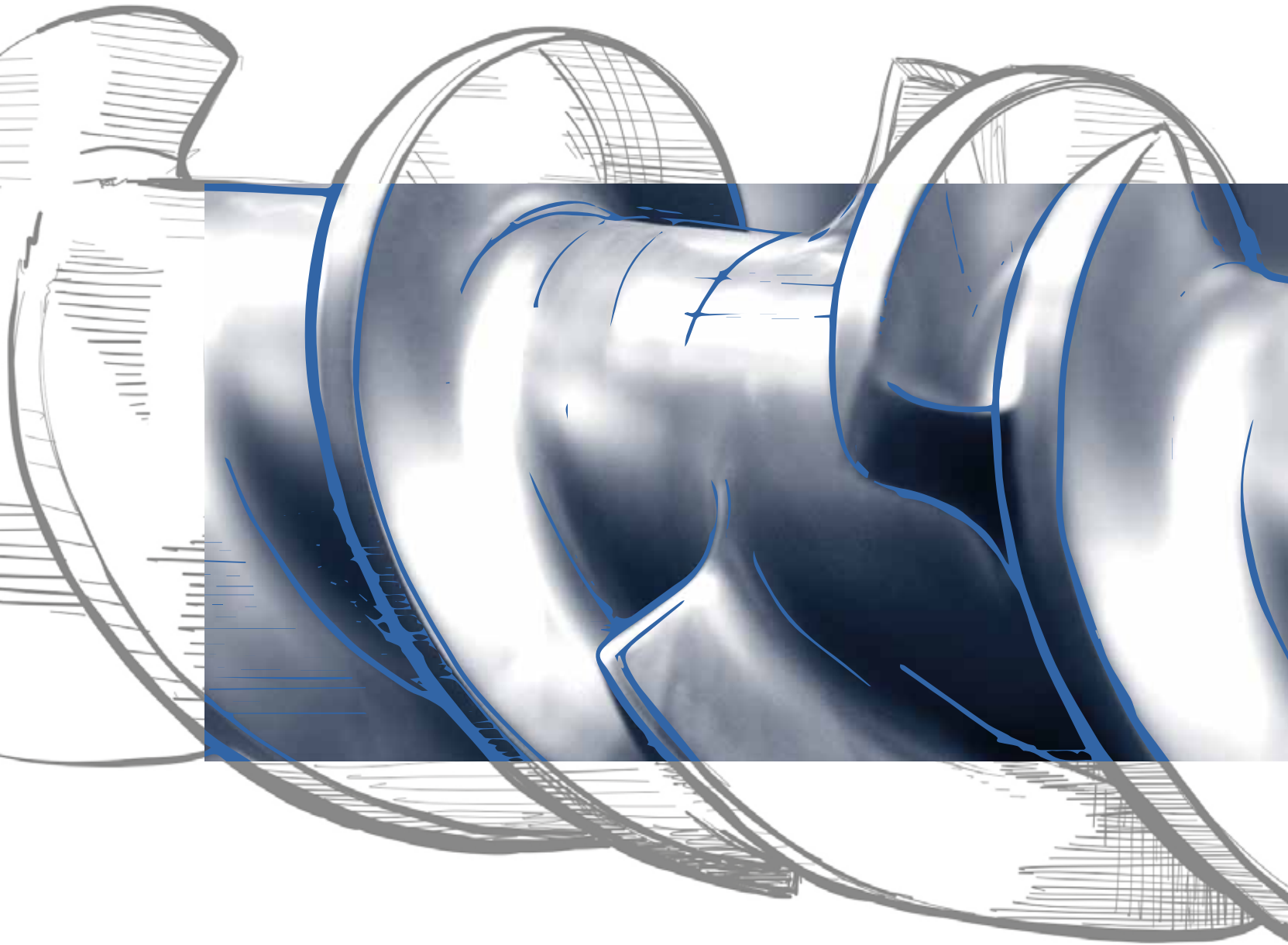
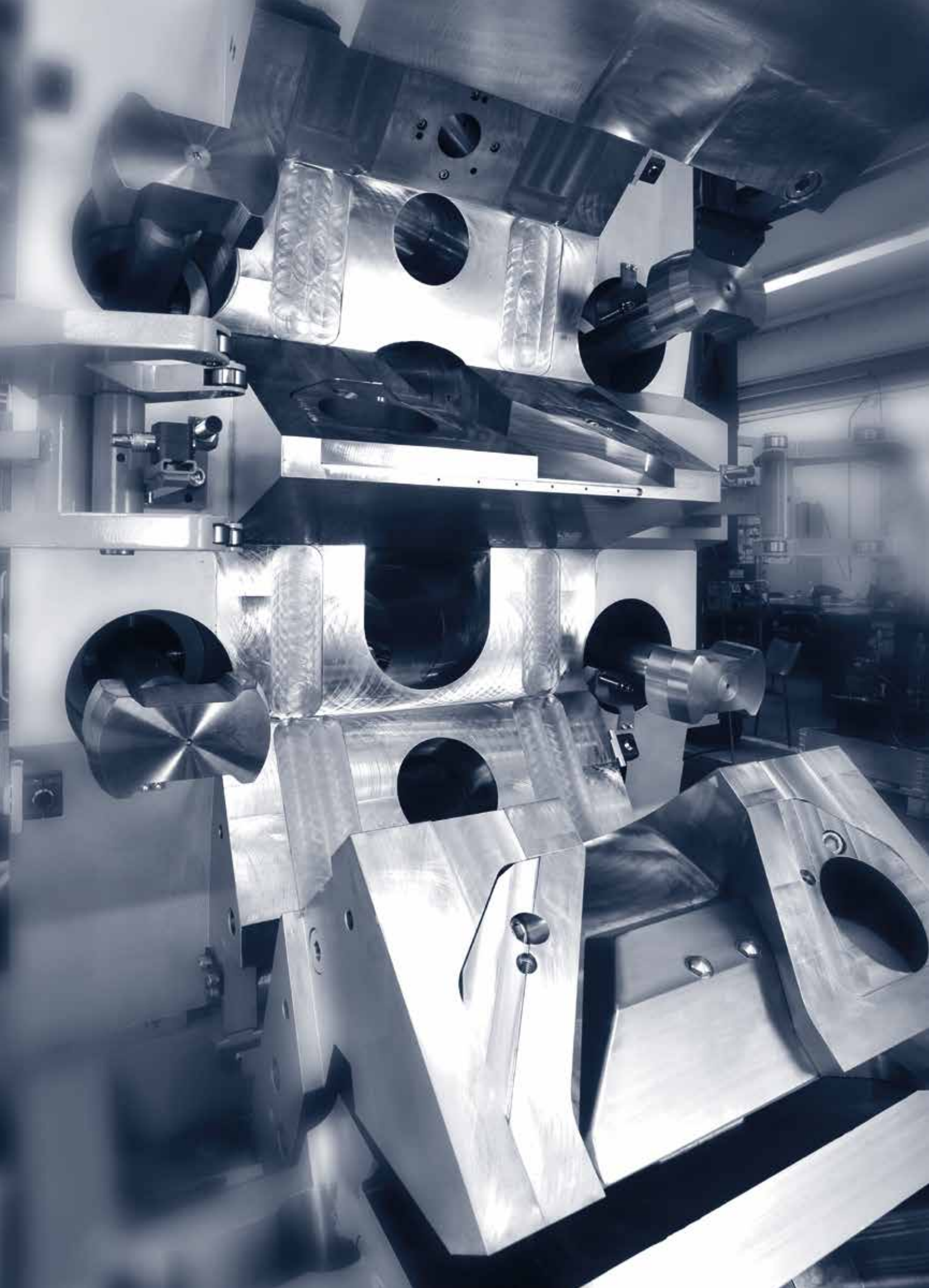


