

# Energy-saving Components and Systems for the Textile Industry



Baelz improves the quality of textile products with minimal energy use and stable production



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# Baelz in the textile industry

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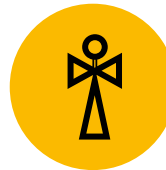
Everybody needs textiles and clothing. Nowadays, this need is met 90 % with textiles from China, Turkey and other countries such as Bangladesh and Indonesia.

The production process for textiles is associated with enormous energy consumption. Measures for saving energy are especially effective here and pay off quickly.

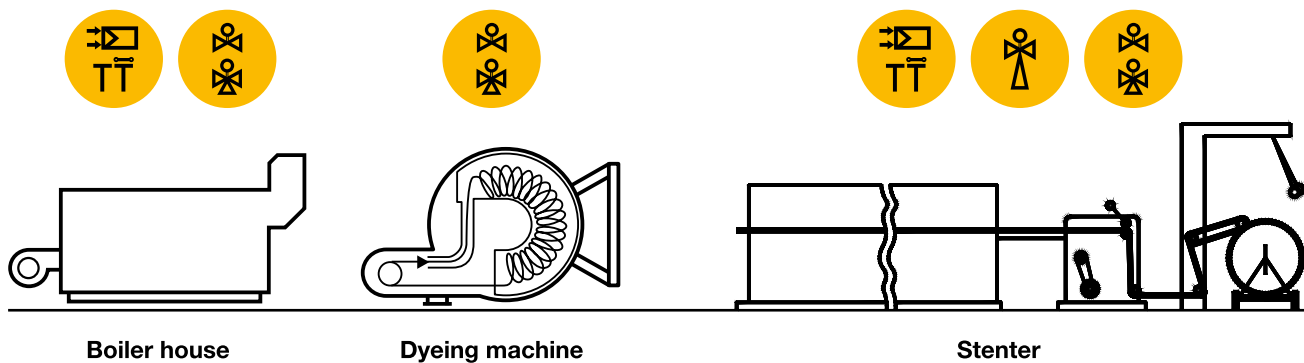
Baelz has been a partner to the textile industry for decades, having worked closely with fabricators such as Artos, Babcock or Brückner since as early as the 1950s. Baelz was one of the first companies to automate the temperature control of stenter frames and supply high-quality control valves.

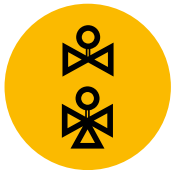
Nowadays, many high-quality textile machines originate from companies in Asia. For the machine manufacturers located there, Baelz has also been a valued partner since the 1980s.

Baelz is firmly anchored in the textile industry both as an original equipment manufacturer in textile machine construction, as well as for retrofits in factories with energy-saving technology. It therefore plays an important role in boosting the efficiency and ecology of plants.

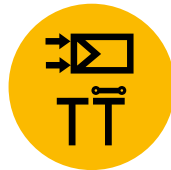


Baelz control valves are used for all processes in textile finishing, controlling both steam as well as thermal oil reliably and safely.

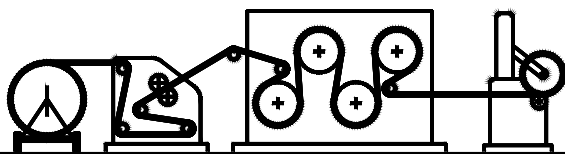




The Baelz steam jet pumps utilize the Venturi principle in a unique way to achieve huge saving potentials.

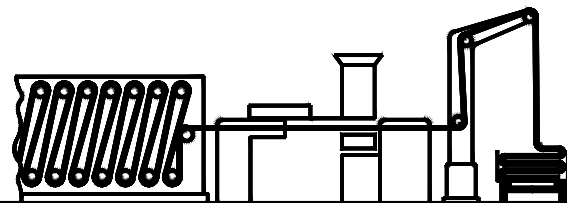


Thousands of Baelz industrial controllers are reliably in use in textile fabrics, as they are easy to operate and robust in tough application conditions.



