

**BARMAG**

# **DTY manufacturing**

Sustainable solutions and technologies

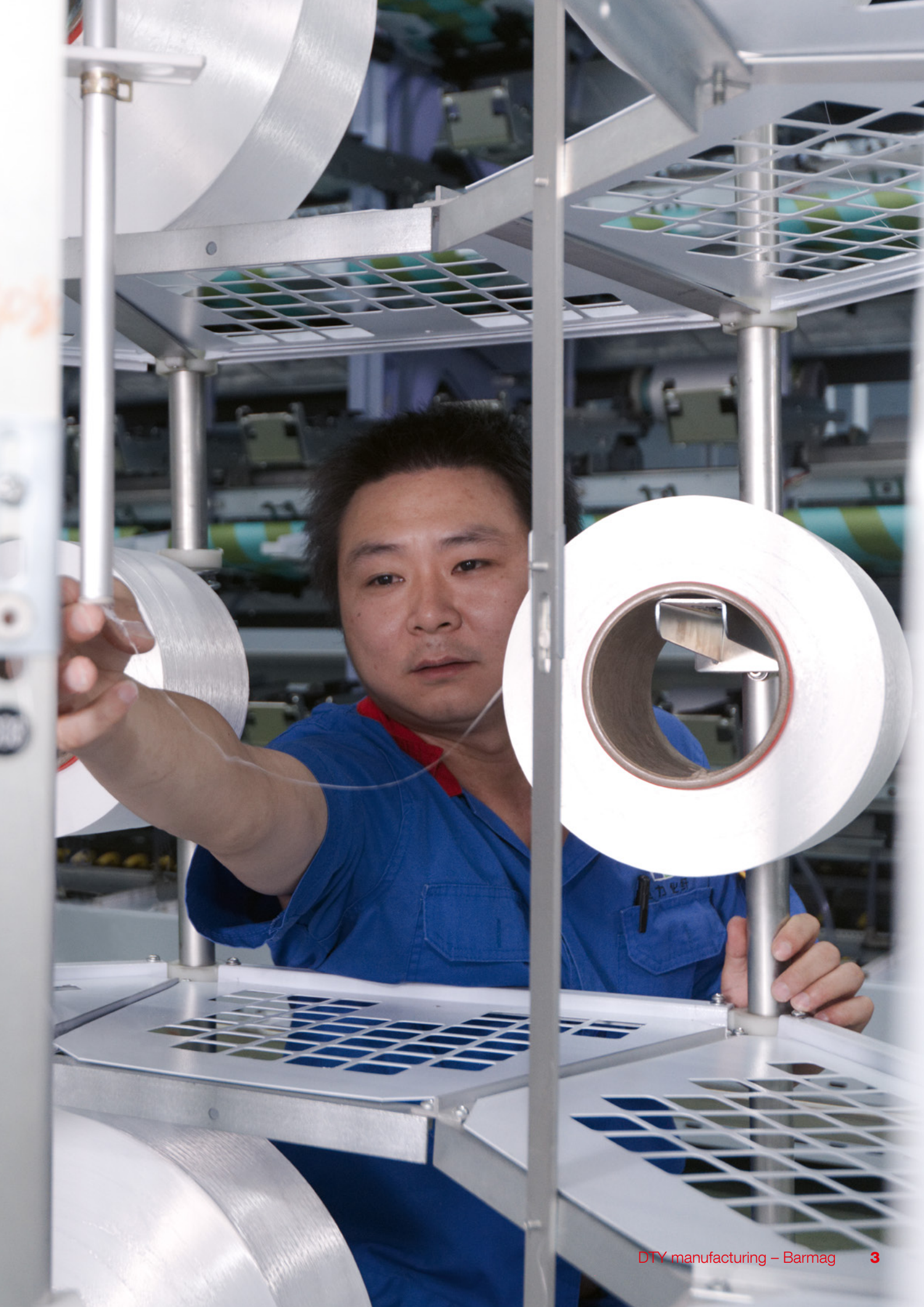
From Melt to Yarn



# Your benefits

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# From Melt to Yarn

## Solutions along the textile value chain

Place your business ideas in professional hands! Consulting, engineering, plant construction, high-tech machinery and lifecycle management together with automation solutions and all-embracing Industrie 4.0 options – the whole package from Barmag. Many years of experience in textile machine construction and our strong global network form a solid basis and the perfect prerequisites for us as your solutions provider.

