



TireTech Group



**Tire Building Machines
Engineering & Services**



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HF TireTech Group

Quality, competence and experience: Our profile for your success

We are innovators with body and soul. We developed the first machines for the rubber industry more than 150 years ago. Today, we are a global leader in pioneering the technical development of systems and machinery for the manufacture of tires and technical rubber goods. We provide high technology competence in all business units. The HF TireTech Group provides a range of technologies for all production steps in tire manufacturing and rubber

processing – from planning, design engineering, manufacturing, commissioning, right up to the complete maintenance of your systems: always tailored to your needs. We are constantly refining our components so that even following the initial purchase our machines will always be technically at the cutting edge. We are interested in long-term relationships with our customers: One team powered by commitment, keeping what we promise.



Team & Philosophy
from page 4

We have one mission: Our customers should be able to choose our machines with total confidence, now and for the future. We master challenges as a team and we place the highest value on the latest technology.



Engineering
from page 6

We know every inch of our machines, from the very first idea up to their delivery to our customers. We never lose contact and our customers value our intelligent design and service principles.



Assembly & Operation
from page 10

All key components are developed in our factory in Hamburg. Our machines are built and tested here by our highly skilled staff and then accompanied by our experts to our customers' plants.



Innovations & Benefits
from page 12

There are lots of highlights when it comes to our tire building machines. We never stop developing solutions for the future and providing our customers with minimal total cost of ownership.