Washer

Drum dryer



Steamer

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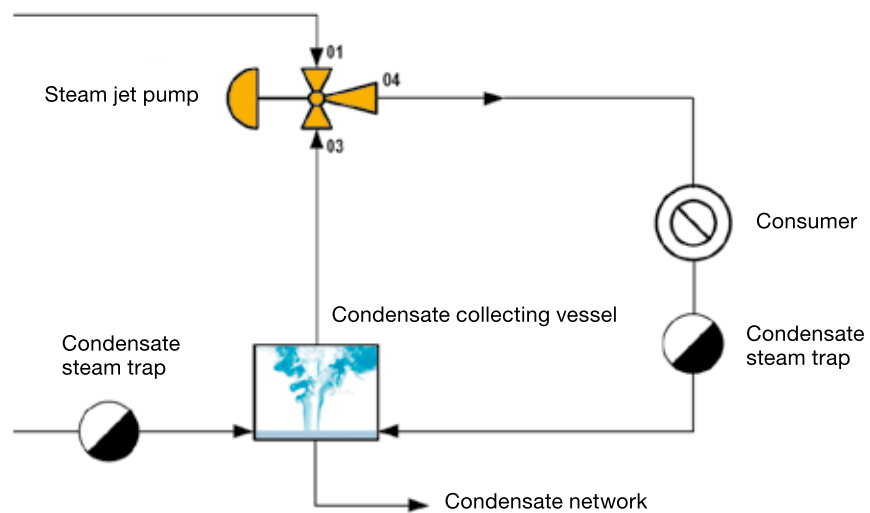
# Baelz steam jet pumps in the boiler house

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## Vapor compression application for utilizing steam energy

Systems with Baelz steam jet pumps designed according to the Baelz-vapordynamic® process are used for energy saving.

This allows direct steam savings in the range from 10 to 30% or even more to be attained.



**WITHOUT BAE LZ: High steam losses!**

**WITH BAE LZ: Nothing is lost!**



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# Baelz steam jet pumps in drum drying

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The **Baelz-vapordynamic**<sup>®</sup> process is used for recirculation here. During production – in other words when hot condensate is relieved – waste or flash steam results. This resultant flash steam is admixed to the motive steam as intake steam via the steam jet pump and is then returned to production compressed as mixed steam. This means it is available for further use.

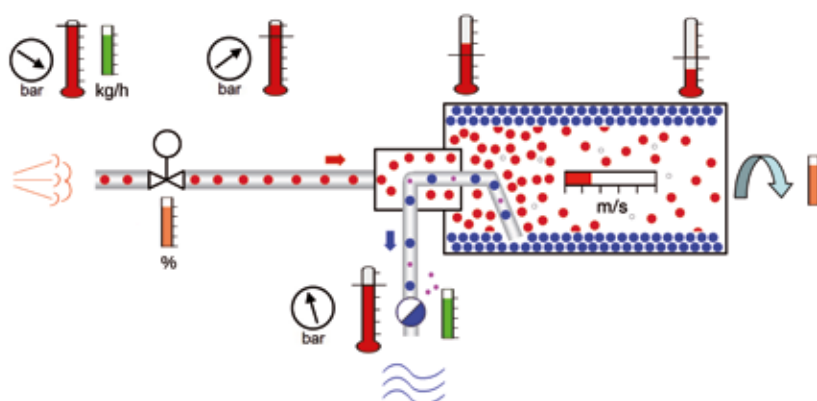


## Conventional application involving drum drying:

In drum or cylinder dryers the fabric passes through numerous drums. Steam inside the drums heats the fabric on the outside and results in evaporation of the moisture contained in the product. The **conventional steam heating** used by drying cylinders with 2-way control valves consumes a lot of energy. The temperature distribution in the cylinder is uneven (Figure below) and decreases towards the side of the drum facing the steam inlet.

