFE TRANSLATES INTO EFFICIENCY

RUNS AND RUNS AND RUNS ...

How do you design long service life? Blickle wheel series are consistently designed for a long service life and thus guarantee a fast and smooth flow of materials in intralogistics.

Because in these applications, time and speed are money. But wheels and castors are often the Achilles' heel. That is why we at Blickle create the basis for long and optimal functionality right from the design stage. Our wheels are high-tech products that meet a wide range of requirements at the same time: high speeds, high load capacities, high stability, suitable for a wide variety of ground conditions, designed for high impact and shock loads.





Optimised for maximum efficiency:

- 1 The perfect connection**

Various processes such as vulcanization, insert moulding or pressing ensure a firm connection between the wheel body and the tread.
- 2 Dynamically highly resilient**

Special wheel series with dynamic, highly resilient premium treads and optimised tread geometries prevent thermal overloading and enable high dynamic loads (high driving speeds).
- 3 High abrasion resistance**

Wear is reduced, thus extending the service life.
- 4 High cut and tear resistance**

Treads with high cut and tear resistance ensure the best resistance to external influences such as sharp-edged obstacles.
- 5 Treads with optimised rolling resistance**

Special treads with optimised rolling resistance enable higher energy efficiency and reduce physical strain when pulling and pushing.
- 6 Optimised material solutions**

Water, heat, cold, oils or chemicals can attack wheels. Blickle offers suitable material solutions and surface treatments for wheel centres and treads for almost all environmental conditions.
- 7 Blickle's own inspection and test laboratory**

All load capacity information is validated in the Blickle inspection and test laboratory on state-of-the-art systems or, in the case of extreme wheel sizes, calculated using mathematical simulations.
- 8 Precision bearings and machined bearing seats**

Exact bearing seats and the use of precision bearings ensure optimal running properties. Specially machined bearing seats for ball bearings guarantee excellent coaxial properties.
- 9 Robust and strength-optimised wheel centres**

Specially optimised wheel centres are an essential part of all our products. High-quality materials and proven design ensure reliable service.

Better Blickle

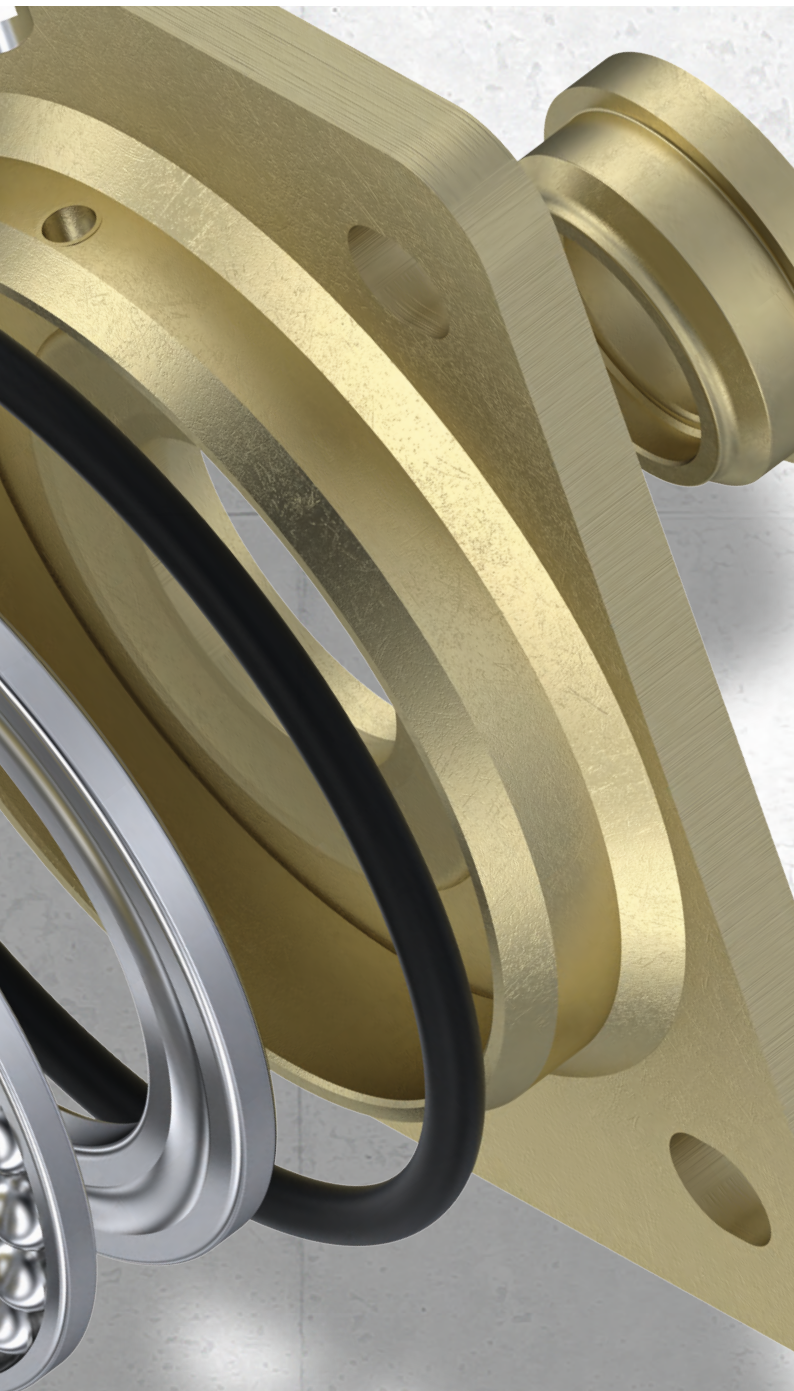
- The right product for every application.
- We keep an eye on all aspects.
- High-tech down to the last detail.