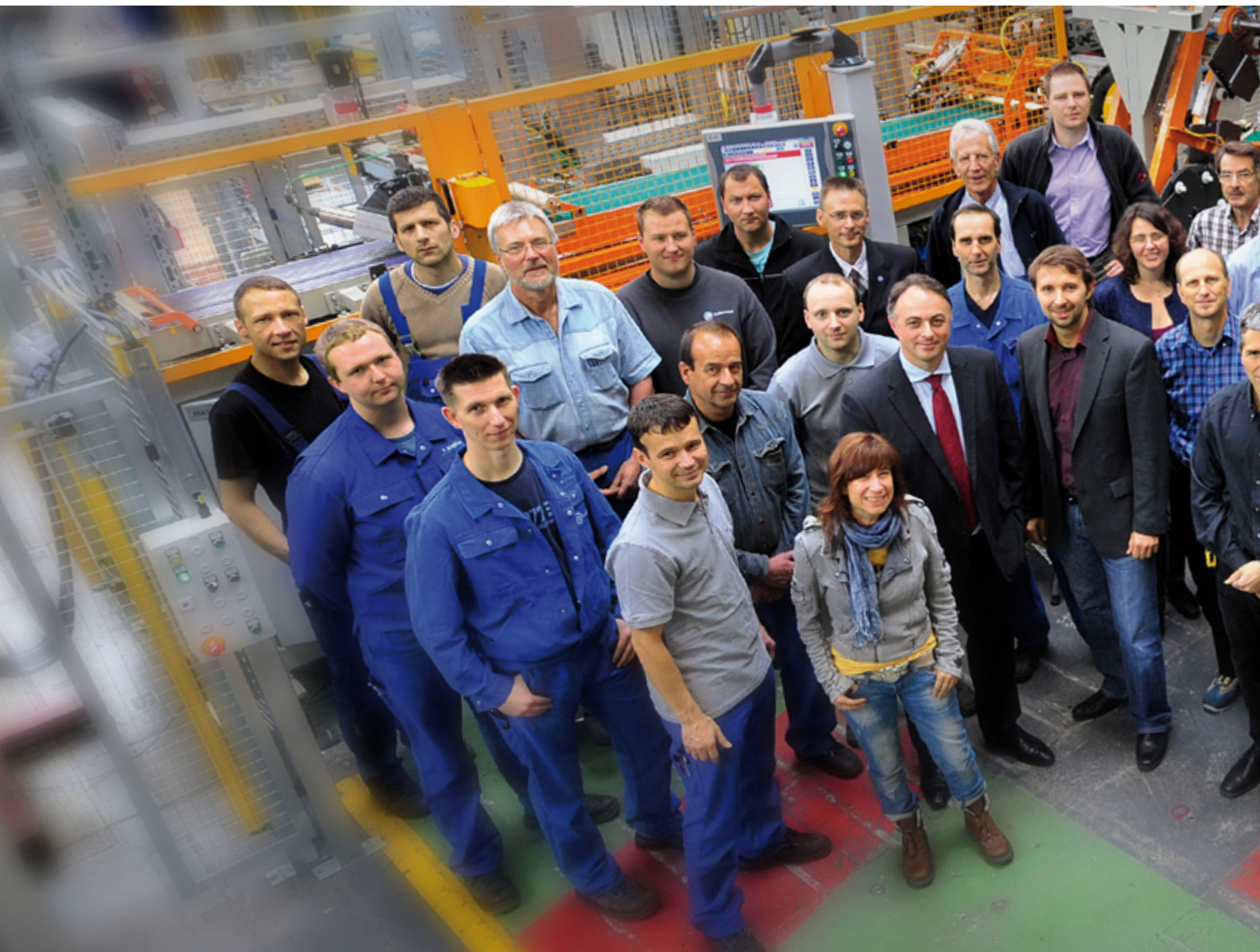


Service
from page 16

365 days a year, 24 hours a day – we guarantee our customers worldwide support, day and night.