### CONVENTIONAL

Uses a lot of energy  
Uneven temperature distribution in the cylinder  
Temperature at the end of the cylinder is less than at the start

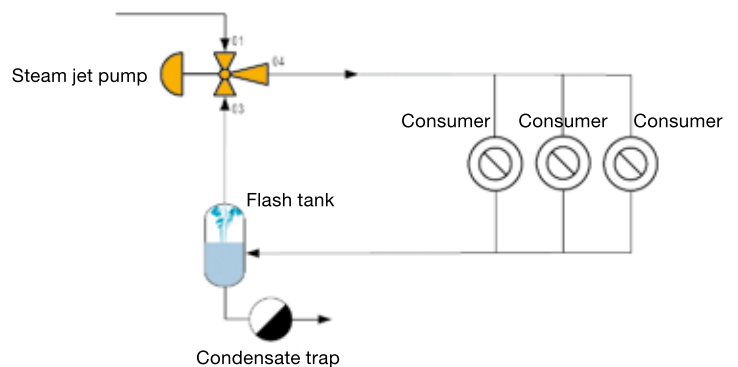


## The Baelz solution for drum drying:

The mixture of motive steam with intake steam leads to a **lower steam consumption** at high steam velocity, a thinner condensate film inside the cylinder and hence better heat throughput for **faster drying**.

The suction effect of the steam jet pump means the steam circulates in the cylinder, which results in a much more even and **stable temperature distribution** over the length of the drums. Consequently, the drying process is also very **uniform** and increases the quality of the end product. Thanks to steam recovery (recirculation), less condensate results than with conventional systems. The availability of the system is thus better, as less condensate traps can fail due to wear.

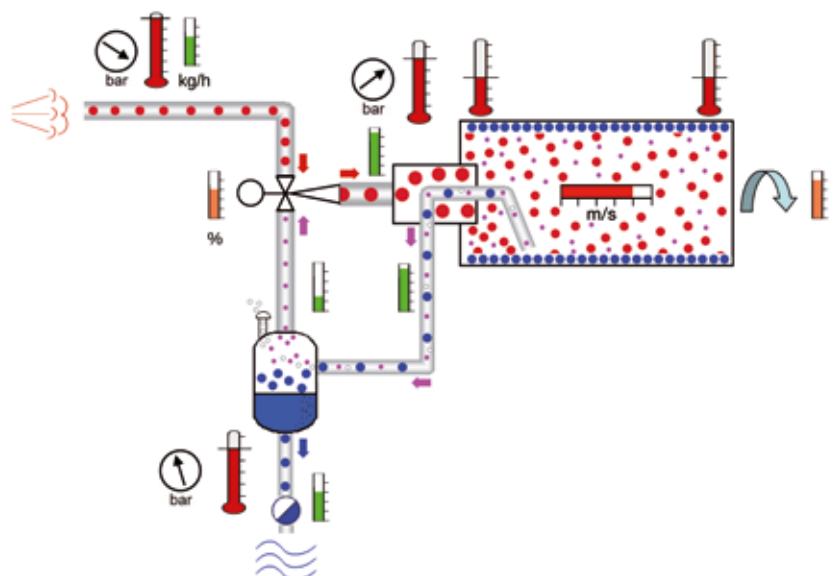
## Recirculation application



## BAELZ SYSTEM

Circulating steam in the cylinder results in a much more even, stable temperature distribution over the complete length of the drums

Thinner condensate film inside the cylinders leads to improved heat throughput for faster drying



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# Baelz saturated steam generator for textile steamers

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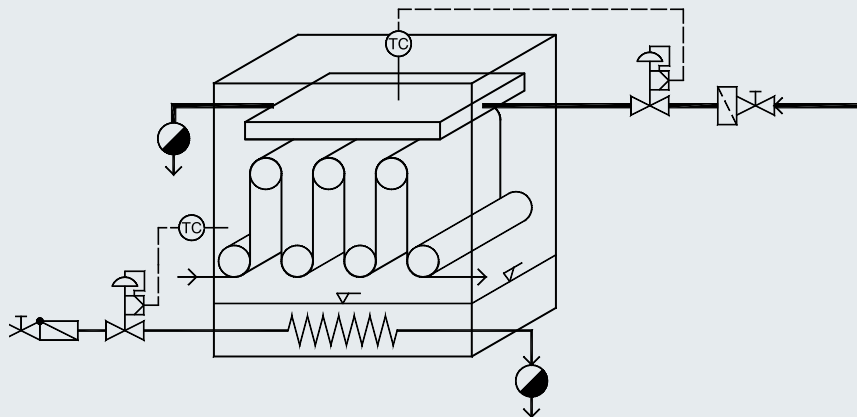
The **steam jet pump baelz 591** can be used for both pressure reduction and hot steam cooling as well as for saturated steam generation. This has certain advantages in comparison with conventional hot steam coolers:

- Saturated steam generation without overheating
- Only one valve instead of control valve and fixed-nozzle jet pump
- Wet steam generation also possible
- High quality of pressure and temperature control within the load range
- Very good atomization of the injected water
- Simplified plant layout

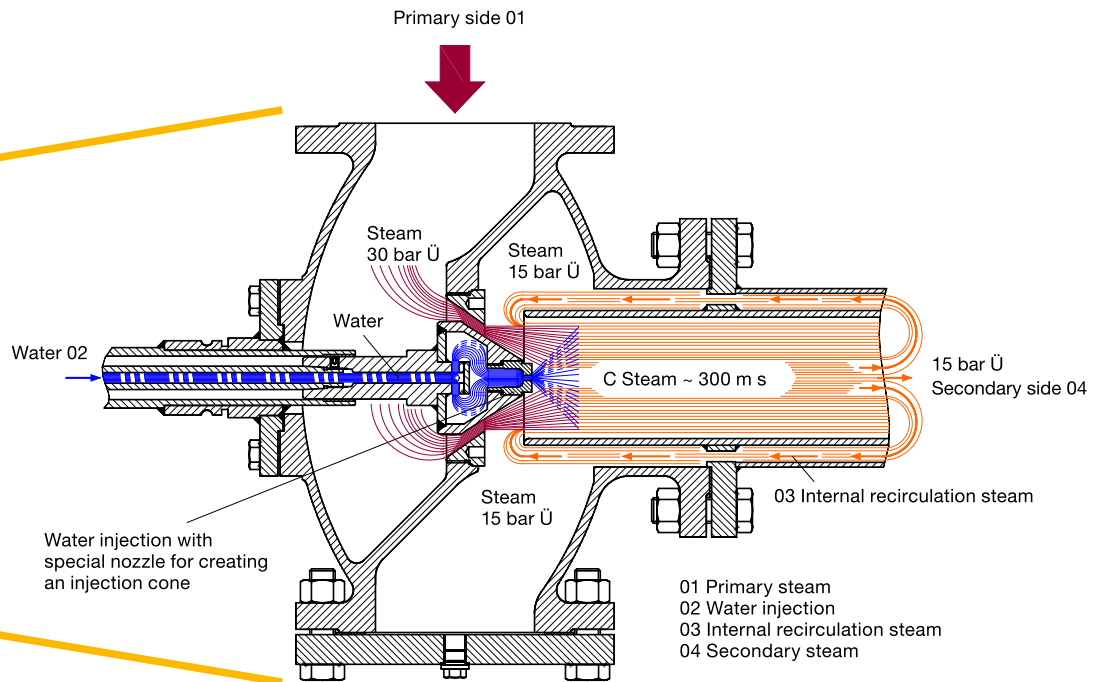


## CONVENTIONAL With water bath

In the conventional system, a **water bath is heated via heating coils**, through which the steam is routed. Steam vapor results on the water surface, this rising to the fabric panel. Drawbacks: Poor controllability and high system weight owing to heavy water bath.

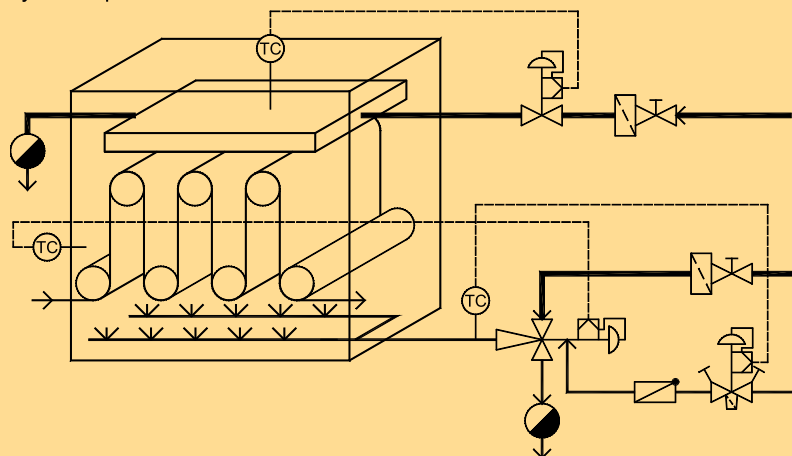






## BAELZ SYSTEM Without water bath

Perfectly controlled **saturated steam without water bath** via the **steam cooler baelz 591** – steam consumption is reduced by directly generating the saturated steam. Greater reduced weight of the plant. Better application of saturated steam onto the material, hence better quality of the product.