# Extrusion Technology



**TireTech Group**

*Performance. Passion. Partnership.  
Innovative Engineering since 1855.*



# HF – your reliable partner for your tire manufacturing process

For more than 160 years, HF, located in Hamburg, Germany, has been an engineering and manufacturing company specialized in custom designs and high quality. Historically, HF has always focused on engineering, dedicated solutions, and integrated production, resulting in reliable equipment with process know-how.

For decades, HF has focused on delivering customized solutions to the tire industry, and today delivers a complete portfolio of mixing, extrusion, tire building, and curing solutions worldwide! Our global customers are using their long-lasting HF equipment to produce top quality tires under the most efficient and cost competitive conditions.

HF is fully owned by the L. Possehl & Co. mbH, a group of over 150 medium-sized industrial companies located around the world. Each company is encouraged to preserve and maintain its unique identity and to continue to develop independently within the Possehl Group. **As a successful and widely diversified Group since 1847, the Possehl name stands for entrepreneurship, tradition, and responsibility.**

An important part of our corporate culture is the Possehl Foundation. The Possehl Foundation was created after Emil Possehl (son of the original founder of the Possehl Group) passed away in 1919. His last will & testament formed the foundation to ensure that attention would continue to be paid to the improvement of the community, historical buildings, and to the education of youth.

HF is proud to be a part of the financially stable and socially responsible Possehl Group.

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# You have defined your requirements. We have the solutions!

**Extrusion at its best! Highest levels of energy efficiency. The best solutions to support your process chain.** Excellent results in the tire manufacturing process. These are the essential characteristics of **HF TireTech Group's extrusion machinery.**

**Efficiency, reliability, cost-efficiency, and extremely low operating and maintenance costs during the entire lifecycle of the product** – these are the expectations that we have of our own machinery. Our machines are **known for their high technological standards, utmost reliability, and longevity.** Over the past 160 years we have accumulated under one roof the competence, **the know-how, and the experience required to accurately map all stages of the process chain for the production of high quality tires.** Our design and manufacturing range covers single extruders, complete extrusion aggregates, and entire extrusion lines – **individually tailored to your needs.**

**All components are customized and aligned to the processes, designed, and delivered from one source** – in our opinion, this reflects the perfect interaction for the highest technological expectations. For us, the simple handling of the machines is a very important factor, as are reliable operating times, a minimum of wear, and **optimal integration into your production processes on site.**

## Features & Benefits

**This is how we create technology which ensures the best long-term production results. By the way – we are the technological leader in the premium segment.** Our extrusion aggregates and extrusion lines are based on a modular design and are widely acclaimed as a trendsetter **in the tire industry for the highest innovation standards,** first class quality, and extreme longevity combined with very low operating costs at an absolutely competitive initial price.

**HF TireTech Group designs hot and cold feed extruders and extrusion heads** ranging from Simplex to Quintuplex in varying versions, as well as complex extrusion lines, **which are designed with precision in order to fit our customers' needs.** The delivery and maintenance is performed in close cooperation with HF's worldwide service organization.

**A combination of state-of-the-art-technology** and as well as tried and tested tradition offers **true cost savings efficiency.** Our machinery simply has the best life cycle. You can rely on HF TireTech Group's extrusion machinery.

**History made by HF TireTech Group:** in 1987 we introduced the most resounding innovation of the time at the Rubber Conference in Nuremberg: the triplex extrusion head.