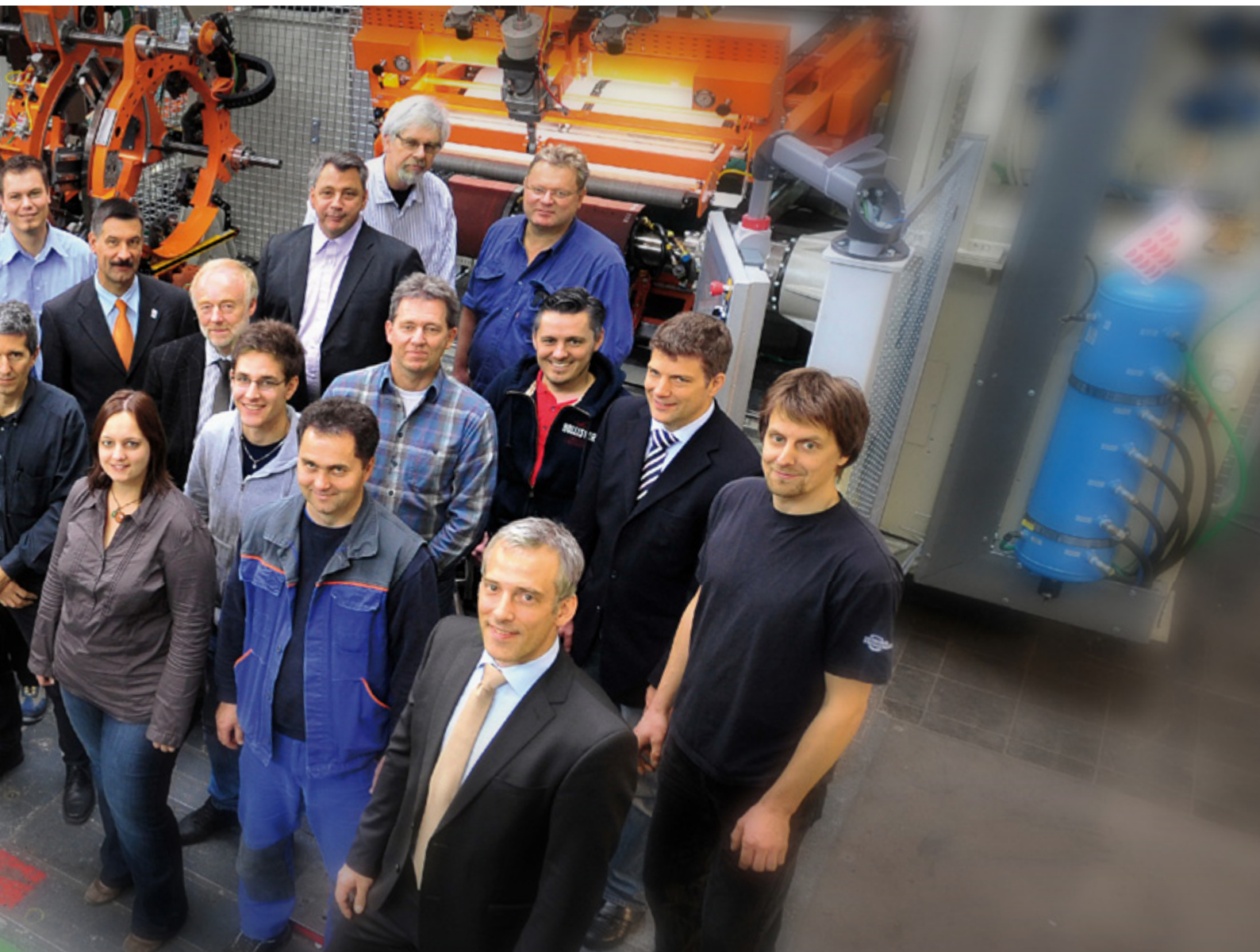
High performance

Tire building machines with assurances for the future



Our machines achieve an optimal balance of high quality requirements with increasing output demands. The quality assurance requirements placed on tire manufacturers by the automotive industry have been increasing for years. At the same time, the demand for increasing product output remains unrelenting. Together with our customers all over the

world we have faced up to these challenges and, for decades now, have been developing machines in modular design which are easy to operate and simple to maintain. Regular updates, and the option of adding functional modules, ensure that our machines are also well equipped to meet the high demands that may be placed upon them in the future.



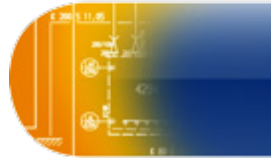
The know-how, the creativity and the enthusiasm of all our employees are our greatest resources. These highly motivated people are the key to our success. Everybody in our team is aware of their responsibility to satisfy our customers. We have lean structures which enable us to react quickly. Our mission can only be accomplished through teamwork and this

has brought us to the pinnacle of the tire-technology-evolution. Our customers can count on us. Our developments are always one step ahead of the rest, making us one of the most copied companies within our industry and our partners well prepared for the future.

We love details

Engineering with body and soul

There is no challenge we won't rise to. We have been in this business for over 150 years now and we still take great pride in the moment when the machine is assembled for the first time.



Our engineering principles

Intelligent and modular

Our speciality:

Tailor-made systems

We are number one when it comes to customized tire building machines for the production of high value added tires. We are able to tailor-make our machines based on intelligent construction principles and advanced building block systems. We create and build our key components and protect our inventions through patents. We know every detail of our machines because we invented them. Both our products and services are high-class.

Technical advancement is one of the cornerstones of our company philosophy. We regularly invest in improving our products. Our R&D consistently exceeds 5% of our turnover. When it comes to the field of innovation and in setting new standards in machines engineering, we have ranked as one of the industry pioneers for decades.

We are proud of our engineers who, through their enormous wealth of experience and expertise in rubber and tire technology, inspire the HF TireTech Group every day, developing new ideas and improving on those we already have. We place great value on a diverse pool of knowledge and a lively exchange of ideas, which is why our design team is composed of "bright young things" and experienced engineers.

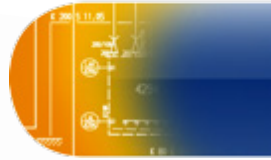
Innovative concepts are individually devised and developed in the team and then incorporated into the product series.

We do not just rest on our laurels. We have made a conscious decision to regularly employ university students so that we can always remain up-to-date and have continuity in sharing the knowledge for the future.



Through our decentralised design and the distribution of various modules into different control cabinets and separate pneumatics, any faults can be located immediately, start-up is much faster and the machine configuration remains flexible. We believe in development, which is why our machines have a modular design. The development, design, detailing and drafting of the tire building machines is conducted using state-of-the-art 3D CAD calculations use the Finite Element Method.