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# Baelz steam-water mixer

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In many textile processes, large volumes of hot water are required quickly, steam is almost always available also.

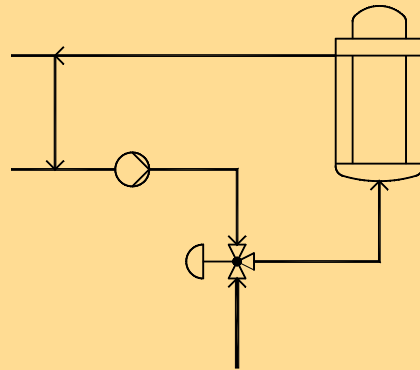
A special design of steam jet pump, the **steam-water mixer baelz 585** is then used. This is ideally suitable for processes where it is necessary to produce hot water rapidly by directly mixing steam and water.

With the control valve baelz 585, flange version DN 15–125 and baelz 586, sleeve version DN ¾" – 1½", we provide a system component for low-noise steam-water mixing in the output range from 20 to 100 %.

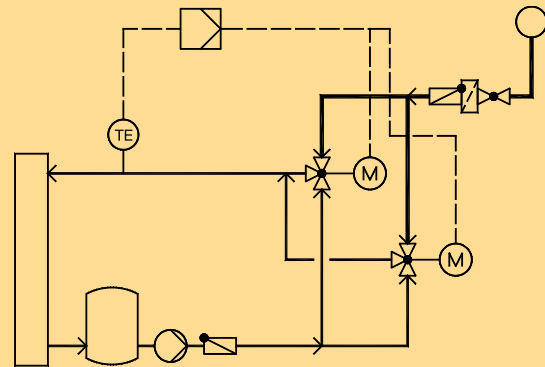
#### Advantages at a glance:

- Optimal utilization of the motive energy for pumping the water to be heated
- Optimal mixing through condensation of the steam in water
- Low-noise operation thanks to a mixing chamber specially designed for this
- Integration in the process control involving an interaction of actuator, temperature sensor and controller
- Less investment costs
- Application possible with other media, depending on compatibility

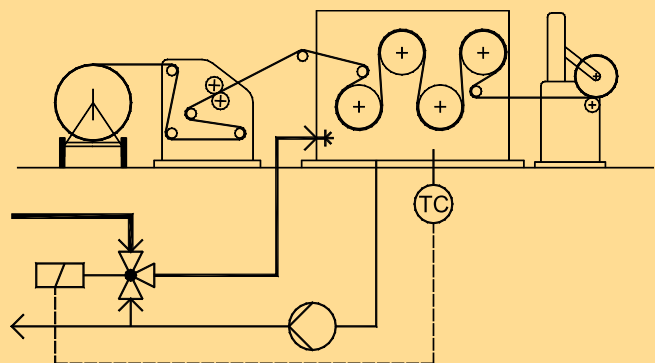
**Heating a double-walled reactor for gently heating fluids**



**Generating large volumes of hot water for drying and cleaning processes**



**Hot water generation for a large textile washing machine**



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# Baelz control valves on stenters