# Common Design Approach

The fundamental design principles of our extrusion sets from Duplex to Quintuplex are all the same. All co-extrusion heads are based on joint working principles with our unique hydraulic hammerhead locking system. The patented locking system takes up the forces of the extruded compounds and reliably seals the flow channel surfaces. The use of hydraulic pressure, the movement in a curved bushing are the characteristics of our locking system. The design of the locking system allows close proximity to the flow channels, which enhances the accessibility, operability, and maintainability of the extrusion set. Within the model range, the heads and the extruders are sized according to your specifications and the profiles you intend to produce. Our cold feed pin type extruders are available in the prevalent steps from 90 to 250 mm, sharing a common design platform. The downstream equipment is determined by the profile to be produced. We support you in choosing the right line layout from our broad range of various equipment, such as shrinkage conveyors, quality inspection, and marking devices, modular cooling line and profile take-off. We will also work with you to find the optimum grade of automatization for your environment.



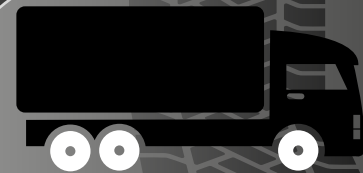
e.g. **Quintuplex Extrusion Set**

for PCR tread and sidewall with semi-automated cassette winding station for tread and liner with spacer and winding station for sidewall.



e.g. **Triplex Extrusion Set**

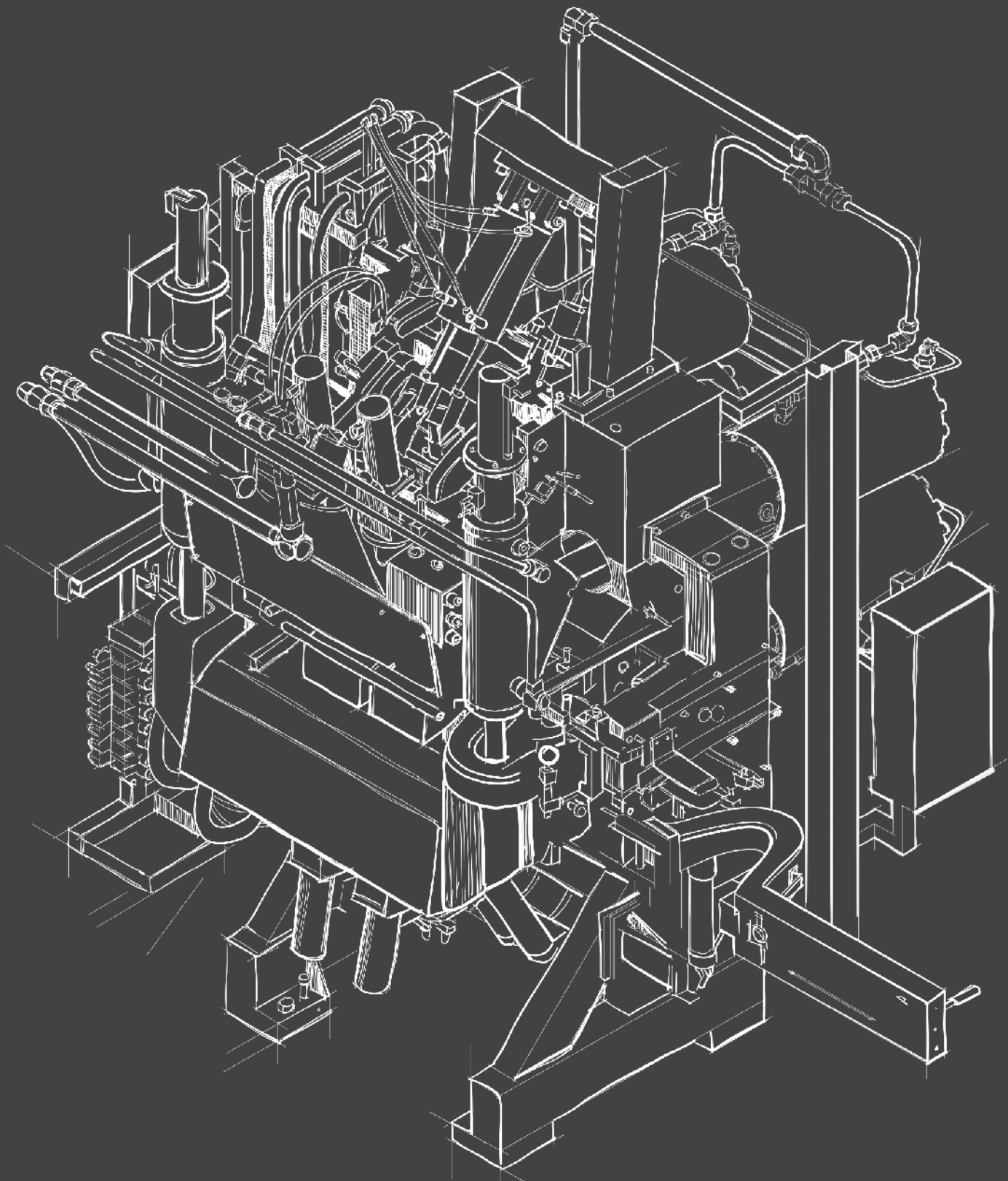
for motorcycle and scooter tread and sidewall profiles with fully automated winding station