Our focus is on the next generation and their needs which is why we provide our machines with PLC, for example – a barcode guides to all information regarding material and processing and which can be accessed at any time. The tire industry is increasingly calling for the disclosure of this information in the context of product liability. We – and therefore also our customers – are already equipped today for the future demands of the automotive industry.



SmartMotion

Our HMI software is instinctive

The benefits of HF's HMI

- easy to use 2-D navigation
- integrated user manager
- recipe manager
- parameter manager
- servo diagnostics
- guided step sequencer diagnostics
- timeout diagnostics
- CCD-Camera diagnostics
- filterable alarms
- multi-lingual
- recipe structure (green tire code, machine parameters...)
- parameter change logger
- up to 5 independent HMI panels
- 19" panels
- programmed calibration routines

Pros

- + Control System – One source solution
- + Safety PLC – Guard Logix
- + Quick dimension change



When we invented our patented SmartMotion process our goals were clear: We wanted to make our machines at least 10% faster without reducing the quality of tire assembly. What we have actually achieved is an overall increased tire output of up to 20% (depending on machine type) with the same quality of tire assembly.

Using the same PLC hardware with a Rockwell HMI solution and the same recipe structure we have successfully reduced the overall "tire cycle time" by minimizing the internal system communication time. The servo motors move more smoothly, there is no jerking and there is less vibration. These factors together mean less maintenance on the machines.

SmartMotion is also available as an ideal product for upgrading older tire building machines. We can offer this upgrade at a very reasonable price so that the return on investment can be achieved within 2 years.

Quality assurance from the very beginning

Reliability and accuracy are our mottos



Nothing is as important to us than our relationship with our customers. This is why we have optimised our services to such an extent that we can guarantee the smooth running of each of our machines. Before a machine leaves our factory, it is subjected to a strict inspection protocol. Only then, when the machine is approved, do we ship it to our customers, where it is assembled and tested a second

time. These essential expert assessments are performed by our engineers who are able to guarantee the absolute accuracy of the machine thanks to the inspection protocol.

The assembly and maintenance is performed by our well-trained, internal and external technicians who all have expert knowledge on all types of our tire

