



SAFETY ON ANY TERRAIN



STEERING AHEAD

The Mission of the Willi Elbe Group

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Comprehensive development expertise, constantly up-to-date operational management, and state-of-the-art production. Discover here how the Willi Elbe Group is successfully steering its fortunes for new standards in mobility. Together with you – and for your objectives.



Ever higher requirements placed on automobiles, new vehicle generations and cross-functional platforms. Innovative technologies are opening up new potential. Together with its markets, the Willi Elbe Group is steering a clear course as it steers its fortunes – straight ahead! With precisely targeted ideas and the readiness to continually develop and improve, we never stop moving. “Safety on any Terrain” – that’s what products from the Willi Elbe Group guarantee, both now and in the future.

Our core competence is steering technology. In addition to drive line technology and cold-forming technology, it’s a sector where we’re paving the way by constantly setting new standards. The broad-based development expertise of the Willi Elbe Group rests on more than 60 years of success in the automotive

industry, which all began with the production of propshafts and unit packs. Whatever is involved – prototypes or mass production, system components or the complete steering modul, and whether it’s for passenger vehicles, trucks, buses, agricultural machines or motorcycles: as a cross-functional partner, the Willi Elbe Group meets and masters all kinds of different challenges. Our role as a first tier supplier for leading carmakers is one that we interpret in a consistent and cooperative way. In addition to auditing, our process coordination is customer-oriented. Our corporate structure is a guarantee for long-term partnerships, and is specially tailored to suit today’s ever shorter innovation cycles. As a result, we develop advanced steering modules for groundbreaking new platform concepts in the automotive industry.



Continuous progress: Steering technology from the Willi Elbe Group satisfies the steadily increasing requirements of carmakers.

STEERING POWER

The Willi Elbe Group for Utility Vehicles

Even far away from rails, air and water, mobility has all kinds of different facets and aspects – which is why the Willi Elbe Group produces innovative steering technology for a highly diverse range of vehicles. Products include: height and angular-adjustable steering columns with manual, hydraulic or pneumatic activation. The portfolio also includes intermediate shafts with spline profiles or ball-bearing guided length compensation in single or double telescopic design. One major highlight is the pneumatically activated comfort steering column with its far-reaching adjustment. It area makes it far easier to enter and exit the vehicle, creates generous storage areas and a comfortable seat position, and also increases available space during rest periods. Drivers benefit from excellent ergonomics and above-average comfort.

At the same time the company manufactures complete intermediate shafts, including all bearing units for longest service life under the toughest of daily

conditions – e.g. on construction sites and in agriculture. After all, tractors and forklift trucks frequently operate away from asphalt surfaces and exert special stress on each of their components. Additionally, steering modules from the Willi Elbe Group ensure comfortable travel in busses.

State-of-the-art tools and advanced technologies can be found everywhere at the Willi Elbe Group. In addition to NVH optimization – via modification of stiffness and damping - networked 3D-CAD and PDM workstations are also used here. Computer-aided systems for production planning also mean maximum delivery reliability.

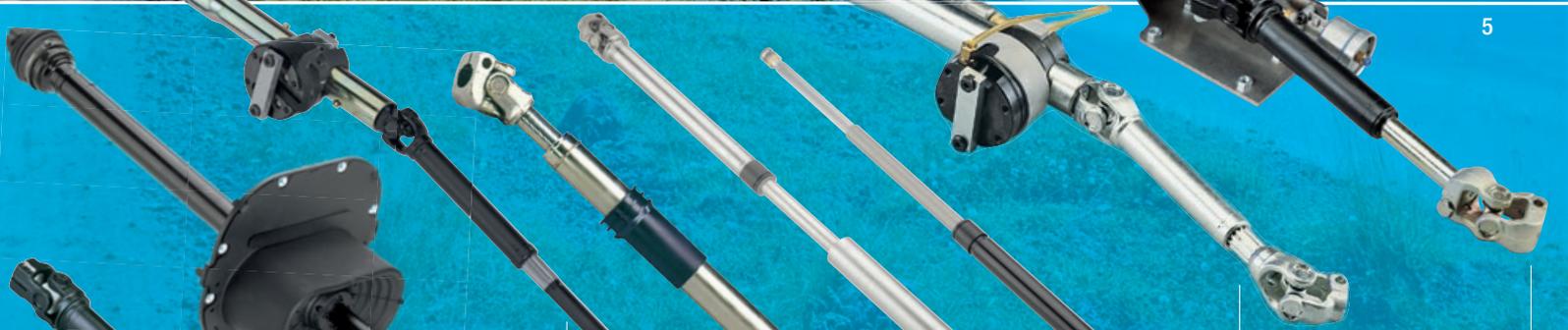
The same standards apply to product quality: the basis here is provided by pathbreaking technologies and by materials that have been optimized with total precision and then reliably tested for long-term, heavy-duty operation under real-life conditions.



Comfort steering column

Far reaching adjustment area
Pneumatic activation

Maximum load and the most rapid reaction times. Mobility on the cutting edge of the feasible. Mastering the challenges posed by heavy loads weighing several tonnes, unbelievable gradients and tough environmental conditions. Experience the steering and brain power of the Willi Elbe Group when applied to utility vehicles.