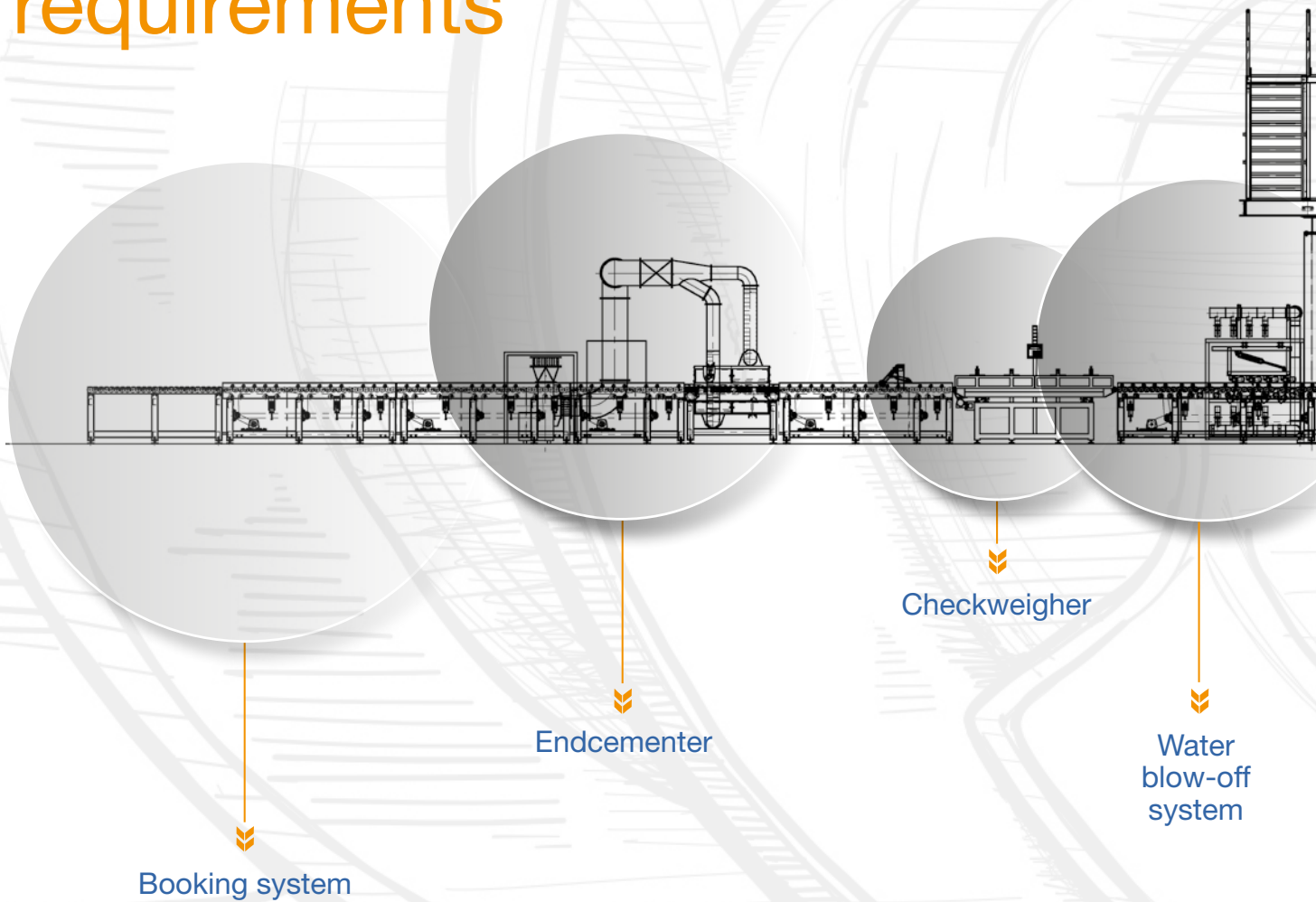
e.g. **Duplex Hot/Hot Extrusion Set**

for TBR tread and sidewall with Hot-Feed main extruder, pre-warming with pork chop extruders, downstream with cushion calander, strip application and sidewall winding