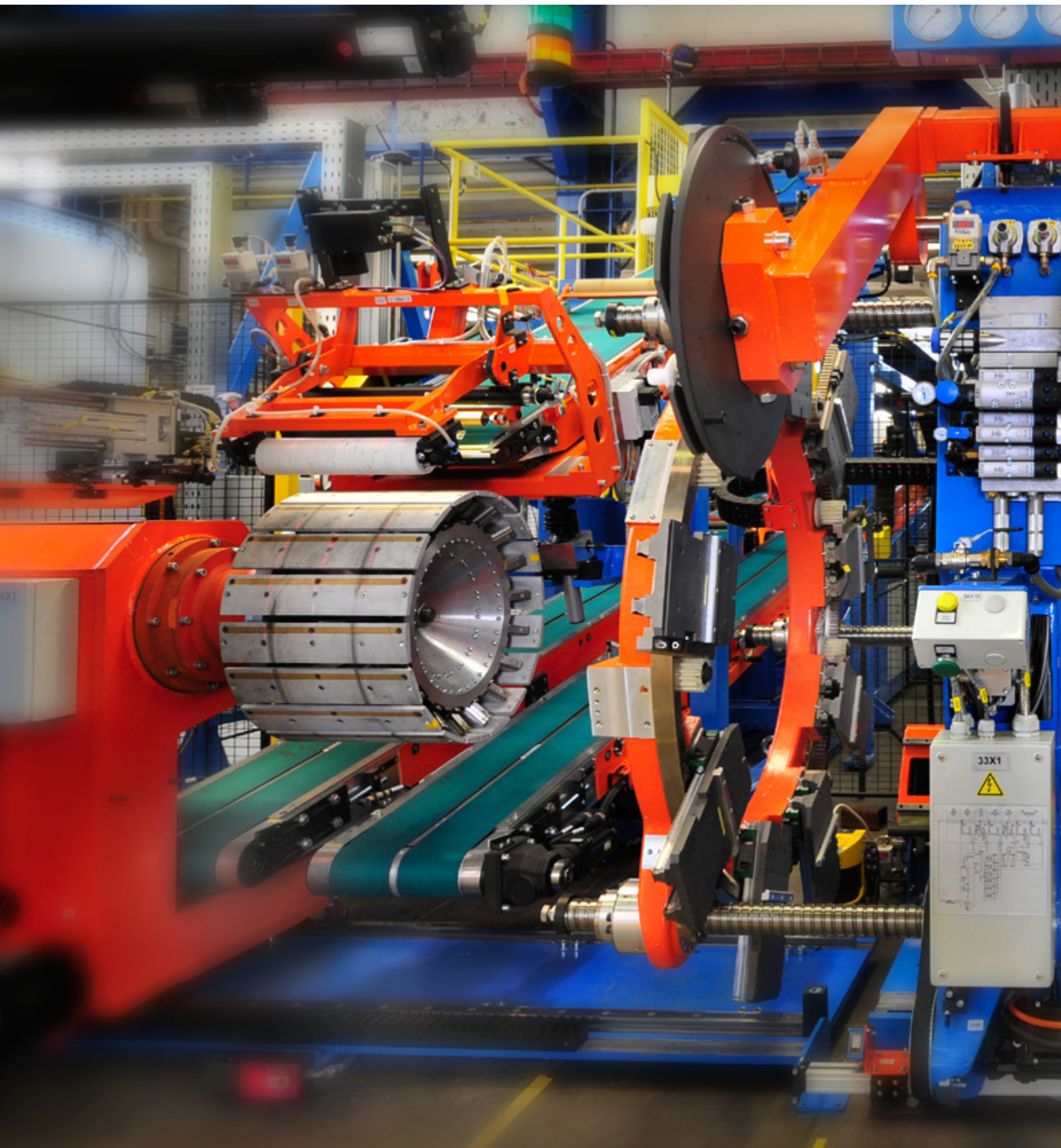


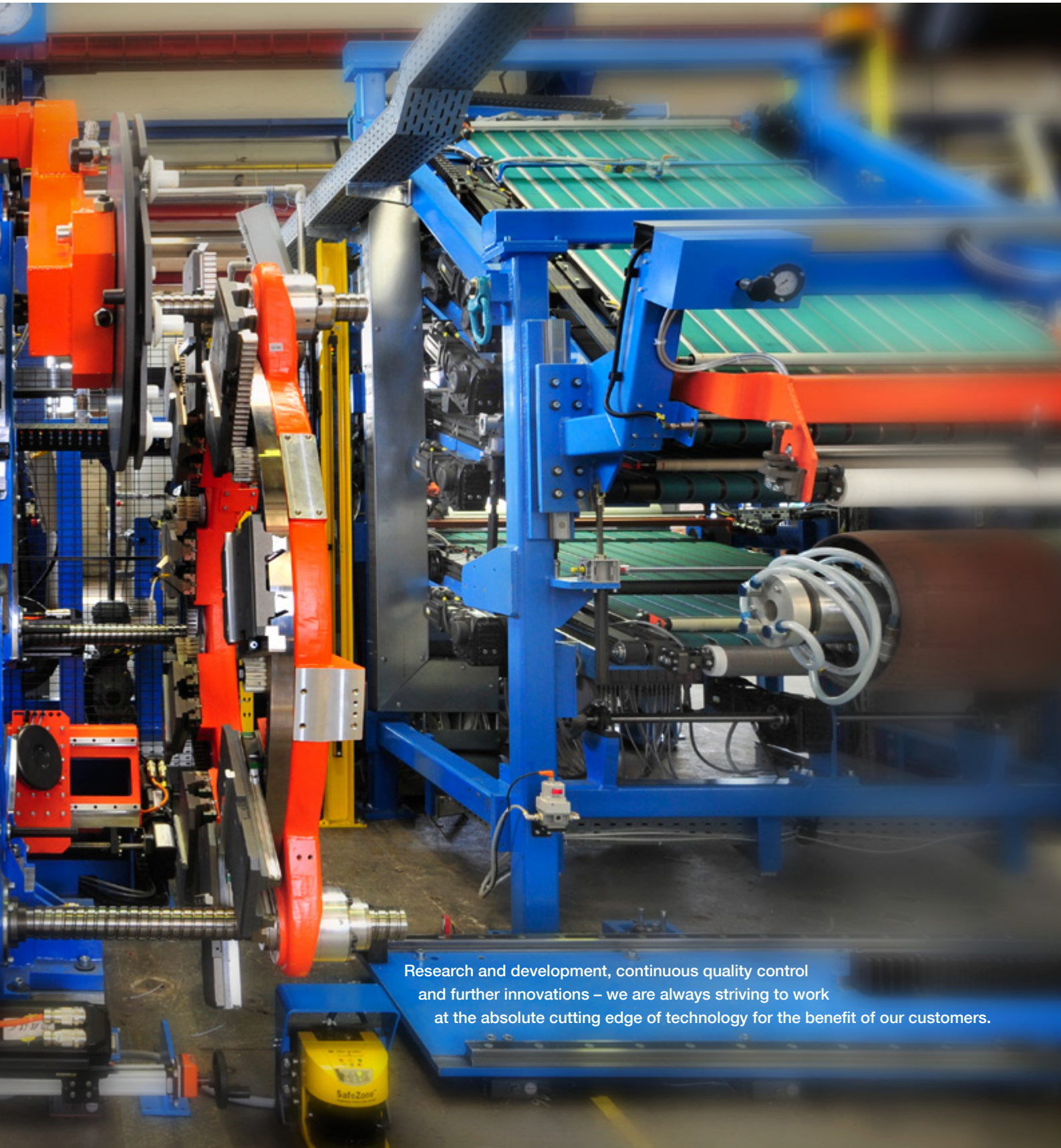
building machines, have been trained in laser alignment technology and have been given instruction on latest safety regulations. Our installation teams operate all over the world and receive regular training in Hamburg. We are well-known for our speed and our effectiveness while still maintaining a consistently high standard, and – the most important thing: We enjoy what we do! Our demands are extremely high,

which is why we manufacture and assemble the core components in our own factory. We know every detail of our machines, from the day they were first created