SOLID DESIGN TRANSLATES TO EFFICIENCY

INDESTRUCTIBLE

Time is money. Fast, smooth processes and procedures are an important success factor for your company. An essential component: extremely robust Blicke brackets, which can easily cope with even the highest speeds.





In addition to special bearings and optimal adhesion between the wheel centre and the tread, most importantly it is the unique bracket technology that enables us at Blicke to offer optimal solutions for fast applications. Because precision and durability are the prerequisites for smooth processes in intralogistics.

With over 60 wheel bracket series, we always offer the right one for every application. Unique manufacturing processes such as dynamic riveting of swivel heads or special designs with hardened bearing races in the swivel head ensure that Blicke rollers set standards in many intralogistics applications. The Blicke LH and LS bracket series are benchmarks in the heavy-duty sector. All technical information is of course tested in accordance with the current standards and in some cases far beyond that in the Blicke test laboratory. The precision components ensure the lowest tolerances – just “made in Germany” and “at its best”!

Longevity in all weight classes

Bracket with standard swivel head



Up to 600 kg load capacity

- Above average service life thanks to the special dynamic Blicke riveting process for the swivel head.
- High stability thanks to double ball bearing in the swivel head.

Bracket with hardened bearing shells



Up to 1,000 kg load capacity

- Particularly resistant to shocks and impact thanks to specially-shaped hardened bearing shells.
- Extremely durable even with high loads and driving speeds.

Welded heavy duty brackets with precision bearings



Up to 30,000 kg load capacity

- Maximum stability even with extreme loads and axial loads as well as at high speeds.
- Good corrosion protection through galvanising and yellow passivation.



Low installation height with extremely high load capacity and reliability: Customised solution for automatic guided vehicles (AGV) Grenzbach L1200S.

Special requirements need good cooperation

In addition to its comprehensive standard range, Blicke also manufactures a wide variety of special solutions. Grenzbach Maschinenbau GmbH, provider of a range of innovative automation solutions, is a technology leader in a number of different markets. Its automated transport solutions include the Grenzbach L1200S automated guided vehicle (AGV), which uses wheels and castors from Blicke. This vehicle moves beneath units like desks, trolleys, frames or shelving, lifts them up and transports them to a specific destination. The AGV can handle up to 1.2 tons, with the load oriented in either direction. It can also rotate on the spot.

In close cooperation with the product developers in Grenzbach, a solution was created in our design offices that was perfectly adapted to the requirements. The castors needed a high load capacity and a low installation height. This led the customer to opt for our special support roller LSD-ALTH: solid, steel-welded swivel head, minimal height tolerance that is indispensable for the extremely compact installation space, twin wheel castor, suitable for load capacities of up to 600 kilograms in continuous operation with low swivel resistance. Both of the wheels integrated into the twin wheel castor use the solid Blicke Extrathane® polyurethane tread with a hardness of 92 Shore A. This keeps the

From the specialist for the specialist:

THERE IS ALWAYS A SOLUTION



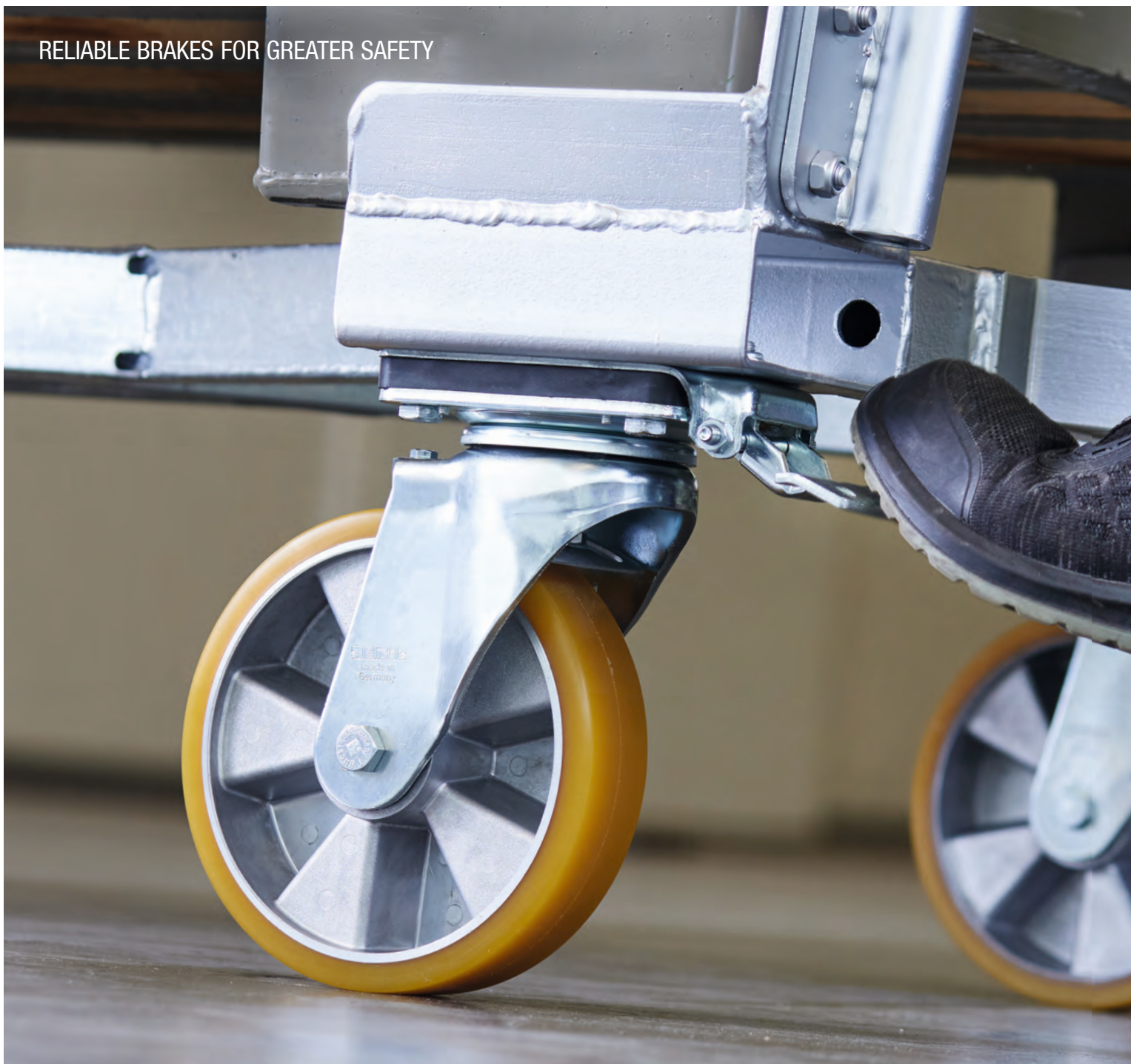
“Blickle quickly and flexibly implements special solutions that prove themselves in our customers’ daily applications.”