### **Define your yarn properties from the very outset**

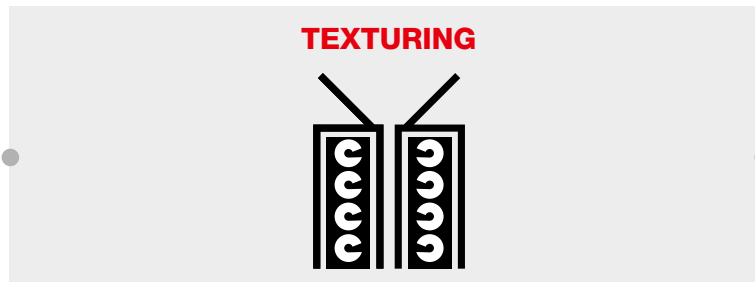
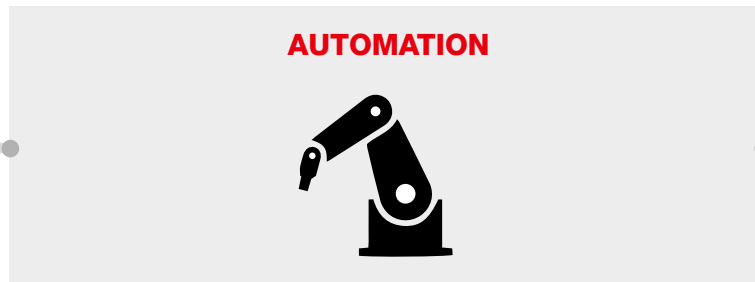
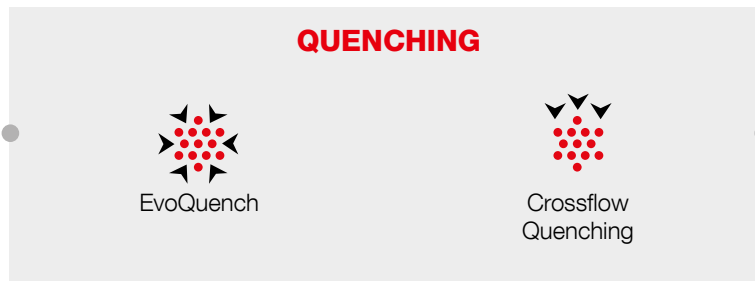
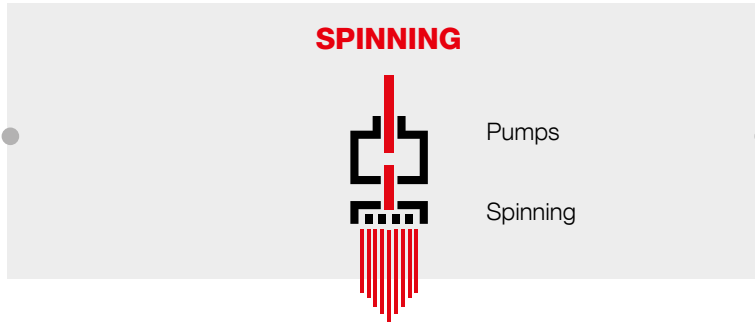
From chemicals or chips to manmade fibers, from melt to yarn, from polycondensation or extrusion to the textured yarn package – we have your value-added chain under control. And you increase your profits. Because an optimized manufacturing process encompassing all production steps provides you with the greatest-possible influence on the quality of your end product. And your production costs.

Add to this the fact that our brand strength will make financing your project a profitable investment.

Extensive experience in engineering and management competencies help us deliver even complex projects and processes. You can rely on that!



INDUSTRIE 4.0



**CUSTOMER SERVICES**

Consulting, Lifecycle Management, Technical Support

# What is DTY manufacturing?

Apparel, home textiles, automobile construction applications – there are countless applications for textured yarns manufactured on Barmag machines. Correspondingly specific are the demands made on the yarns used.

You can rely on decades of research and a constant dialog with customers, which make our systems produce the perfect yarn for each and every application. Reliability, efficiency, user-friendliness and the most economical production of high-quality yarns are the basic criteria that Barmag texturing machines are fulfilling.