on the drawing board. We unconditionally align ourselves with our customers' demands and are only satisfied when our customers are satisfied.

Our drive is our common success

The next generation of HF TBMs
PLT2-SD/14in-24in





Research and development, continuous quality control and further innovations – we are always striving to work at the absolute cutting edge of technology for the benefit of our customers.

What's new?

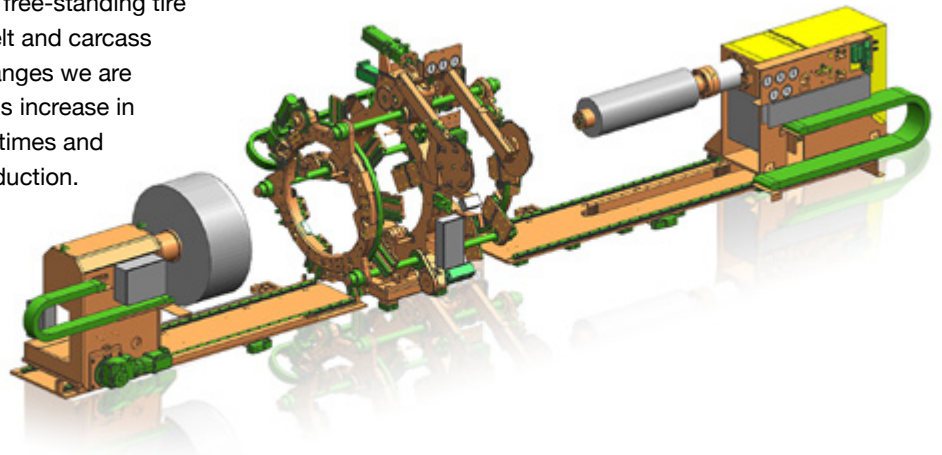
Innovations & Benefits

PLT2-SD/14in-24in

A brief look at our innovations

Following in-house testing, research and development, our engineers have developed a new machine concept.