Intermediate steering shaft
Multi-component steering shaft
Spherical bearing

Intermediate steering shaft
Constant velocity joint
Cab sealing

Manual adjustable steering column
Length and height-adjustable with intermediate steering shaft

Intermediate steering shaft
Single-telescopic
Ball-bearing-guided length compensation

Intermediate steering shaft
Double-telescopic
Ball-bearing-guided length compensation

Hydraulic adjustable steering column
Length and height-adjustable with intermediate steering shaft

Pneumatic adjustable steering column
Length and height-adjustable with intermediate steering shaft

STEERING TOGETHER

Organization of the Willi Elbe Group



6 Headquarters in Tamm

Areas of expertise:

Central administration
Product creation and validation
Procurement and sales
controlling and finances
Steering technology - utility
vehicles
11,000 sq m



Pfedelbach factory

Areas of expertise:

Steering technology – passenger vehicles
Complex steering-column /
intermediate shaft assembly
Metalworking
Laser welding technology
Gearing technology
11,000 sq m



Rippershausen factory

Areas of expertise:

Steering columns – utility vehicles
Metalworking
Hydroforming
Plastic injection molding technology
Gearing technology
Tube forming technology
Laser welding technology
10,000 sq m

A solid corporate base. Intercultural know-how and international synergies. Decentralized production in Europe, enabling a combination of high-end quality and full flexibility. Find out how the individual but nevertheless cross-linked sites of the Willi Elbe Group focus steering power and thinking power for success.

Tamm – Tamm, near Stuttgart, is the central base and headquarters of the Willi Elbe Group. The currently 700 associates throughout the company are all connected and coordinated via short distances. This is where all the sequences at the company's different sites come together. Capacity is also created here for the other four divisions of the company: "Research & Development", "Materials Management & Sales", "Production & Processes" and "Finances & Resources". The other four production plants of the Willi Elbe Group are powerful manufacturing centers with highly individual competencies. These are structured according to customization aspects, with special areas of expertise at each site. Perfect interplay guarantees success.

Pfedelbach – The location in Pfedelbach is the state-of-the-art steering-column assembly center, which also includes metalworking. Synergies are constantly created here between highly complex, highly automated and high-tech production.

Rippershausen – The focus here from the very start was on vertical integration, and on the development of new production processes. The factory today has access to state-of-the-art equipment.

Grabs – While the other factories create tailor-made steering technology, the small and highly experienced team at the company's Grabs plant in

Switzerland focuses on drive technology, with which the Willi Elbe Group has a historical link.

Raufoss – With the acquisition of a Norwegian competitor in 2001, the Willi Elbe Group is continuing to establish itself in the development of lightweight design. Now, more than ten years after the takeover and with a clear commitment to "lightweight design", this is being consistently continued.

Nanjing – The Nanjing site enables "local content" to be offered on the important Chinese market as well. The plant therefore safeguards sustainable and long-term customer relations.



Grabs factory



Areas of expertise:
Steering columns – tractors
Prop shafts for mechanical engineering and drive technology
Metalworking
Welding technology
2,000 sq m

Raufoss factory



Areas of expertise:
Cold forming technology with automatic robot placement and integrated heat treatment
4,000 sq m

Nanjing factory



Areas of expertise:
Steering technology – passenger vehicles

STEERING FORWARD

New structures at the Willi Elbe Group

Optimizing details while improving the whole. Being open to new trends. Seeing tradition as a duty in order to keep developing. The Willi Elbe Group is paving the way, steering you down new paths toward efficiency and productivity.

Less weight for reduced consumption – today this claim applies to almost every component in a vehicle. Just as decisive where efficient mobility is concerned are lean structures, in all companies participating in the automotive value chain.

In 2008, inspired by the example set by its customers and partners – leading manufacturers of trucks, passenger cars and other types of vehicles – the Willi Elbe Group restructured its organization. The newly created areas of expertise can now work together with more synergies than ever before. The interaction between product development, process

development and production is especially beneficial in this regard.