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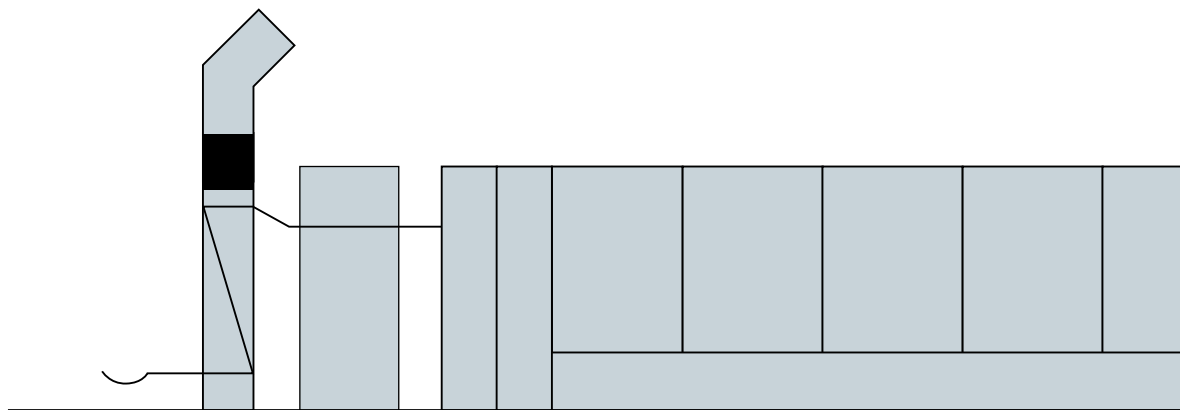
The **stenter** serves for **textile finishing through heat treatment**. Here the fabric travels via a system of chains through stenter fields (treatment chambers), in which heated air is blown onto the material so as to enable not only drying but also stretching and fixing of the fabric.

**Baelz control valves** and Baelz controllers have been ensuring safe operation and consistently high quality of textiles in thousands of stenter frames for many decades.



The control valves for thermal oil of the **baelz 342-BK-SS** series are extremely durable and comprise very few individual parts. As such, they stand apart from the competition thanks to the cast-in valve seat ring.

They are usually in use on stenters frames with the electric actuator **baelz 373-E07**, this characterized by force-dependent motion stop and solid design.

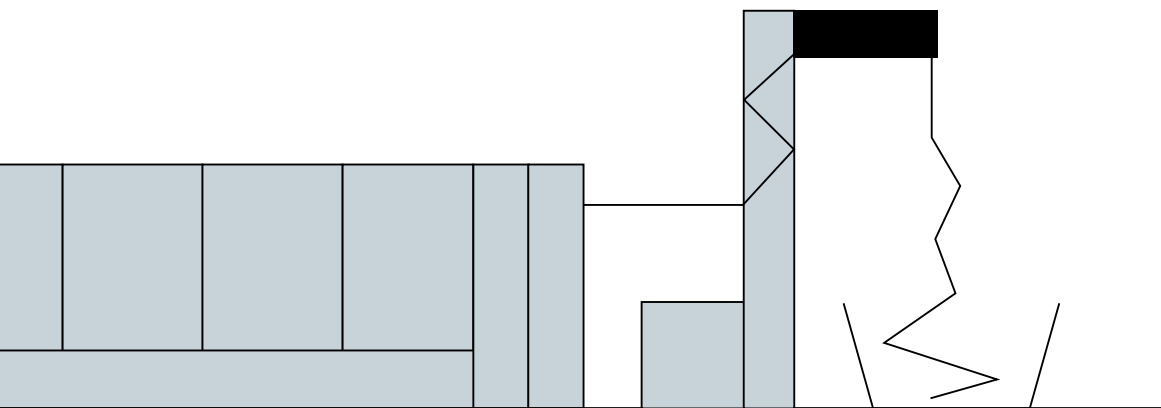




For steam-heated stenter frames, the control valve **baelz 356-K** is the best choice. This is made from forged stainless steel and can therefore withstand cavitation and erosion better than conventional cast control valves.

The industrial controllers of the **baelz 6490** and **baelz 6590** series are specially designed for application in textile machines.

These are distinguished by unique features such as position display without potentiometer or tremendous robustness in the event of power failures. Low power consumption also makes it possible to dispense with ventilation slots, this preventing additional failures due to dirt contamination.