## The idea

The only thing that counts is the efficient manufacturing of your high-quality products. This is the focus of all our work. With highly-developed components, know-how and proven technology, our modular DTY machines manufacture top-quality textured yarns for excellent downstream performance and optimum OPEX costs.

Our experienced experts and engineers are familiar with the requirements of the entire technical textile process chain. They will advise and support you in all phases of your business – from consultative sales discussions for tailored solutions, process commissioning even for more difficult products all the way through to global, around-the-clock service. For your individual needs.

## The benefits

Your success is very important to us. For this reason, we always maintain a focus on the benefits to you when developing our products. Profit from

- High yarn quality
- Savings in OPEX
- High efficiency
- Highest productivity
- Flexible processes

## e-save

comprehensive efficiency

### e-save provides you with a competitive edge

With e-save, Barmag introduced a label for particularly energy-efficient systems, machines and components back in 2004. Over the past years, e-save has established itself as the trademark of a comprehensive efficiency program. This underlines the preeminent role of Barmag when it comes to commercial success and sustainability.

Compared to other yarn concepts available on the market, this solution convinces in terms of

- **Energy:** godet feed system, innovative drive systems and heater designs allow potentially reduced energy consumption.
- **Economy:** reduced manufacturing costs with superlative doffing efficiency, less wear and fewer spare parts and potentially higher process speeds through innovative cross sections.
- **Environment:** lower raw materials consumption, better carbon footprint due to energy efficiency.
- **Efficiency:** improved machine efficiency with fewer downtimes through reliable doff operation, automation interface and simplified maintenance and operation.
- **Excellence:** ATT ('Advanced Take-up Technology') ensures excellent package build and the highest yarn quality.
- **Evolution:** the world's biggest R&D Center with more than 60 skilled experts, who always maintain a focus on your benefits when developing our products.



## No compromises in terms of quality – as creative as the market

Yarn quality is the decisive criterion for your business success. Here, we are by your side – with our high-performance texturing components: from godet feeding system, the optimum heating and cooling systems, drawing and texturing units all the way through to the take-up with our ATT.

This means optimum tuning of the individual production steps and system components, hence guaranteeing the very best product quality and a high degree of production efficiency from the melt through to the final product itself.

### **Maintenance-free godet feed unit for even yarn**

Single-drive godet feed units ensure slip-free and smooth yarn transport in those areas in which superlative requirements for yarn processing are decisive. And this particularly benefits your textured yarn.

When producing fine-denier products with a high number of filaments, slip-free and smooth yarn transport ensures superior yarn quality and extended yarn evenness over time. Friction-intensive products, such as full-dull or spun-dyed, which usually quickly wear out the components they are in contact with, are processed with greater efficiency and at lower production costs. This is firstly due to non-existent slippage and secondly due to the godet itself, which makes additional yarn-guiding elements or wear-reducing components superfluous.

### **ATT – Advanced Take-up Technology**

The requirements for the DTY package constantly increase with the further development of downstream processes. The ATT represents a quantum leap in package building technology, providing significant benefits for your product and hence your business success! It comes with a single-position drive solution, fewer technical components and computer control of every single stroke per position throughout the package formation resulting in excellent yarn uniformity as well as superlative dyeability and physical properties.

### **Yarn tension control keeps an eye on your end product**

Good yarn is the result of good yarn processing. Our quality management systems ensure this. The FiberGuard online tension monitoring system, with the unique combination of peak detection and CV evaluation, provides the highest standard of online yarn quality control, statistics, quality and plant management. The fault graphs enable you to analyze problems with your machine at a very early stage, allowing you to rectify the situation. This form of predictive maintenance helps you maintain very high product standards and avoids potential quality degradation downstream and customer complaints.

### **CreelManager for quality monitoring**

The online yarn quality control system connected to the CreelManager keeps you informed of the quality of the packages. With the help of special sensors in the creel, the system is provided with information on the POY package change and the splice position in the DTY bobbin. This information – with the knowledge of the POY package – can trace issues back as far as individual spinning positions, which for the very first time allows operators to monitor not only the performance of the DTY machine, but also of the prior production step in POY spinning. With this system in place, you can integrate your entire process chain into a total quality system.



