

INSIDE WELKER

About Technology, Know-How & More by C. Koch

THE 20 MOST FREQUENT QUESTIONS

During the many opportunities to talk with our customers, we recorded a list of the 20 most frequent questions about conditioning and heat setting. Here, a short presentation of these and the respective comments.

1. What are the benefits of vacuum conditioning?

Compared to the traditional operation in conditioning rooms, the major benefits are:

- **High moisture regain** (+ 2% with CONDIBOX) with uniform distribution of moisture in the entire cone (better quality)
- **Low energy consumption costs** - 15 kWh only for 1.000 kg of cotton yarn
- **Minimal process time** of max. 50 min. only - compared to 24 hours in conditioning rooms
- **Little space requirement** for WELKER BOX conditioners
- **Uniform physical property** improvement for the whole lot in strength and elongation.
- **Substantial reduction** of dust in the knitting area and warper creels.

2. What about knitting yarn?

Waxed yarn for knitting is treated between 55 - 60°C. This is the ideal temperature for moisture regain. There will be also some relaxation and twist-setting.

3. How can we get accurate twist setting?

In 100% cotton and cotton blends immediate relaxation is effected at setting temperatures of 80 - 98°C. Snarling of the yarn is reduced directly after the steaming process.

4. Does conditioning influence the friction values of waxed yarns ?

Definitely not. Normal conditioning at max. 60°C does not exceed the wax melting point. At higher temperatures the wax-particles on the surface of yarn will melt and penetrate into the yarn. Thus friction values become worse.

Special waxes are available for higher temperatures. Please ask your wax supplier for advice.

5. Which utilities are required to operate WELKER Conditioners?

- **Electricity:** approx. 15 kWh/1.000 kg yarn (connected load 60 - 140 kW, depending on production)
- **Cooling water:** approx. 200 l/ batch (1.000 kg) max. temp. 20°C
- **Compressed air quantity:** negligible, pressure 6 bar

6. We have gas or oil fired steam boiler in our mill. Can this be used instead of electric steam?

Using existing steam is an advantage to reduce operating costs. The WELKER system then will be equipped with a special STEAM COOLER. Operation and performance remain unchanged.

7. Does hot steam deteriorate yarn quality?

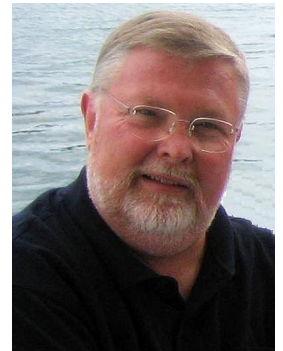
Modern conditioners work in vacuum status. It is impossible to harm the yarn while the machine is in vacuum, even if by any failure superheated steam is inserted into the vessel.

In any case, however, the WELKER "SOFT STEAM" safety system detects any sudden raise of temperature and stops the machine at the process limit.

8. How does the WELKER system work?

ECO electric heaters generate heated water which is transformed into low temperature saturated steam.

The water flows into the vacuum, which immediately reduces the temperature down to approx. 32°C (at 95,0% Vacuum). Therefore, low temperature saturated steam is formed which gives a gentle treatment of the yarn.



Claus Koch, president and CEO of the WELKER GROUP is a textile and mechanic engineer with a textile life in all continents since more than 40 years. Having worked for renowned spinning machinery makers in South America and Europe as head of sales and technology, he made a career as CEO of a large German Industrial Group. In 2001 with a management buy in, he took over control of the WELKER GROUP which he streamlined and turned around. With various patents he re-engineered products and processes making of WELKER one of the market leaders in the field of conditioning and steam heat-setting. INSIDE is published aiming to inform the interested public about technological aspects and details of the technology in which we detain our expertise.



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9. Why does WELKER provide better uniformity of moisture regain than competitors?

By means of high vacuum (up to 95%) all air is removed from inside the cones. **There can be one or two vacuum cycles (fractioned vacuum).**

The vacuum allows saturated steam to penetrate into the empty spaces. Steam in its gaseous state can easily reach the centre of each cone. Once it is inside the cone, the steam is changing to condensed water in contact with cold yarn. The water then is absorbed by the yarn.

