

Entering the market with a sharpened profile

T-Rex by Ziemann further optimised - focus on maximum customer benefit

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Since the launch of the T-Rex by Ziemann in 2015, a decisive step has been taken in its further development. Since then, the mill has proven itself as a 5 t/h dry grist mill in a German whisky distillery as well as a 15 t/h mill for conditioned dry milling in a large industrial plant in Central America with a production of 12 brews per day and a volume of 1000 hl per brew.

The T-Rex milling unit can be operated for dry milling and steep conditioning. For dry milling, there is the T-Rex DRY, which is available in a range of capacity levels from 5 t/h to 25 t/h based on malt in accordance with DIN 8777. Conditioning can be added upstream as an option. Both chilled cast iron and a special stainless steel material can be used for the grinding rollers.

The steep conditioning system T-Rex WET is available with a capacity of up to 25 t/h, graduated in steps of 5 t/h. This system for wet milling has grinding discs made of special stainless steel and a stainless steel housing and can be fully integrated into the brewery's cleaning processes.

T-Rex
BY ZIEMANN

 **Ziemann**
Holvrieka

First major revision

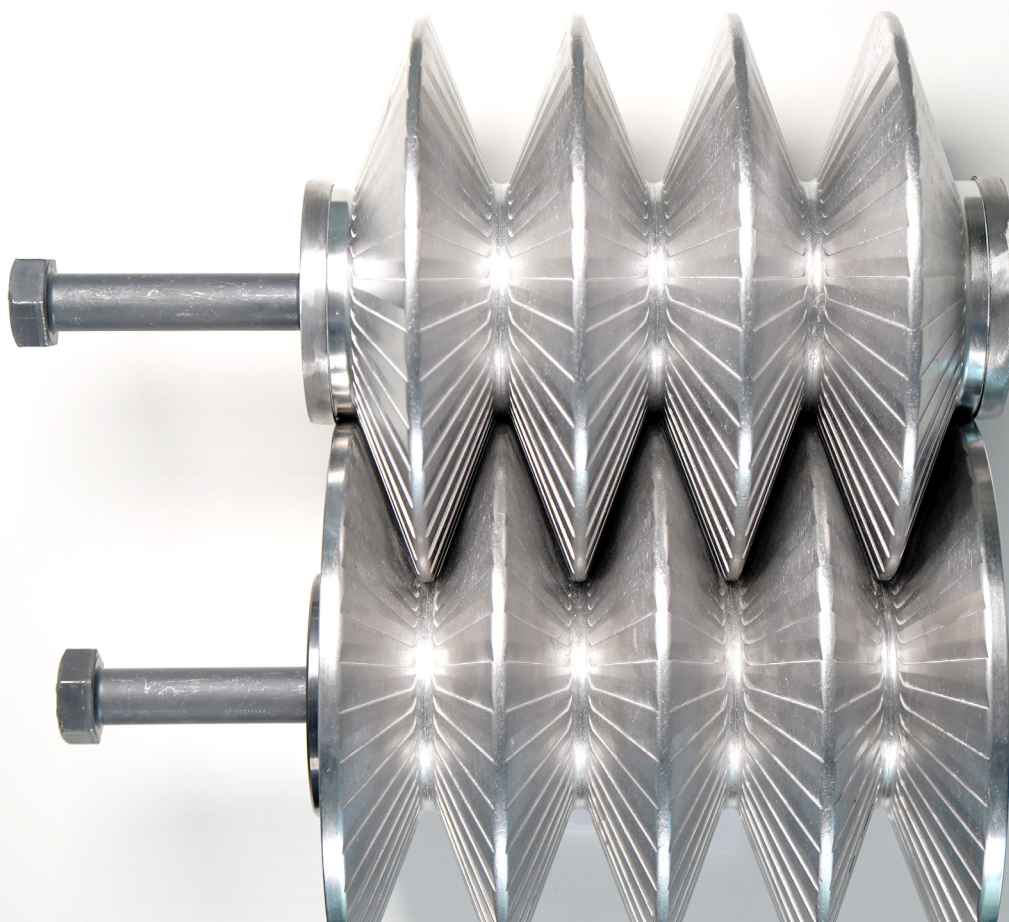
The milling principle of the T-Rex is characterised by high performance with low space and maintenance requirements. The technical developments described in this article build on these advantages.