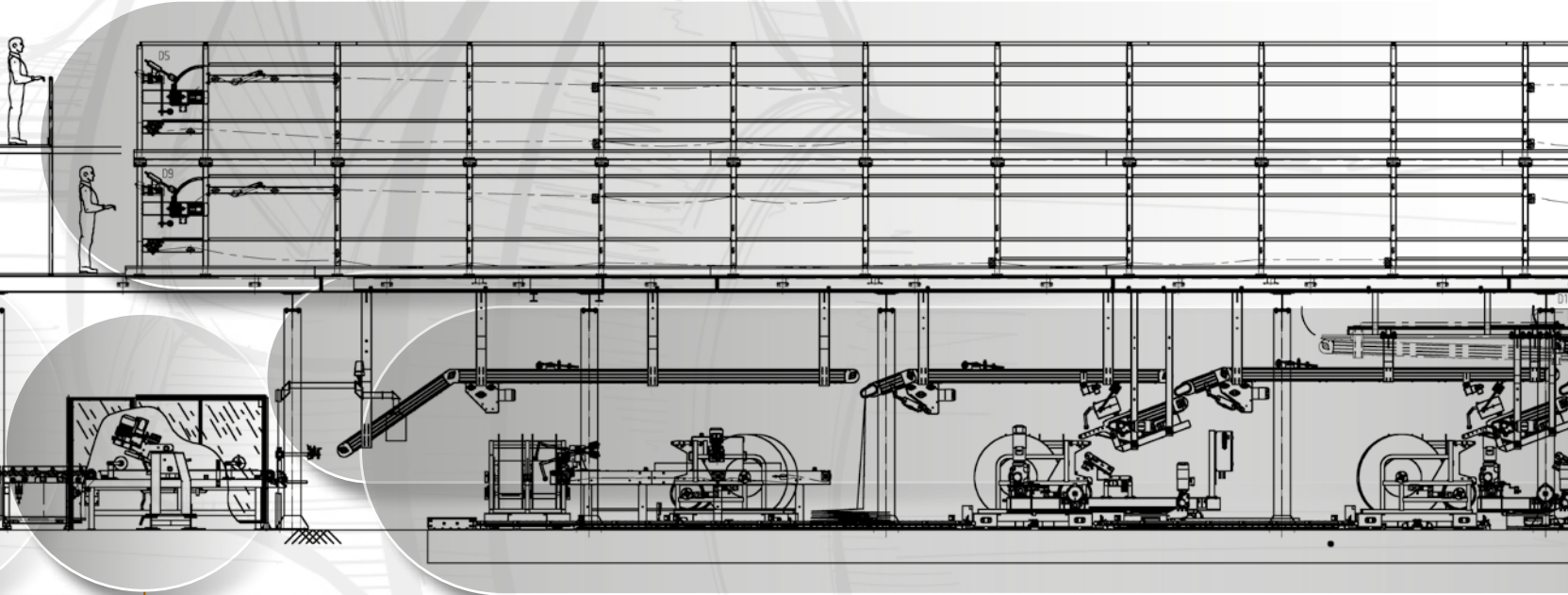




From aggregate to complete production lines –  
**we meet your individual requirements**



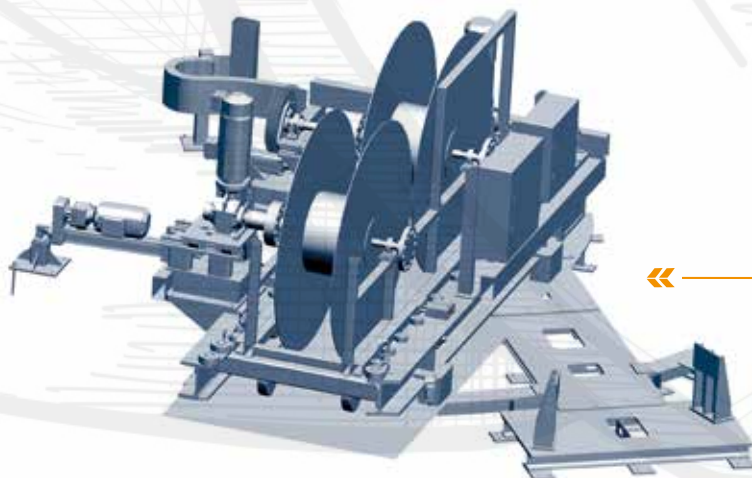


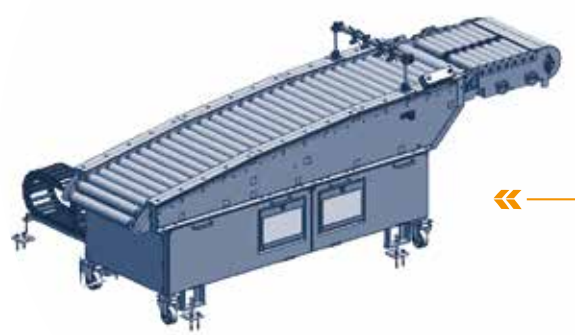
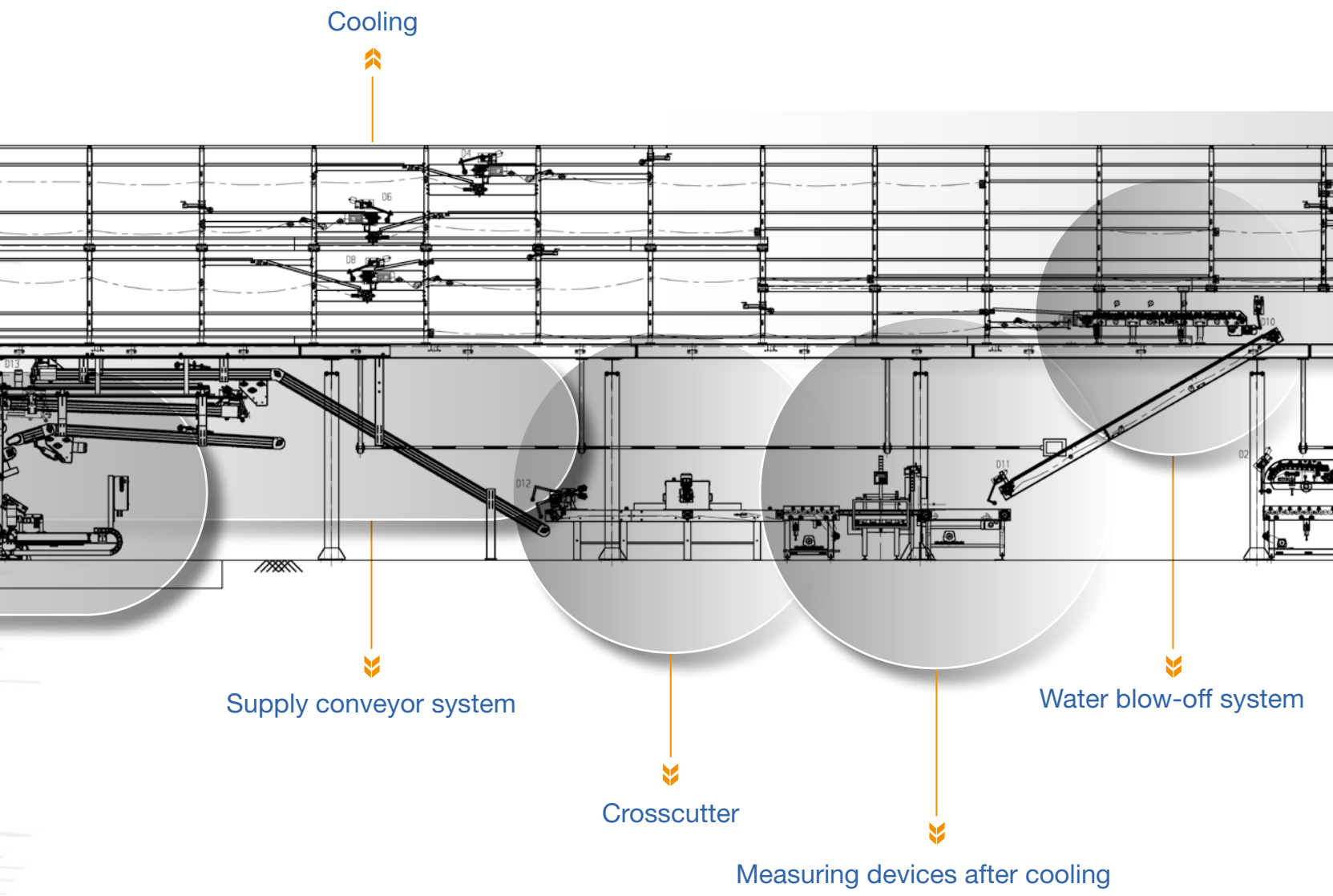