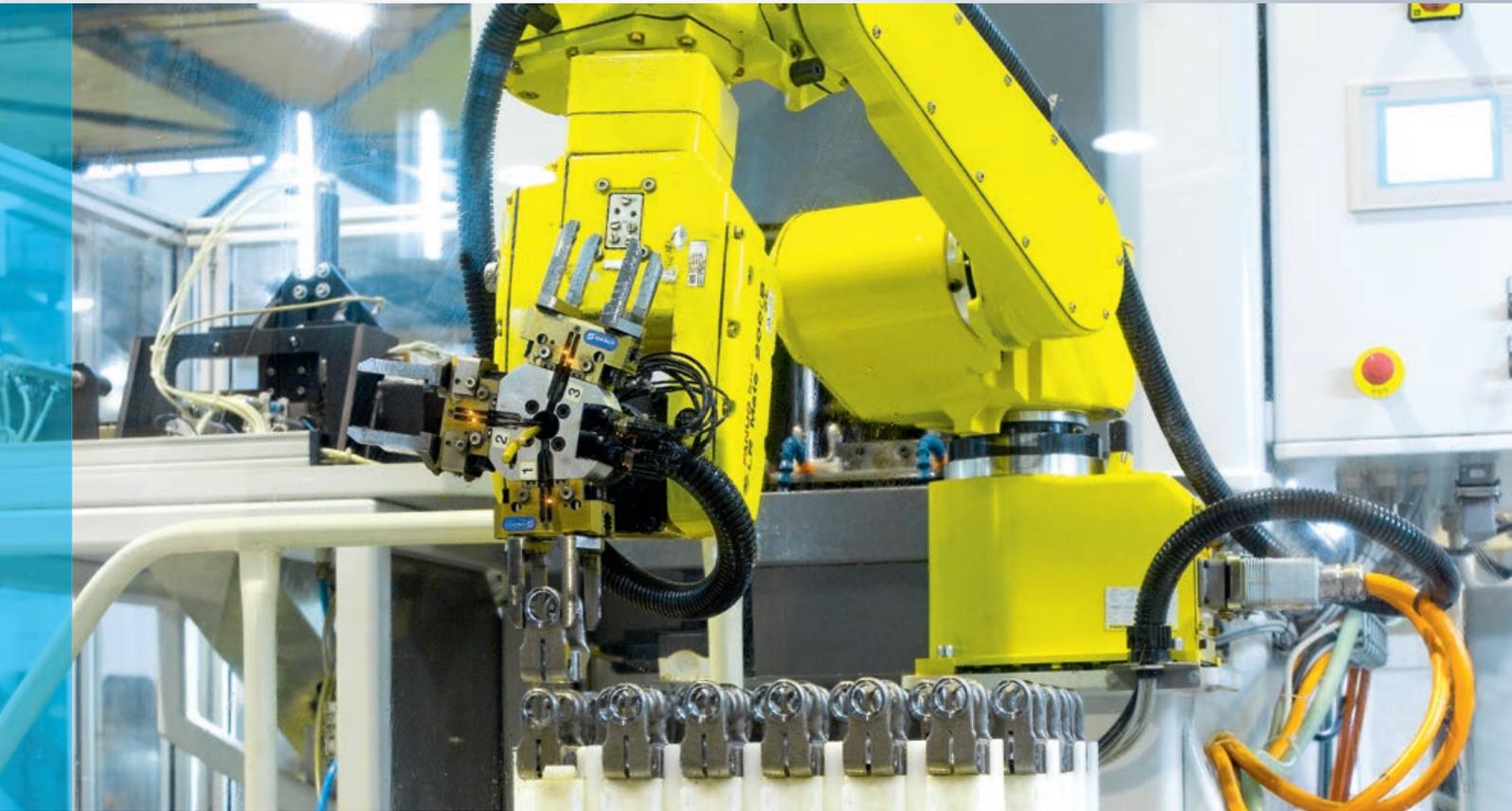
After all, integrated processes are essential. The Willi Elbe Group realizes them – from conceptualization, simulation, finite elements and calculations to crash simulations, bench testing and series-production readiness. With fully integrated production planning, the amount the company produces itself is exceptionally high. Numerous quality-relevant processes are realized in-house, such as forging, welding and processing technology, plus assembly work. All of this results in single-source solutions.



Complete production of modular components in sets



Mechanical production as part of consistently lean production



Fully automated
mechanical production

Pre-assembly of steering
column components

Final assembly of steering columns

STEERING QUALITY

Quality at the Willi Elbe Group



10 Dynamic durability testing



Geometrical measuring capability



Characteristic valve monitoring during series production for modular intermediate shafts

Guaranteeing highest product quality. Driving reliability all the time, everywhere, also in the long term. With advanced tools and uniform standards. The Willi Elbe Group represents this kind of thinking – and realizes efficient quality assurance that reflects the technological state of the art.

The Willi Elbe Group is certified to ISO TS 16949 and, as part of comprehensive quality assurance, has an integrated CAQ system of modular design. This covers numerous different facets ranging from implementation of a zero-error strategy, risk evaluation and supplier management to the continuous improvement process (CIP). The development and material process is also accompanied by precision action tracking.

With active error prevention based on the CAQ system, the Willi Elbe Group and all its customers benefit

from higher profitability and efficiency. This is further enhanced by paperless documentation, and archiving of all relevant data and documents. Customer requirements are met with special efficiency and economic effectiveness.

When it comes to quality, regardless of all the technology it is the employees who are the decisive factor. It is their commitment, competence and expertise that define the company's high standards. This starts with high precision and concentration in design and planning, together with precision in production – and

continues even after the component is in successful operation at the customer. This is because products from the Willi Elbe Group have to prove themselves in practice on a daily basis – and they do! The fact is that anyone who is active for the world's leading vehicle manufacturers can set benchmarks where quality is concerned.



Product validation under environmental influences



Statistical confirmation of durability parameters



More information on products and solutions for passenger vehicles can be found in the brochure „Safety on every curve“.



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