The centrepiece of the mill is the milling unit. This does not consist of cylindrical rollers, but of double-cone discs in toothed arrangement that form a zigzag-shaped milling gap.

This arrangement achieves a large grinding surface in a small space. This enables very compact, lightweight mill design, which places low demands on the building. Compared to cylindrical rollers, the grinding discs are small in volume and therefore lightweight. In a mill with a capacity of 20 t/h, a loaded roller weighs only approx. 100 kg. This makes the wear parts favourable and easy to transport.

The double-cone shape and the arrangement of the grinding discs also produce a reduced, acute feed angle to the milling gap, which means that the compact machine has a throughput that can be achieved with a cylindrical roller mill with twice the roller diameter and three times the roller length.

Furthermore, the following applies: The more acute the feed angle, the more efficient the grinding, while at the same time the toothed profile of the grinding discs can be dispensed with.



Longer service life of the grinding discs

Practical use in breweries showed that the grinding discs are robust and durable. However, the wear was not evenly distributed over the entire grinding surface.

At the end of the disc's life cycle, the pointed edges of the discs were always slightly rounded and met a pointed cone on the opposite side, which caused the milling gap to become increasingly uneven.

With this in mind, the edges of the grinding discs have now been provided with a special radius, which enables even utilization of the disc surface and makes the discs even more resistant to foreign bodies. At the same time, this rounding in the centre of the double cone has been replicated, so that rounding now meets rounding. This results in an even abrasion over surface area and time, significantly extending the service life.

As already mentioned, the very acute feed angle resulting from the tothing of the grinding surfaces means that profiling by means of teeth is not necessary. Instead, the grinding surfaces are equipped with different feed grooves, which ensure a high throughput while at the same time protecting the ground material surface. This benefits husk preservation. In addition, wear does not occur at the tip of the tooth, but on the surface. This significantly increases the service life.

In addition to special cast iron, which corresponds to the state of the art for roller mills, grinding rollers made of a special stainless steel are now also available. This enables all parts of the mill, which come into contact with the product, to be made of stainless steel.

Improved technical design

In addition to the heart of the mill, a lot has also changed in its technical structure. Four points were at the top of the specifications for the mill:

- Maximum ease of maintenance and repair, even for untrained personnel
- Maximum reliability with minimum maintenance effort
- Minimisation of drive losses
- Easy integration into existing and new systems

This approach brings far-reaching improvements from the customer's point of view. The new generation of the T-Rex, for example, eliminates the need to remove and store spare parts for a complete milling unit.

The new, modular design of the grinding rollers with split shafts and a disc pack module makes it possible to replace the disc pack and all wear parts within around two to three hours, including a test run.

The bearing is completely accessible by loosening just four screws. The bearing modules can then be fitted with new sealing rings and bearings on the workbench. Almost all components have such tight tolerances that adjustment work is not necessary. The parts are secured against mixing up by markings and pins.

The grinding discs are very easy to replace and can be kept individually in stock and, above all, dispatched and shipped. If time is critical, individual discs can even be sent by parcel service.

No belts or gears were used to drive the grinding rollers. Instead, they are driven directly via a claw coupling. The advantages of this new design are higher efficiency, the elimination of almost all wear parts (the coupling star remains as a long-lasting component), even smoother running and the minimisation of accident risks.

Direct integration into the process control system

All sensors in the mill are suitable for integration into the process control system. There is no need for a “black box” mill control system. This means that the mill can be easily integrated into new or existing systems and can grow with the customer’s system. An MTP file is also available for simple integration into a Siemens Braumat system.

The T-Rex grist mill can be used to process a wide variety of raw materials with a wide variety of grist types and throughput rates without changing the basic design of the mill. In addition to this versatility, there are further advantages such as high specific output, low energy consumption and simplified maintenance and cleaning.





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