Erwin Herre, Head of Product
Management Intralogistics, Grenzebach

rolling resistance low, minimises abrasion and provides a particularly high level of resistance to cuts and tear propagation. An antistatic version protects against electrical discharges.

The drive wheels of the AGV need to be particularly abrasion-resistant while also providing a high level of operational performance in a tight predefined space. Our solution: The GBA 178x50/8, a special drive wheel with specialised flange geometry. The high-quality, premium 92 Shore A Blickle Besthane® tread is cast onto the cast iron wheel centre. The wheel is extremely abrasion-resistant and has a low level of rolling resistance, which increases energy efficiency. The castor and the drive wheel from Blickle allow the unit to be used around the clock. The smart drive technology and the twin wheel castors work together well to guarantee a space saving turning radius of under 1 m.

RELIABLE BRAKES FOR GREATER SAFETY



Safety is our top priority

We want the use of our wheels and castors to be without accidents. You can therefore rely on two things with our products: If you have to brake, it can be done quickly; and if you park something, it stays parked – even in dangerous situations.

According to the German Statutory Accident Insurance, there were more than 36,000 accidents in intralogistic transport in Germany in 2019 alone, i.e. more than 150 per working day. We can reduce this number. As a solution partner in matters of safety, we have a large variety of different parking devices and brakes in our range. This includes the right product for every application.

Blicke arresters and brakes are not only tested according to the European castor standards DIN EN 12526–12533, they are also adjusted to the respective tread. As they are designed to be extremely wear-resistant, you can rely on us in the long term.



Blicke wheel and swivel head brake “stop-fix” (-FI)

Mostly commonly used brakes in the middle and lower load capacity range, easy and ergonomic operation with low actuation forces.



Want to know more?
Simply scan the QR code
and immerse yourself in the
Blickle world of innovations.

BEST IN SAFETY

Stop means coming to an immediate and safe halt. There is no margin for error with brakes and parking locks. You have to be able to rely on them, especially in dangerous situations. This calls for both occupational safety and common sense. You yourself know best about the risk of accidents in intralogistics. From electric shocks to bruises, everything is included. According to the Occupational Safety and Health Act (ArbSchG), you are legally obliged to “assess the working conditions from the point of view of occupational safety and to strive for an improvement in health and safety” as put so aptly by the Association of Metal Employers’ Liability Insurance Associations.

Can we at Blickle provide you with active support?



Blickle wheel and swivel head brake “stop-top” (-ST)

Robust, adjustable design for medium and high load capacity ranges with particularly high holding forces (friction-locking).



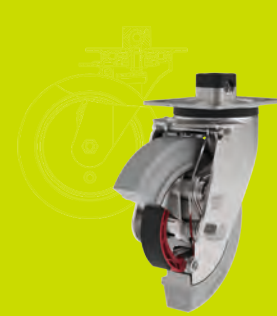
Blickle wheel and swivel head brake “ideal-stop” (-IS)

A fixed locking system (friction- and form-locking) ensures a high level of operating convenience and continuous accessibility.



Blickle central brake “central-stop” (-CS)

Simultaneous locking (friction- and form-locking) of two or more castors by means of a lever, comfortable actuation and release forces.



Blickle drum and dead man's brake (-TB and -TM)

High braking effect thanks to brake shoes, largely protected against corrosion and dirt by the closed design.

OUR WHEELS AND CASTORS HAVE A CONDUCTIVE F

We all know the problem of electrostatic charge – friction creates voltage that will want to discharge somewhere. In intralogistics, not only can this be painful for the operator; it can also be harmful to the goods being transported. Electrically conductive wheels and castors conduct electricity safely and directly into the ground.



It's "just" physics

Friction creates an electrostatic charge – electrical potentials are generated when the transport equipment or the operator comes into contact with the ground. The cart and/or the operator is then electrically charged. In the worst case, this load is discharged onto the operator or the goods to be transported.