Skiver

Wind-ups

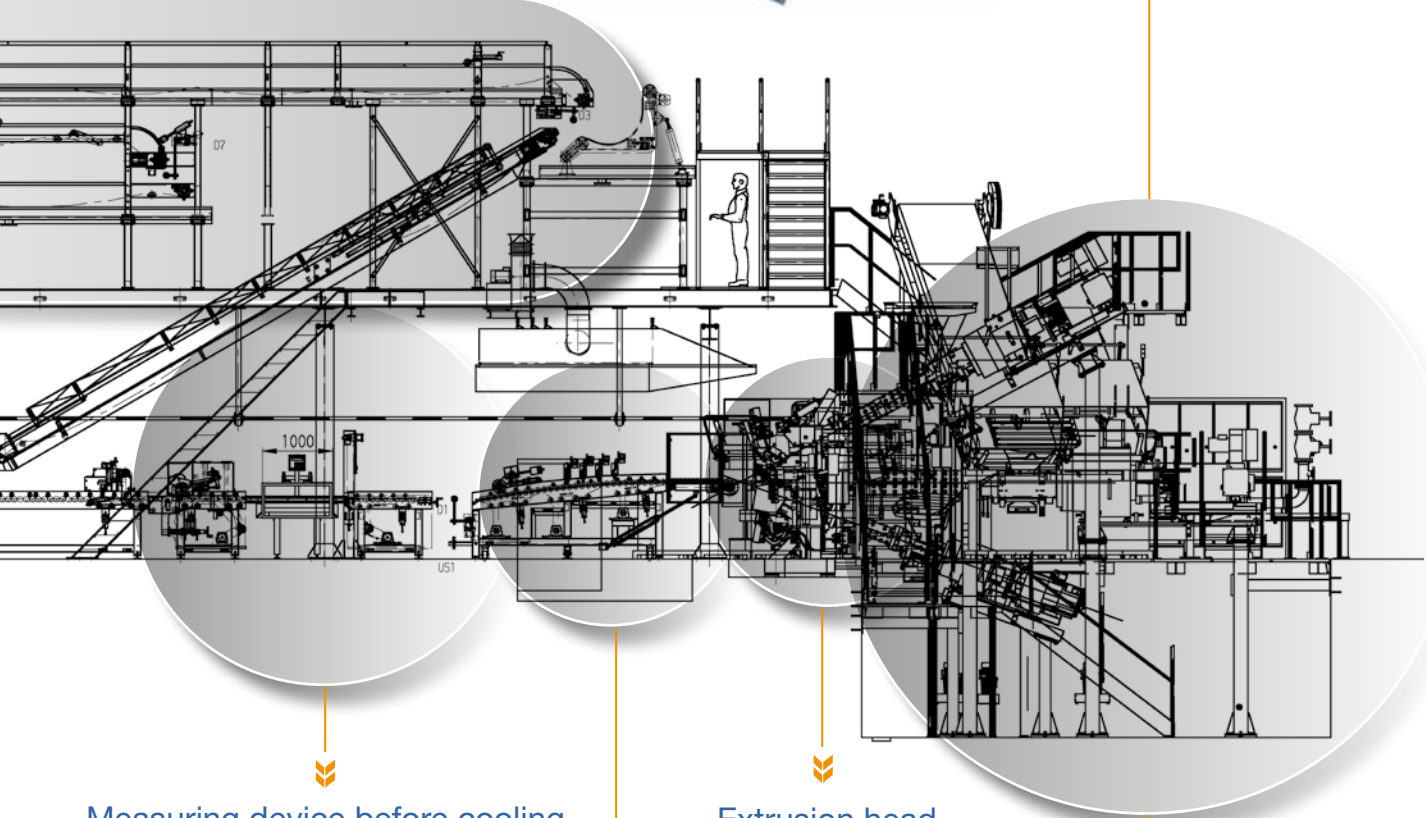
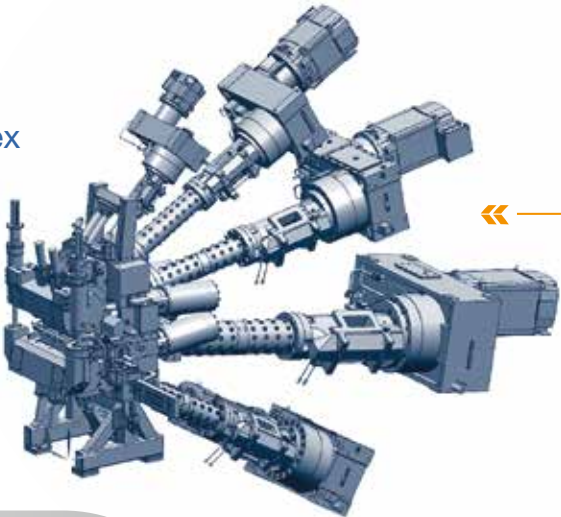
Swiveling type windup station