## Cost-efficient DTY manufacturing

Competition within the yarn markets is becoming increasingly intense. The consequence: constantly-rising pressure on costs. The solution: optimized production processes, efficient systems, sustainable technologies. All these are provided by our DTY technology concepts.

### Easy and fast handling with ...

#### ... Pneumatic string-up

Pneumatic string-up brings the yarn into the heater and the cooling unit – at the press of a button. This ensures a quick and easy string-up procedure and secure positioning of the twist stop roller. Less maintenance through click-in twist stop and yarn guide roller.

#### ... Automatic doffer

Reliable doffing performance to ensure the highest-possible machine efficiency is the result of a sturdy take-up section in a low-vibration design combined with our CPC (Contact Pressure Control) bobbin lever system. Adjustable for different package densities, it allows – in conjunction with our TUP (Take-up Processor) – the best-possible package formation with excellent autodoff performance.

You benefit from the production of uniformly-metered packages. Two parking positions, in conjunction with one further full package in production, allow unattended operation for longer periods of time, for example during night shifts or even at weekends.

### Stay flexible in dynamic markets

Special yarns are partially fashion-influenced or used for special applications. Our DTY machine concepts with a broad denier range from 30 to 600 den enable you to flexibly react to the requirements of the textile markets.

For the production of fancy thick and thin yarns, the eFK can be equipped with hot pins. To achieve this effect, yarn is drawn around a heated pin in irregular movements. This heat treatment prior to the draw texturing process causes thick and thin places to appear in the final fabric – depending on the downstream process, either as a cloudy or a stripe effect.



### **The right heating system keeps you cool**

Defining the right heater combination for a certain production range will optimize your production. Depending on product titer and number of filaments, the selection of heating components in combination with cooling components either improves the yarn quality or optimizes the process speed – or both. Corresponding to the product portfolio, you can choose between conventional contact heaters and HTI electrical high-temperature heaters.

Equally important is the potential energy saving due to the selection of the heater. Apart from optimizing production, energy saving based on heater selection reduces total manufacturing costs. In today's demanding market, environmental optimization of production can be the difference between profit and loss.

### **Twist insertion –**

#### **high yarn quality through higher speed accuracy**

For optimum production, you can choose between different types of friction working discs as well as specially-developed inlet and outlet discs. In line with the modular machine design concept, we offer single-drives with synchronous motors for an absolutely even end-to-end twisting result. Our belt-driven friction aggregates are an excellent solution in the commodity segment. The optional open-close design offers superlative string-up performance and easy handling for fine and sensitive yarns. All texturing units have the following characteristics in common:

- High flexibility for a wide range of products – from fine 30 denier up to coarse 600 denier per friction unit
- Designed for maximum stacking of 10 discs with 9-mm thickness or 13 discs with 6-mm thickness



## On the winning side

You want to ensure the best product quality when producing for your customers? Our experienced development team has designed the machine concepts for highest quality and consistency spindle to spindle and machine to machine.

Efficiency is one of the most important characteristics of Barmag's DTY machines. Their core components convince with regards to economic maintenance, efficient operation and production speed. You profit from higher flexibility, less downtime through reliable doff operation, automation interface, simplified maintenance and operation and many more benefits.

### High doffing efficiency

100-percent transfer reliability when doffing is no longer a dream. Continuous research and development work by the Barmag engineers and new technologies combined with tried-and-tested components provide maximum efficiency and profitability. You can benefit from ideal process devices. Talk to us.

### High machine efficiency

Your customers demand the very best results when it comes to textured yarn? Optimum package formation is mandatory for your business success? Yarn manufactured on Barmag texturing machines convinces with outstanding take-off performance as a result of optimum package build and equal running lengths. High machine availability with low yarn break rates and minimum downtimes guarantee superlative efficiency during production.



## Texturing in a new dimension

With the eAFK HQ – the world's most productive texturing machine – you are able to texture your products on a machine with the smallest space requirements per position within the DTY market. Moreover, you benefit from the up to 50% increase in productivity per machine offered by the eAFK HQ compared to standard texturing machines.