TORS UNCTION



Want to know more?
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Something can be done about physics

The electrical conductivity of wheels and castors protects people and transported goods against uncontrolled electrostatic discharge. The electrostatic charge is discharged to the ground via the wheels and rollers. Blicke offers an extensive portfolio of electrostatically conductive wheels and castors and thus solutions for almost all wheel series.

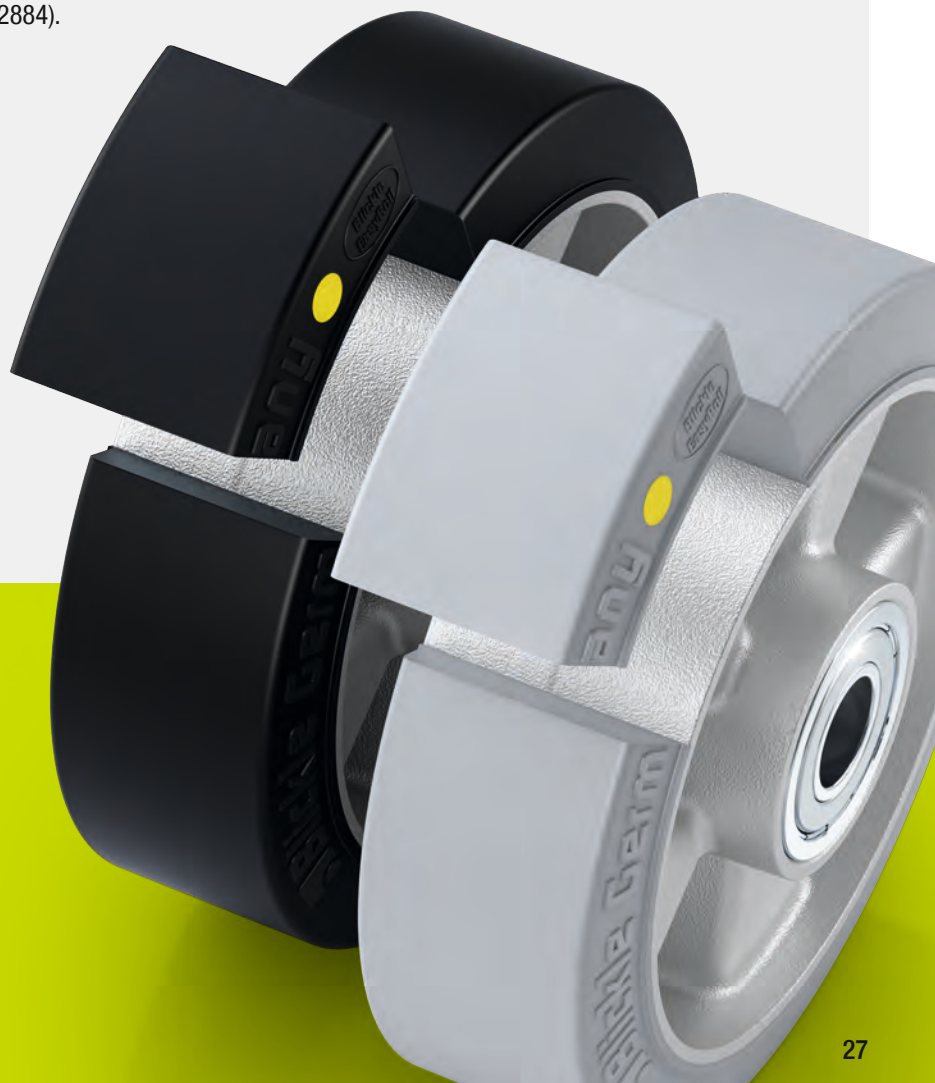
A short note for those interested in technology: A wheel or a castor is regarded as electrically conductive if its ohmic resistance does not exceed $10^4 \Omega$. A wheel or castor is considered antistatic if its ohmic resistance is between 10^5 and $10^7 \Omega$. The relevant standard: DIN EN 12527–12533 (ISO 22878–22884).

Not to be taken lightly: Sparks

The risk of electrostatic discharge to the operator or the goods being transported on the cart should not be underestimated. The electric shock for humans is very brief, but at 3,000 volts or more, it is also painful. For example, if the goods to be transported consist of electronic devices, permanent damage cannot be ruled out. The greatest danger, however, is that explosions can occur in at-risk areas caused by uncontrolled discharges in the form of sparks.

Unique concept:

As a rule, electrostatically conductive rubber wheels have a black tread that is chalky. Blicke has developed antistatic castors with elastic solid-rubber tyres in a non-marking grey version. The ALEV...-SG-AS series has a maximum leakage resistance of $10^7 \Omega$ as well as a hardness of 65 Shore A and does not cause any marks when in use. Particularly in industries with high hygiene requirements, enormous amounts of work and costs for cleaning can be saved.



SAFETY FIRST

ROLF HÖLLE · Head of Development and Design

How important is the design department at Blickle?

As designers, we have a key role in the product development process. We are not only responsible for the technical development; we also bear the cost responsibility for the economic manufacturing of the products. Our main tasks include, on the one hand, the development and design of new products and, on the other, the optimisation of existing products. A total of around 50 employees work in our design department, each in one of the seven specialist areas. In each specialist area, the product design is coupled to the design of the corresponding production equipment. In the

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area of classic wheel and castor design, we at Blickle rely very heavily on our internal know-how. On the other hand, in the area of new technologies, we also rely on external institutes and providers who support us with their expertise during the development process.