Downstream:  
take away and shrinkage conveyor

Quintuplex

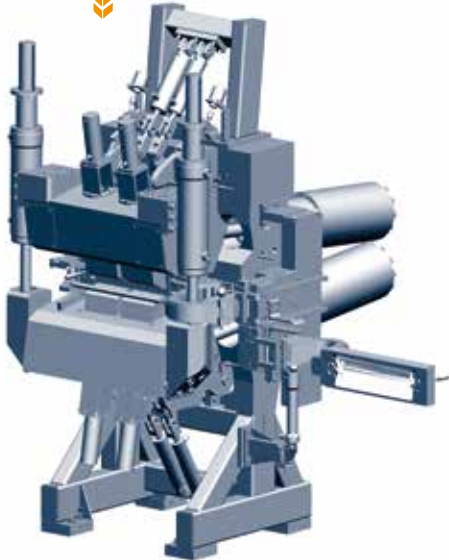


Measuring device before cooling

Extrusion head

Shrinkage conveyor  
incl. exhaust system

Extruders feeding device



# Extrusion Machinery Manufacturing Center

**HF-NaJUS: 75 years of competence in machinery production.**

Located in the heart of Europe, we create synergies in one of the region's most **modern machinery plants**.

## **Extrusion – manufactured by HF-NaJUS in Slovakia**

In 2013, the HF TireTech Group relocated its extrusion manufacturing processes to NaJUS, which is located in the Dubnica region in Slovakia. Our affiliated company, HF Mixing Group, has been manufacturing successfully at this location since 2010. We were able to increase capacities and create synergies: the machine park is jointly used and both companies profit from a state-of-the-art logistics center and an excellent infrastructure.

## **Extrusion quality for you**

Dubnica, located in central Europe, approximately 220 kilometers north east of Vienna, has distinguished itself over the past decades in the manufacture of machinery and in the automotive supplier industry. **Machines and tooling has been manufactured here for more than 75 years**, thus ensuring that the majority of the skilled workers have an excellent knowledge of mechanical engineering. In short, the team at NaJUS is very experienced and highly motivated. Furthermore, HF-NaJUS has the most modern machine park at its disposal. **All key components for our extrusion machines are manufactured here by our team.**

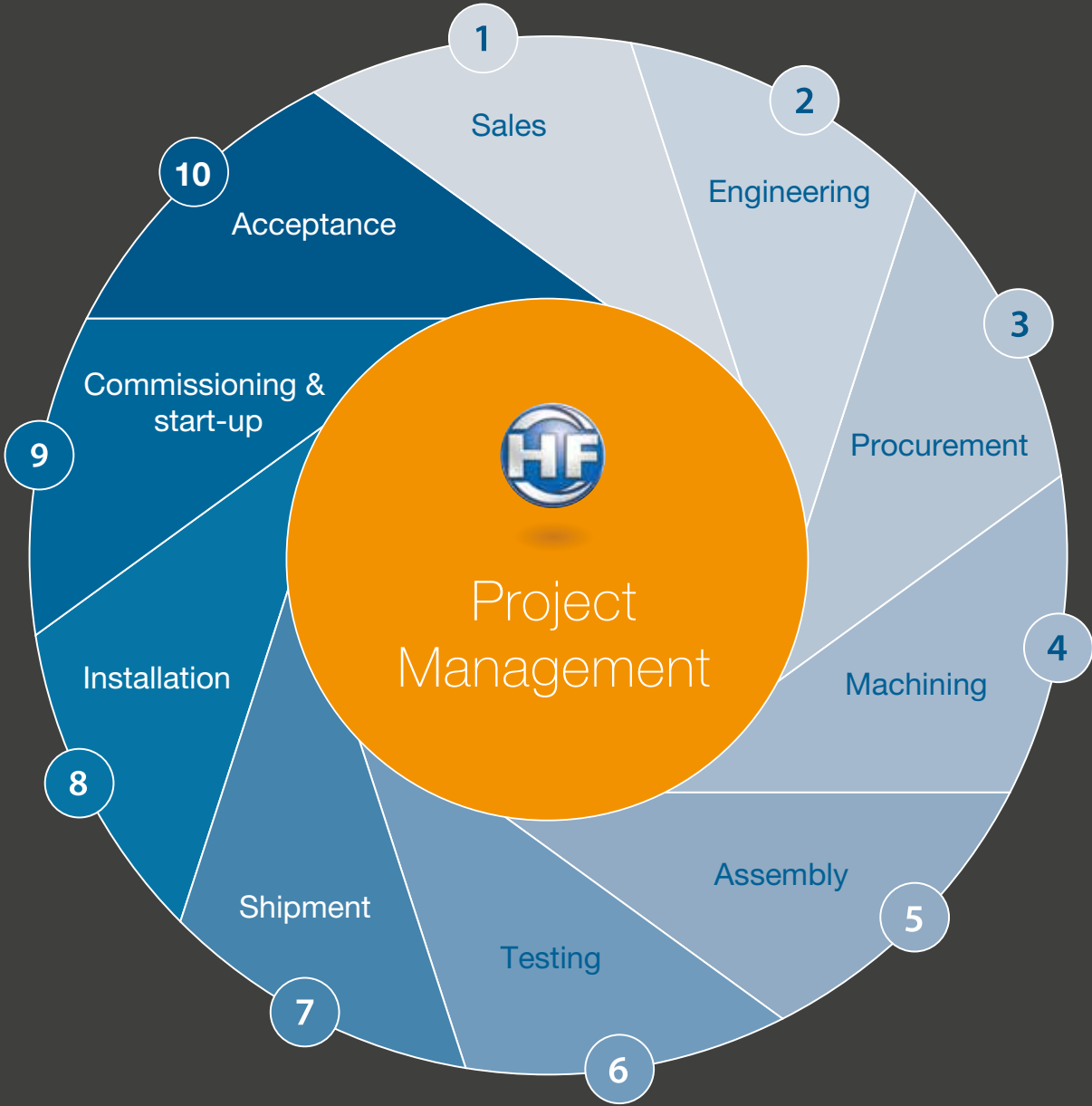
The extrusion components, which are designed by our German engineers, are manufactured by the 300 NaJUS employees in close cooperation with our head office in Hamburg, Germany. The manufacture in Slovakia is, of course, ISO-certified. The Mechanical and Electrical Engineering Departments, Process Engineering, Sales, Project Management and technical planning experts are still located in Hamburg.