**Steam jet pump  
baelz 590**

## **CHINA**

**Drum dryer  
Zhejiang Quingfeng Textiles**

- Conversion March 2012
- baelz 590 x 2 DN 50 PN 16
- Before: 0.402 t steam/km<sup>2</sup> textile
- After: 0.341 t steam/km<sup>2</sup> textile saving 15.2 %



## **GERMANY**

**Wet finishing of knitwear and  
woven fabrics**

**Medium-sized textile company**

**Nuremberg region**

- Steam cooler baelz 591 DN 50
- Universal small control valve baelz 185 DN 15



**Steam jet pumps**  
**baelz 590**



## **SPAIN**

**Drum dryer**

**Medium-sized textile company**

**Valencia region**

- baelz 591 DN 50
- baelz 590 DN 50 x 5

# **PRACTICAL APPLICATIONS**


Long-standing customers advertise with Baelz as a quality feature in their plants

烘箱 Heating Chamber



**FM788 烘箱加热器**  
 FM788 Heating Chamber Heater

配件件 Parts & Accessories



无油轨道 Oil-free track



定时轨道 Timing track



温控阀 Temperature control valve



温控器 Temperature control heater

加热方式 Heating Made



▶ 导热油加热 (标准配置) Thermal Oil Heating System (Standard)



▶ 天然气加热 (可选配置) Natural Gas Heating System (Option)



◆ 织物传送链条

Stenter chain transportation

最佳的特性和最佳加工程序选择使用之链条设备  
The choice of chain transportation type depends on the fabric constructions and finishing process applications.

- ① 链条式传送系统为具有竞争力的选择方案。
- ② 可在零下低温下运行。
- ③ 可在任何速度下运行。
- ④ 噪音低。
- ⑤ Both entry and return chain roll are fit with graphite sliding pads to ensure free running.
- ⑥ The chain runs smoothly under high loading.
- ⑦ Lower power consumption.
- ⑧ Excellent durable working service.



◆ 烘箱热风嘴式及温度控制系统 Type of hot air nozzle and temperature control system of heating chamber

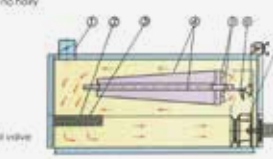


- ① 电脑设计喷嘴 Computer designed for nozzle hole
- ② 喷嘴式风罩 Down the main nozzle shape
- ③ 精密制造无误差 Precision multiple layer assembling, no hole
- ④ 镀锌钢板 Galvanization steel plate
- ⑤ 喷嘴可拆卸可更换 Replaceable of nozzle
- ⑥ 排气口 Exhaust port
- ⑦ 过滤网 Filter screen
- ⑧ 热交换器 Heat exchanger
- ⑨ 热风喷嘴 Hot air nozzle
- ⑩ 热风喷嘴启闭装置 Hot air circulation on/off device
- ⑪ 上下喷风量调节装置 Up and down spray air flow control valve
- ⑫ 循环风机 Circulating fan

① 热风嘴加热控制系统，以PID数位单回路PI100恒温控制电路二角两之点流，Thermo oil circulation heating system, by means of PID digital temperature controller with PI100 Ohm temperature sensor, to control 3-ways motorized valves in open of close.

② 热交换器为翅管式，散热面积大，散热迅速，加散热板，Heat exchanger is Fin type, heating transmission in large dimension, lower heat reserved value, but fast heating and heat dispersing.

③ 避免使用温度，220℃. The max. working temperature is 220℃.



控制系统 Control System



▶ 手动操作平台 (选配) Manual Operation Platform (Option)



控制柜 Control Cabinet  
选配 (选配) Air Conditioning Device (Option)  
采用PLC控制及嵌入式一体化工控机控制柜系统  
PLC control and integrated controller system