What special requirements apply to wheels used in intralogistics?

Every branch of industry has its own characteristics and requirements. In intralogistics, the focus is increasingly on ergonomics. At the same time, there is often a combination of manual actuation of the logistics units and towing over longer distances, which entails high dynamic requirements. Our task is to combine both and to make the operation as ergonomic as possible for the operator. Of course, there are other challenges in this industry, such as small component heights coupled with high speeds and load capacities. In addition, the wheels and castors must be extremely reliable. The logistics units are often used in three-shift operation in intralogistics. The wheels have to function maintenance-free under these conditions for between five and seven years.

What does Blickle do in particular when it comes to safety? How do you guarantee the reliability and safety of Blickle products right from the design stage?

The standard requirement for safety arises from the standards for wheels and castors, which Blickle also actively helps shape through participation in the responsible standards committees. In general, it is increasingly the case that we not only offer a product, but also that the customer wants input through joint development. In such cases, we are happy to contribute our specialised competencies and take responsibility for the result. To ensure a focus on safety right from the start, some customers, such as vehicle developers, involve us in their development process at an early stage. We are responsible not only for the developing the wheels but also the entire running gear. In this field, we are considered very competent and reliable, as we have a wide range of experience. This experience enables us to design the individual components of the running gear in such a way that it works safely in the finished application. Since we precisely know all the interrelationships in product development and production at the design stage, we can actively put safety into practice and also help shape safety practices.

What is the difference in the design of special solutions compared to series products?

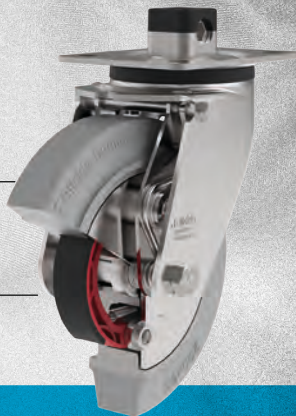
We receive almost 1,500 development orders per year, ranging from small adaptations to completely new developments. In contrast to in-house development, special solutions are customer-driven, i.e. the customer defines the desired application in the form of a specification sheet. On this basis, we design a solution for the customer. This is checked by the customer and often tested directly with samples. Overall, Blickle forms part of the customer's development chain in this respect. Series products, on the other hand, are based on the requirements of different market segments. Based on this, a new product is conceived together with our product management. Then the design is defined, typically in collaboration with an external designer, especially in the area of design and plastic castors. The resulting prototype is then further optimised in a release process by product management, sales and senior management and finally released.

What will the design department of the future look like? Where will the focus be compared to today?

For a number of years, it has been apparent that the trend is towards simulation. The classic approach of designing, building prototypes, modifying and releasing them is very time-consuming and costly. In addition to strength calculations, simulations are also used for design issues since many visual aspects can be represented quickly and reliably with 3D printers. By integrating simulations of the manufacturing processes, we can predict and calculate the behaviour of products relatively accurately. This enables us to accelerate the development process as a whole and to implement customer requirements accurately. It is becoming evident that the requirements placed on the performance of products are getting higher and higher. In the field of industrial trucks, for example, drives are growing ever more powerful. This results in higher demands on our wheels and castors in terms of speed, traction and resilience. In addition, the topic of ergonomics is being brought to the fore and the demand for running gear with optimised rolling resistance is increasing. Another trend is intelligent drive solutions. Electric drives should provide support wherever human strength is no longer sufficient.

What was your most exciting challenge?

I am always excited about the variety of application areas. We are represented in industries where you would not typically expect Blickle to be found. From hatchery facilities with a laboratory-like environment and the highest demands on the cleanliness and purity of the facilities to running gear for milking systems and storage robots that require the highest performance. Of course, the simulation and implementation of running gear with a load capacity of several hundred tons for the wind power industry was also a highlight.



Occupational safety at the highest level: Swivel and fixed castors with drum and dead man's brakes from Blickle.



Our experience enables us to design the individual components of a running gear to work safely in the finished application. Since we precisely know all the interrelationships in product development and production at the design stage, we can actively put safety into practice and also help shape safety practices.

3 THE WAY TO SUCCESS





Aviation specialist HYDRO

WE MOVE THINGS BEFORE THEY TAKE OFF

Heavy loads and harsh environments – everyday life for the maintenance, repair and assembly solutions from HYDRO and typical conditions for our heavy duty castors.

Highly resilient under the most adverse conditions

HYDRO SYSTEMS KG is a global leader in the market for machinery and equipment used to maintain, repair and assemble civil and military aircraft. HYDRO's standards are demanding as the majority of their designs need to withstand loads of several tons. In many cases, they also have to deal with high temperatures, UV radiation and rough terrain. Each individual component has to be capable of withstanding these adverse conditions.

Customised for more safety

This can also be seen in a stand for jet engines, which is used to re-install the huge turbines in the aircraft after maintenance and repair work. The equipment transports engines safely so that they are in just the right position for assembly. That makes stability just as important as manoeuvrability on an uneven surface. HYDRO was having a bit of trouble with the wheels they were using. In particular, the loss of energy due to the rolling resistance of the treads was a problem for HYDRO. The wheels deteriorated quickly and were no longer fit for their purpose.

More reliable and cost-effective than before

We developed a special twin wheel castor for HYDRO using the high-strength wheels of the GTH series. These have a super-stable wheel body made of grey cast iron and a high-quality Blickle Extrathane® polyurethane tread. Each stand uses four welded steel twin wheel castors to make sure that the heavy engines are moved safely and surely, even over uneven surfaces.