HF's high standard of quality is not only evident in the manufacture of machines, but also in our occupational safety measures. The term "Safety at Work" is a matter of course and a top priority at all HF production plants.



# All process steps from a single source

Engineered in Germany. Manufactured in Europe  
with local partners for our global customers.



**HF TireTech Group:**

**Satisfied customers** in 40 countries.

**Local support in 11 locations worldwide** including 3 production sites.

**1,000 employees of the HF TireTech Group** from 15 nations.



# Customer Service

## Supplier Integrity

Our clients depend on our machinery 24 hours a day, seven days a week. Our systems are extremely reliable and very low in maintenance in all respects, provided that all wear and tear parts are inspected regularly and exchanged when necessary. **We are constantly working on improvements for our machines so that your factory will remain technically state-of-the-art.**

## Site Installation Services

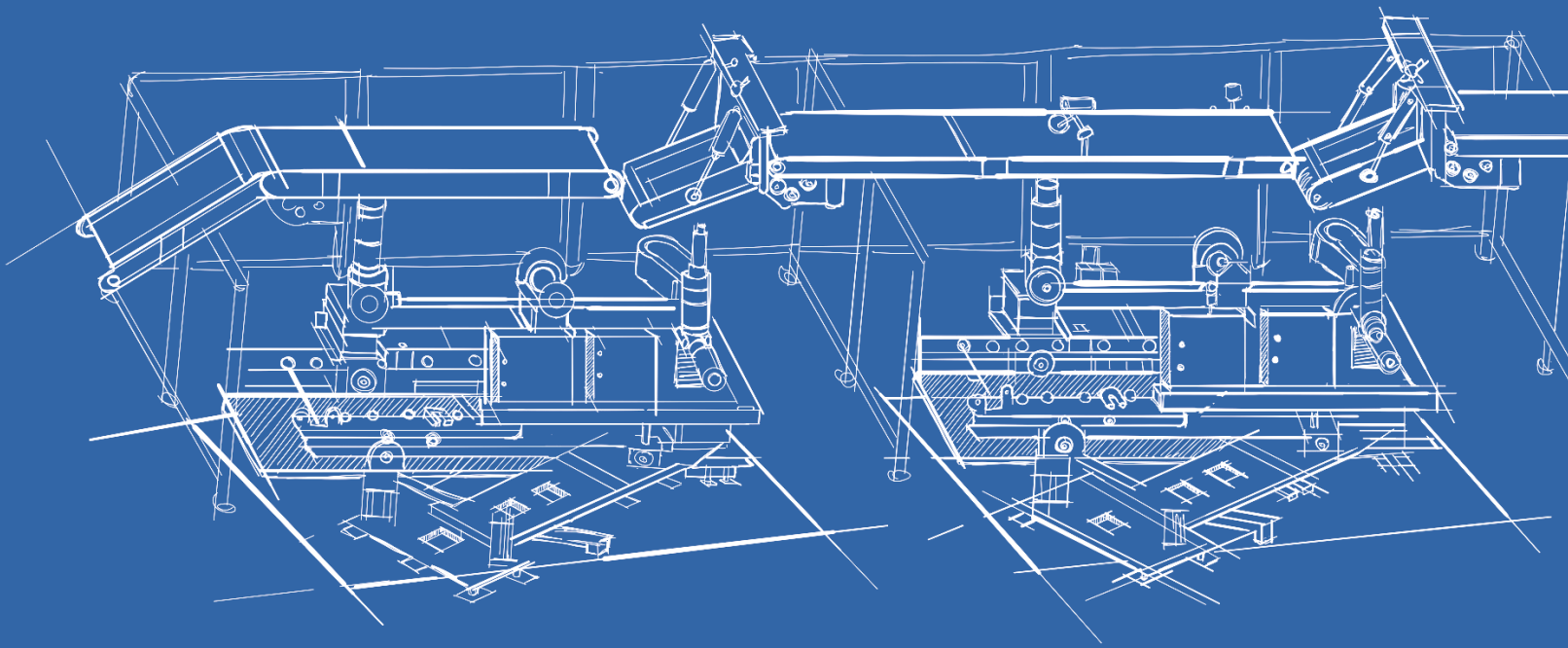
We are at your disposal to support you with the installation of your new or relocated extrusion equipment to ensure the most efficient start-up of your equipment. **We work closely together with your key users to enable you to install extrusion machinery** on your own, if preferred, or with the assistance of HF experts.

## Spare Parts

We will always have parts available for your system or we will make them available within the shortest possible lead times. Essential wear parts are mainly manufactured in our factory in Dubnica. **These quality parts are designed to be long lasting**, so that the functionality of your system is guaranteed over the entire life cycle.

## Maintenance/Optimization

We provide more than just support in the system's design, assembly and commissioning. We offer a wide-range of maintenance and optimization services, particularly during running operations. Our team of experts can provide analysis of your systems, identifying any areas with improvement opportunities and can propose the necessary measures required to optimize your operation.



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