### **Optimize your future production process**

Do you want optimized yarn handling? This was the primary focus of our development. The eAFK HQ in the standard cross section offers you a process window of 30 – 300 den at a maximum mechanical speed of 1200 m/min. The yarn ends per section have been increased from 24 to 48, with the expansion of take-up positions per deck from 4 to 6 while adding a 4th deck.

### **Be as flexible as your markets**

Temperatures, doffing times, winding parameters ... with the eAFK HQ – and, for now on, also with all other machines – you can use the corresponding software to set the machine to your requirements, hence considerably increasing your production flexibility. Different speeds on each side? Not a problem with the eAFK HQ. Adjust the machine to your specific processes.



## Unlimited possibilities – product diversity for your premium yarns

Our DTY technology offers you a comprehensive process window – without compromises in terms of yarn quality. Our flexible texturing concepts allow for a variety of possible yarn products for numerous applications.

### Diverse processes for all applications

Heavy or fine denier? Elastane, thick and thin effect or two-tone? Polyester or polyamide? We have the right systems configuration and broad process window for all your requirements. With our modular design, implementing supplementary components for special processes in line with the machine's feed concepts is easily accomplished.

### Reacting flexibly to trends

And whenever you change your production range? We can help you here, too. Blending of elastane with PET or PA yarns for example targeting improved comfort in the end product is becoming a standard application. By covering yarns with elastane during the texturing process, you achieve even better stability and a higher stretch level of the final yarn product – beneficial for downstream processes. Rely on our one-step covering device and hugely improve the efficiency of your production process.

You need special effects in your textured yarn? Why not integrate additional feed units into the yarn path? Up to three feed units – depending on the other components – can be added in the feed section.



## Digitalisation optimizes processes

Within the context of the comprehensive digitization of our environment, production processes are increasingly interlinked with modern information and communication technologies.

Today, people, machines, systems, logistics and products are communicating and cooperate with each other, simplifying many processes as a result. Digital transformation is creating whole new dimensions. With a unique combination of experience and knowledge, we are at your side in conquering precisely these new dimensions.

### **atmos.io**

atmos.io is the connectivity platform which provides the hardware infrastructure, software architecture and data models for all digital solutions for Barmag's manmade fibers machines. Providing seamless data connectivity between shopfloor and the IT and ERP landscape at each customer, atmos.io ensures a secure and scalable integration. The platform functionalities can be tailored according to the requirements via the Barmag online solutions.

### **Reports and Analysis**

The Plant Operation Center (POC) has for many years been an established process and production management system for the Barmag machines and systems deployed to manufacture textile yarns. Today, this functionality is included in the modules of the scalable atmos.io platform.

This is made possible by the modular character and the scalability of the system. And retrofitting additional modules is very simple. But atmos.io is capable of far more: the entire installed process chain can be connected ensuring also post doff data visibility. With this, the platform networks the entire production solution and the corresponding workflow.

### **Quality guarantee**

What are the benefits of such a process and production management system? All process values relevant to the quality of your product are continually recorded and form the basis of online quality monitoring. The criteria and rules of quality assessment and warning are defined by you. This applies both to online quality assessment (pre-doffing) and offline quality assessment (post-doffing).

### **Clear overview**

Your manufacturing orders are set up in atmos.io and continually updated and displayed. The MES (Manufacturing Executive System) always provides you with a clear overview of each order and each product. This is valid both for currently running and already completed manufacturing orders. This is including full and centralized transparency for all connected manufacturing sites.

However, not only data integration, but also distributed workflows are possible, such as approval workflows and other tasks. This also includes tasks resulting from continuous condition monitoring, where atmos.io provides real-time notifications and dashboards when something happens or is predicted to happen .

### **Agile production**

atmos.io not only enables the plant management to react fast and target oriented to indicated deviations from expected process settings. Modules such as AIM4DTY also provide clear problem-solving guidelines based on expert know how to automatically detect deviations or lower efficiency. This supports the industry in solving reaction problems, increases profit margins and reduces waste.