The castors are also equipped with a directional lock. The swivel head can be locked in position with a locking pin to keep things moving in the right direction. Once the stand reaches the aircraft, the swivelling castors help to position the engine with precision. The Radstop wheel brake provides extremely high brake forces to keep the stand secure and stable during assembly, even under a heavy load. This makes the work involved much easier and safer. HYDRO has been extremely impressed with the solution provided by Blickle. The castors move the engines with reliability and precision. The longer service life removes the need for lengthy and expensive setup times. In addition, Blickle was able to implement the customised production more cost-effectively than the product previously used.

COMPLETE MOBILITY



Electrically conductive variants for protection against electrostatic discharge.



Broad portfolio of heavy duty wheels and castors that can bear loads of up to 100 tons.



Blickle twin wheel castors enable manoeuvrability even in confined spaces.



With special tread mixes, wheels and castors from Blickle achieve significant noise reduction.



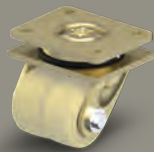
Large selection of heat- and cold-resistant wheels and castors in the temperature range from -100 °C to +600 °C.



Special series with high resistance to various chemicals and cleaning agents.



Special lightweight wheels from Blickle reduce health risks such as muscle and skeletal disorders due to pulling and pushing.



Blickle compact castors have a load capacity of up to 1,750 kg per castor with particularly low heights and wheel diameters starting at 35 mm.

Blickle wheels and castors play an important role in a number of different intralogistics processes to ensure that materials are transported efficiently, safely and reliably within a company. Wheels and castors used for this purpose are subject to a wide variety of requirements due to the significant differences between the logistical procedures in different sectors and production processes. We provide a unique range of products and have a solution for almost any application. The decision to opt for Blickle's products is based in part on "made in Germany" durability. Another factor is that Blickle wheels and castors ensure from the start that logistics processes are fast, safe (accident prevention) and cost-effective (total cost). Blickle products reduce the physical strain on operators pulling or pushing heavy loads, making logistical processes more ergonomic.



True running

Blickle directional locks ensure optimal directional stability of the cart.

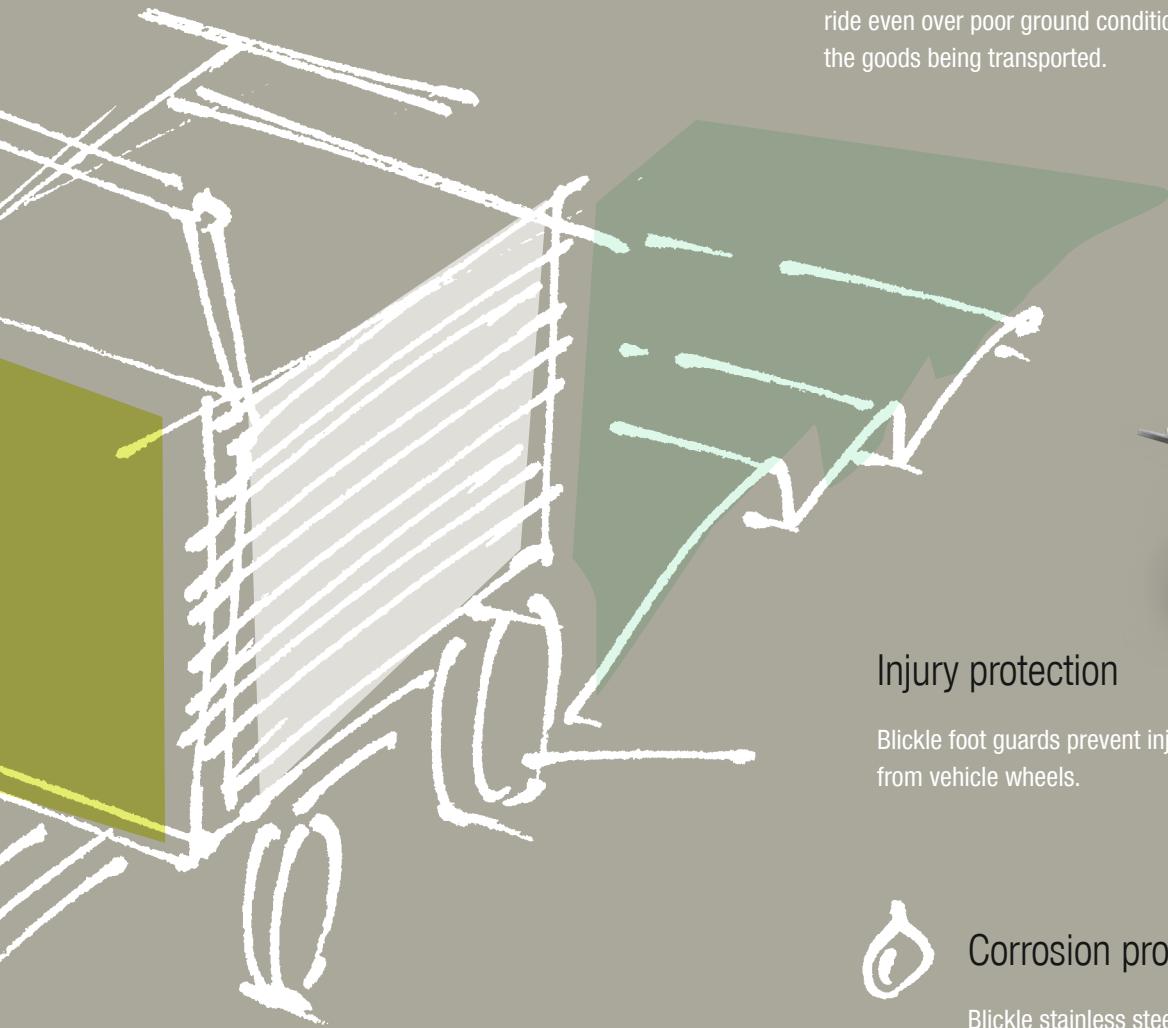
The overall quality arises from the interplay of the details: Intelligent design, high-quality material, careful workmanship and an unconditional commitment to perfection make our products so unique.