The new idea is based on a free-standing tire building ring and moving belt and carcass drums. Thanks to these changes we are able to achieve an enormous increase in performance; shorter cycle times and therefore increased tire production.



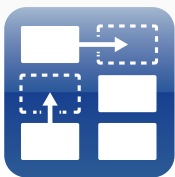
HF is your best option

Here are a few reasons why

- Tailor made units, special features for the individual requirements of our customers
- Flexible, modular design
- Fully-automated machines for standard tires up to the production of high and ultra-high-performance (assuming that standard tires are produced fully automatically)
- Production output of up to 1600 green tires per day
- Short tooling change times
- Adaptable through the option of functional modules
- Ease of operation and maintenance
- Low maintenance costs
- Long-lasting, solid design
- Top service worldwide
- Splice measuring system
- Shuttle let-offs
- SmartMotion (reduced cycle time = increased output)
- Environmentally friendly
- Automatic height adjustment
- Quick dimension change
- Green tire unloading systems
- Optional robot for bead setting and green tire unloading



Advantages of our tire building machines



Modular building block system



Adaptable through the option of functional modules



Fully-automated machines for standard tires up to the production of high and ultra-high-performance tires for particular needs*



Ease of operation and maintenance



Production output of up to 1600 green tires per day*



Low maintenance costs



Reduced production downtime thanks to material storage systems and easy tooling changes



Long-lasting, solid design

Info

More information and detailed Fact Sheets on our machines are available on our website

hf-tiretechgroup.com/de/service/downloads

* assuming that standard tires are produced fully automatically

Never standing still

24/7 worldwide and multi-lingual service

We provide solutions



Our 24-hour service makes sure that our machines never stop running. An HF specialist is always close by to offer assistance, reassurance and solutions. Our customers can depend on us.

Service



Service you can rely on – 24 hours a day

Supplier integrity

Our customers can rely on our machines 24 hours a day, seven days a week. Our machines are considered extremely reliable and very low-maintenance in every respect, provided that all wear parts are inspected on a regular basis and exchanged in time when necessary. We are constantly working on improvements and the optimisation of our components so that our machines will remain technically at the cutting edge. We have locations around the world

so that an HF specialist is close by whenever needed, knowing everything about the machine and speaking the local language. In addition, we also offer a long-term guaranteed spare parts service for all components.

The outstanding level of expertise that our customers gain with us as a service partner ensures our machines keep on functioning and delivering excellent results on a continuous basis.

24/7-Hotline: Tel.: +49 (0)40 77 179-270

Our spare parts

Genuine, precise fit, long-lasting and available for decades



We guarantee to supply our machines with spare parts for many years to come. Essential wear parts are mainly manufactured in our factory in Hamburg. These quality parts are designed to be particularly long-lasting and high-performance so that the functionality of our machines is guaranteed over the entire life cycle.

By the way, we don't just supply spare parts for our own machines, we are also able to supply spare parts for other manufacturers' machines.



Maintenance / upgrades

Always up-to-date - with professional maintenance and machine optimisation

We provide more than just support in machine design, assembly and commissioning.

We offer a wide-range of maintenance and optimisation services, particularly during running operations. Our team of experts provide quality analysis of our machines as an integral part of the regular

inspection work and are able to target any weak areas revealed by these results and draw up the necessary measures required for optimising processes.

Our report also identifies where our machines are suitable for new applications or which measures are necessary for upgrading.

Our service examines whether ...