CLUSTER  
PORT FRP CORE

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NOISE GAIN OUT  
ACTIVITY

15



ORIGINAL STREAM  
ACTIVITY

IPN

GLOBAL STREAM  
ACTIVITY

FIXED



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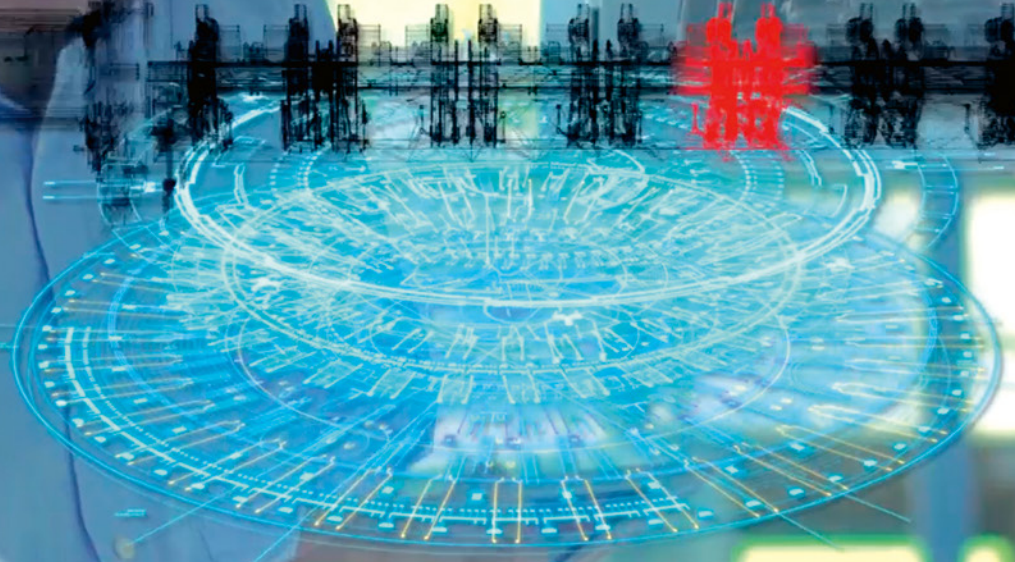


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G7

LOOP  
TRANSMITTER

FXD



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R9

LOOP  
TRANSMITTER

FXD

R2

TOUCH  
READ

SXD

# Partnering for Performance

Our Customer Services department has one all-embracing mission: we want to make your production increasingly efficient and productive, and your business increasingly competitive and profitable. To do this, we offer you a close working relationship – Partnering for Performance.

## **Our services for your success**

Textile technologies are becoming ever more efficient and flexible, opening up great opportunities to enhance your competitiveness. At the same time, this progress accelerates the race in the market. To be able to keep up and react swiftly to a changing market situation, it is important to maintain and expand your technical capabilities and to utilize them properly.

To achieve these, we place emphasis on a close, trusting service partnership with you to ensure reliable production and gain a technological edge, to secure your investment and to guarantee success in the future. Together, let us exploit the strengths of our technologies for your business.