Speed

Blickle wheels and castors with a high dynamic load capacity enable a fast material flow.

Transport goods protection

Spring-loaded castors from Blickle enable a smooth ride even over poor ground conditions and thus protect the goods being transported.



Injury protection

Blickle foot guards prevent injuries from vehicle wheels.



Corrosion protection

Blickle stainless steel components and seals protect against corrosion.



Non-marking

Blickle wheels and castors with non-marking tread keep floors clean and unmarked.



Floor surface preservation

Blickle wheels and castors with lower surface pressure are particularly gentle on the floor.

Original Equipment Manufacturer

SUCCESSFUL PARTNERSHIP: WHEN COMPETENCIES MUTUALLY REINFORCE

The demands on the products are growing, the market is getting faster and at the same time the development budget is shrinking? It is high time to get a reliable, successful partner on board.

Succeeding on the market together

Both in the industrial environment and in retail, the number of self-driving transport systems in intralogistics is continuously increasing. At the same time, conventional pallet trucks are in extremely common use and still form the backbone of in-house goods transport. On the one hand, the requirements for these vehicles and thus also for the individual components are becoming ever more demanding and complex. On the other hand, development capacities and budgets are severely limited at many OEMs, and the time to market for new vehicles is getting shorter and shorter. It is all the more important to have a suitable partner at your side who has extensive know-how, is flexible and fast and on whom you can rely one hundred percent even under time pressure. With Blicke you have such a partner who provides a very large kit of standard components made from a wide variety of materials that have proven their outstanding performance in the market for many years.



For several decades we have been successfully developing a wide variety of solutions for intralogistics together with almost all OEMs in the industry. Regardless of whether the market demands ever smaller wheels with simultaneously higher loads or higher speeds with lower energy consumption, an experienced team of developers with specialists from the respective disciplines ensures that both OEMs and end users can rely on the best possible solution. Blicke is not only characterised by its enormous flexibility when it comes to optimising wheel body geometries, reducing noise emissions or creating energy-efficient tread mixtures, we also meet user needs by finding the right answers to complex questions through new development work.



BLICKLE. BEST IN

- > More than **30,000 standard products** provide the perfect solution for almost any situation.
- > **Fast and inexpensive** solutions thanks to Blicke's modular design principle.
- > Flexibility in **special solutions**: Together with you, we will develop a solution customised to the individual application.

Product
Variety

- > **A high level of vertical** integration and production at the headquarters ensure complete control over all work steps.
- > High **Blicke quality standard** by combining state-of-the-art machines with precise manual work throughout the entire production process.
- > State-of-the-art, automated production and testing facilities guarantee **high process reliability** and **"made in Germany" quality**.
- > Our products are designed for **long service lives**.

Quality
and
Production

Service

- > Fairness, loyalty, respect and trust are at the heart of **all of our interactions** with our customers, suppliers and employees.
- > **We are committed to acting responsibly** both at our headquarters in Rosenfeld and also at our international subsidiaries.
- > Recognised as a **climate-neutral company** and for **sustainable entrepreneurship**.

Responsibility



**KLIMANEUTRALES
UNTERNEHMEN**
certified by Fokus Zukunft

Cooperation

- > Decades of experience and competence in **all industries** as one of the world's leading manufacturers of wheels and castors.
- > **For us progress is a tradition**: A family company now in the 3rd generation.
- > Close customer support through network of **specialist advisors in over 120 countries** worldwide.

Innovation

- > **Intelligent drive solutions** that provide support wherever human strength is no longer sufficient (e-mobility solutions).
- > High proportion of **customer-specific solutions**.
- > Experienced, **specialised teams of experts** enable special solutions to be implemented quickly.
- > By **working with renowned scientific institutes** and universities, Blickle developers get new ideas rolling.
- > **Continuous optimisation** of the existing product range.
- > Around **1,500 successful customer-specific solutions** per year.

Delivery Performance

- > More than **24,000 different products** ready to ship in one or two days.
- > **Short delivery lead times** thanks to decentralised warehouses or direct shipment from our central warehouse in Rosenfeld.
- > First-class delivery performance thanks to a **state-of-the-art logistics centre**.

- > **Expert advice** from personal customer contacts **worldwide**.
- > Informative Blickle website with **product finder and online shop**.
- > **E-commerce and E-procurement solutions**.
- > Presence at **international trade fairs** worldwide.
- > **Blickle Academy**: Training events for employees and dealers.

If you want to be a leader in the market, you have to keep getting better. We want to be the best. For you. For your success. As a solution partner and service provider, we want to help make you successful. That is why, in addition to our extensive standard range, we attach great importance to the development of customised solutions. If a gap appears in our portfolio, we fill it.