卷布系统 30寸开式卷布及送布机  
Delivery system 30 inch with a feeder for width roll

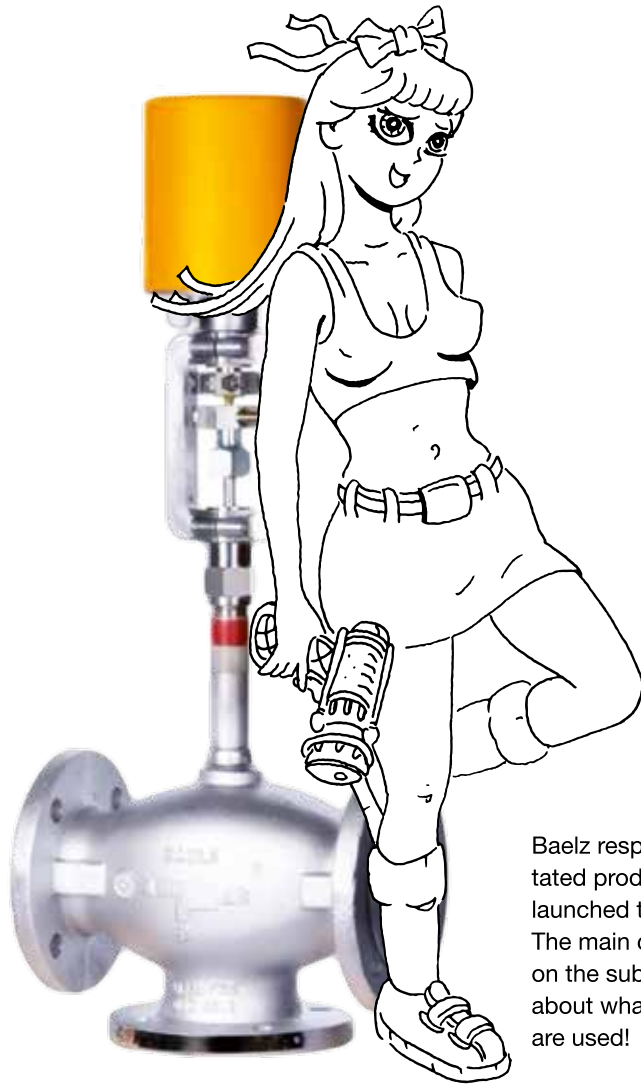


多点触摸  
触摸屏  
Touch screen  
control on  
the web

卷布产线控制，送布系统，送布机由卷布系统控制并具备卷布。  
The delivery system control on web. Feeder, 30 inch width roll  
delivery system control on web. The feeder



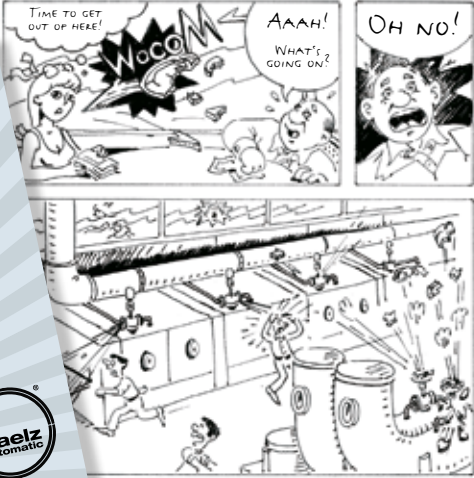
温度产线控制  
Temperature control panel for stenter



The flip-side of success – many imitated products!

Baelz responds to the topic of imitated products with humor, having launched the “Copy Girl” in 2007: The main character of a comic strip on the subject. Here you can read about what can happen if copies are used!

**By the way:** Baelz originals are meanwhile painted silver on the valve body. But many copies too...



The comic strip can be downloaded from [www.baelz.de/oriverify](http://www.baelz.de/oriverify)



**Contact Baelz if you're unsure whether you're being offered an original!**

Whoever buys from Baelz and its authorized partners can be sure of receiving an original component – with guarantee, customer service and expert advice.

Talk to Baelz if you have any doubts. We shall be pleased to inform you about the value of the original or offer expert advice.

**COPY CATS**



● Baelz near to you

● Baelz subsidiaries

● Baelz partner companies

**Germany**

W. Baelz & Sohn  
GmbH & Co.  
Headquarters in Heilbronn

Berlin, Hamburg, Essen,  
Siegen, Frankfurt,  
Nuremberg, Aalen, Ulm,  
Munich

**USA**

Baelz North America  
Atlanta, GA

**Austria**

Bälz GmbH  
Vienna

**France**

Baelz Automatic SARL  
Paris

**China**

Baelz Heat Automation Equipments  
Beijing

**Baelz helps save energy in the following sectors:**



**Chemicals**



**Automotive**



**Textiles**



**Heat distribution**



**Pharmaceuticals**



**Aviation**



**Timber**



**Power stations**



**Paper**



**Tires**



**Buildings**



**Food  
Beverages**