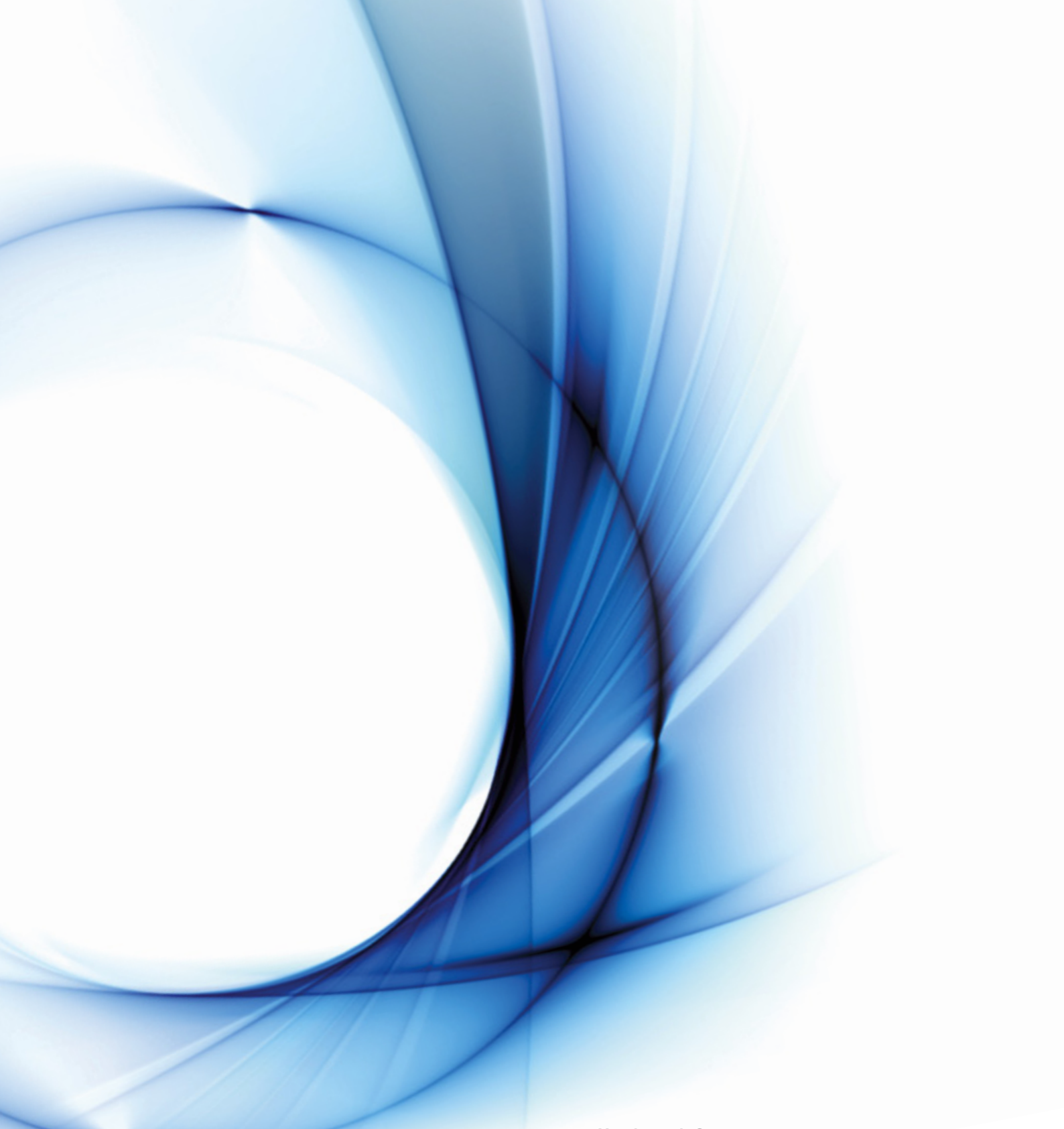
- energy savings are possible
- our system is working in an environmentally-friendly manner
- enhanced production performance is possible or what adjustments and upgrades may lead to an increase in output

Our service conducts ...

- quality analysis and provides suggestions for improvement
- optimisation of our machines regarding procedures and processes

Our service develops ...

- concepts regarding the exchange or upgrading of individual components or for improving process management
- the relationship with our customers – this is always our utmost priority, therefore it is our focus every day



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