**Further information on our comprehensive Customer Services can be found here**



**Or contact us:  
service.barmag@barmag.com**

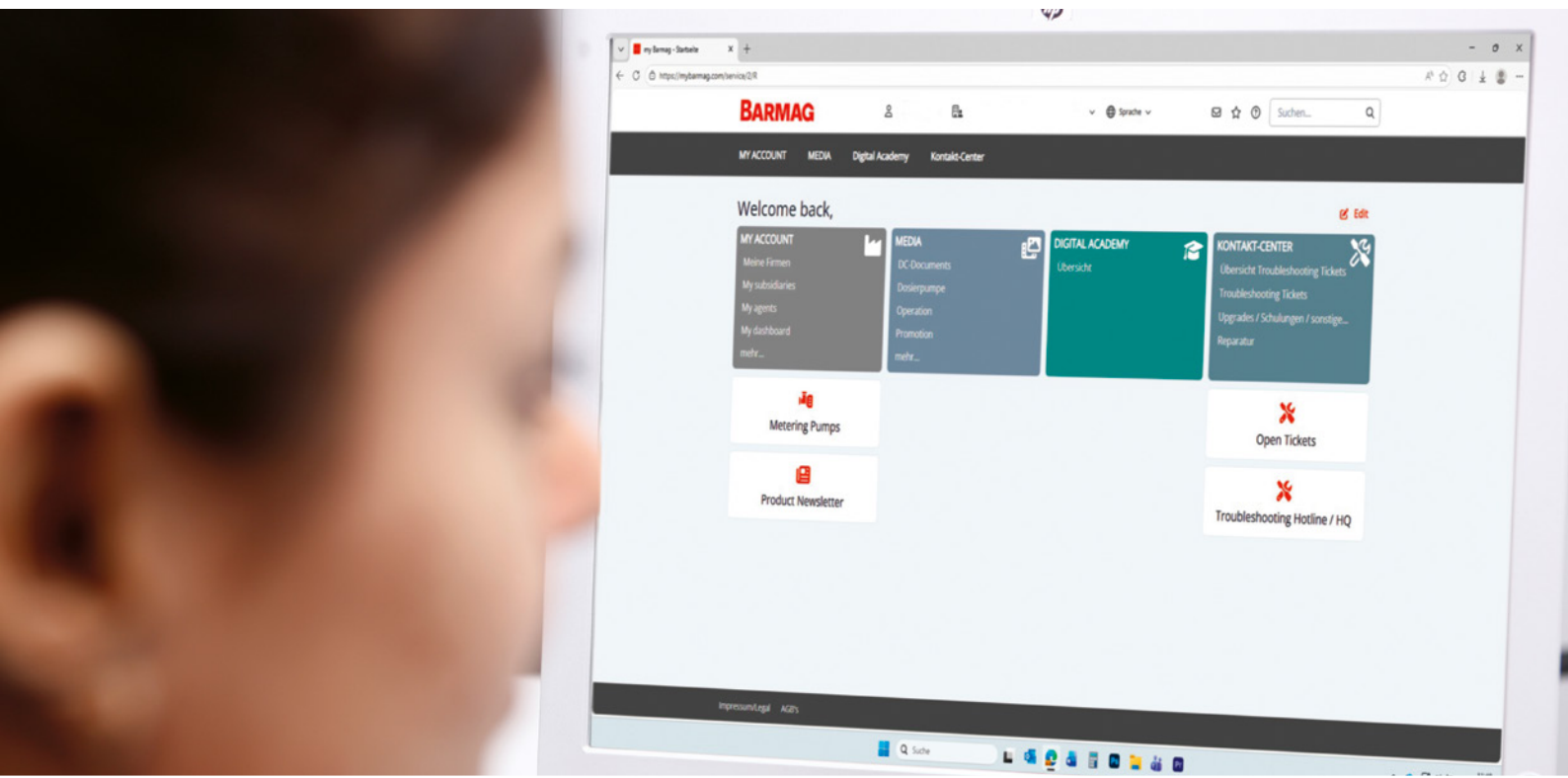
## **Our goal: your operational efficiency**

Through our partnership, we want to increase your operational efficiency to the best effect. With this in mind, we focus on optimizing your operating and manufacturing processes, your system and logistics management and the acquisition of further skills by your staff. Your success grows with the interplay of all the factors involved.

For this, we offer you the performance of a technology leader with a unique global service network, along with highly-qualified service and engineering experts. We will advise and support you in all phases of your business along the entire value creation chain of fiber production:

- With start-up services for the installation or relocation of your systems,
- With technical support around the clock,
- With modern services for maintenance and repair, performance enhancement and staff training,
- With modernization and upgrades from the manmade fiber specialist;
- With constantly developed original parts with long-term availability as well as optimized consumables,
- With individual solutions for obsolete components and
- With our unique web-based customer portal myBarmag.com

Whatever you need, you can select services tailored to those requirements from a service portfolio that is unique in the industry.



# Our promises

With our Barmag and Neumag competence brands, we are the world market leader for manmade fiber filament spinning systems, texturing machines, BCF systems and staple fiber systems. As a service provider for engineering and aftersales services, we offer total solutions for the entire textile value added chain. We attach great importance to energy efficiency and sustainable technologies in all our developments.

To what extent do you profit from this? Our market position guarantees you the benefits and quality of leading technologies, our sustainable products save you money and our comprehensive services save you time and hence increase your profit.



**More on  
Barmag DTY production**



**Or contact us:  
[sales.barmag@barmag.com](mailto:sales.barmag@barmag.com)**