10. How can we preserve moisture regain after conditioning?

After conditioning, the yarn rests and cools down for approx. 30 minutes. During this time some moisture is lost to the environment. After the 30 minutes the yarn has to be packed in PE bags or wrapped to preserve moisture regain. Proper packing provides a humid environment for the cone which improves an even moisture distribution.

As brand new development, WELKER has launched in 2007 the **COOLVAP technology**. By means of nano- molecules of water, an anaerobic cooling takes place inside the conditioner, thus reducing the temperature already inside the conditioner and saving the evaporation of water.

11. There maybe some concern about fungus and spotting during transport or storing.

Uniformly distributed moisture inside the cone never exceeds the natural moisture absorption capacity of cotton. Thus there are no wet sections in the yarn which could be the source of fungus. Also the water undergoes a distillation process which eliminates impurities like fungus spores.

However, with the new COOLVAP technology, appropriate additives can be applied to the yarn bobbins. Newly developed HIDROMAX additives can be inserted into the machine with the COOLVAP system, thus preventing the risk of fungus and increasing the retaining of moisture.

12. Some of our high twist yarns require heat setting. Do we need another type of machine?

Using WELKER Systems there is no need for two different machine types. Conditioners are designed for two modes of operation:

- Conditioning at temperatures of max 65°C
- Heat-setting at temperatures up to max. 105°C

It takes to push a button to change from one operation to the other.

13. We want convince ourselves from the benefits of WELKER. Can you assist to arrange trials in our country?

In all parts of the world Vacuum Conditioning is „state of the art“ for improvement of yarn quality. WELKER has approx. 1.800 machines installed world wide. Please contact our agents in your country to arrange a corresponding trial locally, or if needed, in our premises.

14. We are strongly interested in your system. How may we justify such investment?

Moisture regain always justifies investment in yarn conditioning. Payback in less than one year leaves no doubt on the efficiency of WELKER Conditioning.

Furthermore, rising demand for improved yarn quality corresponding to world-



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WELKER SPINTECH GMBH
Neugasse 3
67435 Neustadt/ Weinstr.
Germany –
Phone + 49 (0) 6321 48 32 98
Fax + 49 (0) 6321 48 72 73
Email: info@welker-spintech.com
www.welker-spintech.com
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standards will make such investment a matter of time only.

German textile machinery is always valuable. Considering our excellent workmanship, proven design, and the use of reliable components we feel that our price/performance ratio is better than those of machinery builders who sell cheap and leave the additional "soft costs" like maintenance, repair, production stops, poor performance and service and corresponding troubles with our customers.

15. What is the capacity of WELKER Conditioners?

WELKER conditioners are available at all sizes from 25 – 3.000 kg/ hour in the CONDIBOX and MINIBOX product lines and allow the processing of all types of yarn carriers and pallets. Process time is approx. 60 minutes. WELKER has the most extensive range of conditioners of all types for all applications.

16. Which spare parts are required?

The only wear part is the seal of the automatic door closure. However with proper lubrication a long life of this seal (up to 12 months) is possible.

17. What is the difference between Conditioning and Heat setting (Twist Setting)

Conditioning is a low temperature vacuum steaming process for regaining moisture of yarn after spinning. Moisture increase = weight increase. The conditioning cycle gives good

moisture regain, however it provides only little twist setting.

Heat setting is a vacuum steaming process at elevated temperature level (85 - 95°C) to reduce tension (snarling) of yarn after spinning. The heat setting cycle gives perfect relaxation to the yarn, however it provides only little moisture regain. Both processes can simply be selected on the control panel.

18. What about service for WELKER in our country?

WELKER machines are known for its reliability and low service demand. However, our agents in your country are able to provide any necessary service such as installation, spare parts, technical assistance, etc.

19. How experienced is WELKER in this field?

WELKER supplies textile machines since 1856 and is therefore, a traditional supplier. Steaming and conditioning machines are built since 1941, WELKER was the inventor of the vacuum conditioner for textiles.

20. What about warranty and quality?

We offer the "WELKER 10 YEARS GUARANTEE" for our machines in the terms of our standard guarantee certificate. Please ask our Agents for more details.

All WELKER machines are 100% manufactured in Germany.



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Phone + 49 (0) 6321 48 32 98
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