Our vertical integration and “made in Germany” production give us complete control over the entire manufacturing process, from the material to the final assembly. We are also proud of our delivery performance. More than 24,000 different products are ready for dispatch in one to two days from one of the most modern logistics centres in the industry. Our quality standards are extremely high – in all areas!

Production: Germany. Sales: Worldwide.

We export our products to over 120 countries worldwide. With 18 directly owned sales companies in Europe, North America, Asia and Australia as well as sales partners all over the world we ensure that our international customers are well looked after.



OUR WORLD OF INTRALOGISTICS

Mobility in all channels

Discover over 30,000 mobility solutions: Request our current general catalogue or try out our product finder at www.blickle.com



For easy manoeuvrability in intralogistics

For maximum driving comfort, floor preservation and noise reduction

For maximum service times for industrial trucks

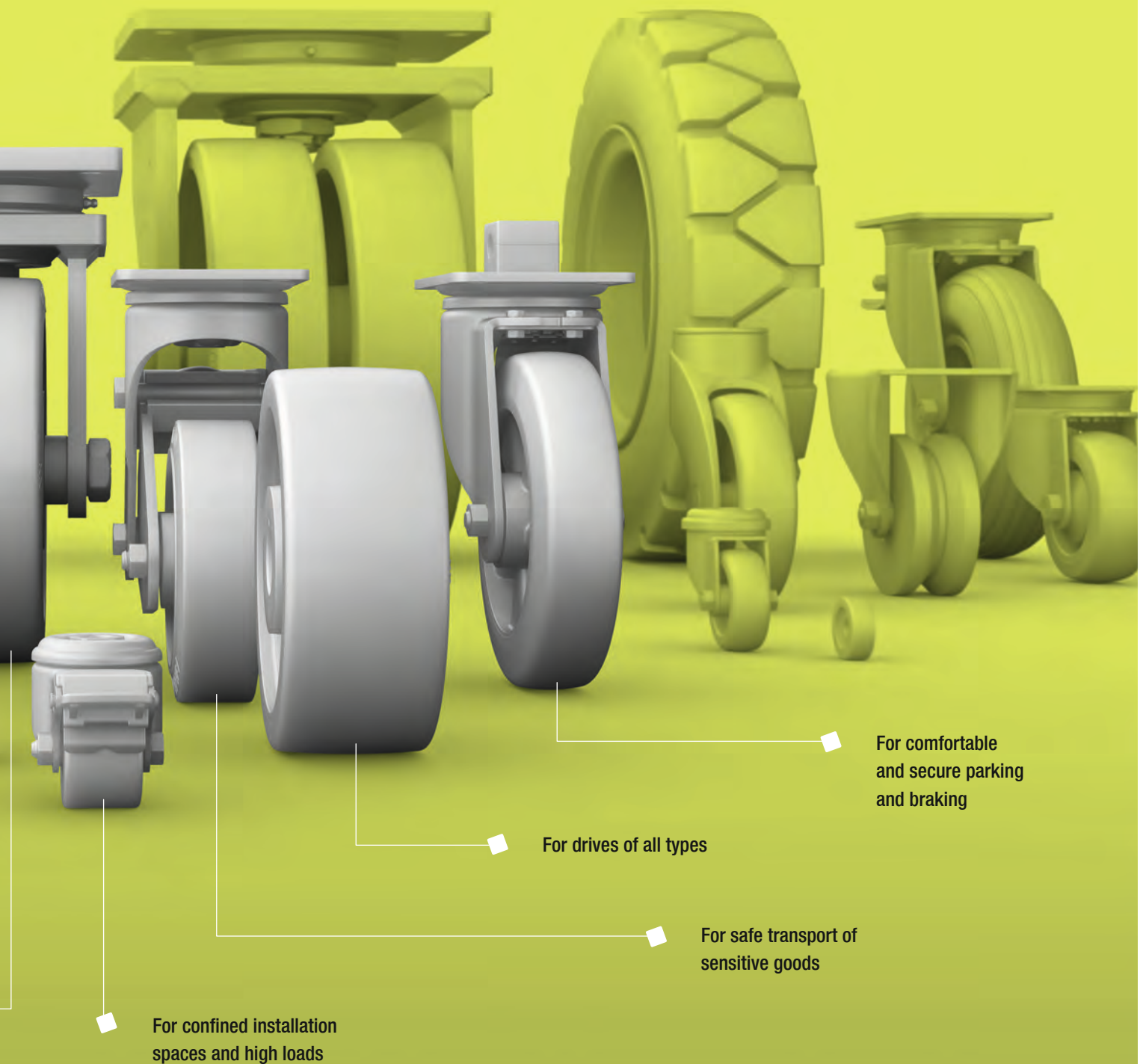
Want to know more?
Simply scan the QR code
and immerse yourself in the
Blickle world of innovations.



For especially difficult
operating conditions

Our wide range of over 30,000 standard products provides the perfect solution for almost any situation. All of our products are high-quality, maintenance free, available quickly and have a long service life, as you would expect from Blicke.

Unique solutions for intralogistics that set new standards in ergonomics, occupational safety and efficiency. With us you will definitely find something suitable for your requirements. If you can't find it in our extensive standard range, we can work together to develop a customised product for you: Customising is one of our strengths. **Because our mission is customer satisfaction.**



Moving heavy loads safely and easily

PERFECT ERGONOMICS

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Blicke ErgoMove® Product advantages:

- Electric drive, steering and braking assistance for loads of up to 4,000 kg
- Optimal running characteristics for trucks of any weight
- Comprehensive safety features
- Available 24/7
- Intuitive operation
- Plug & play