

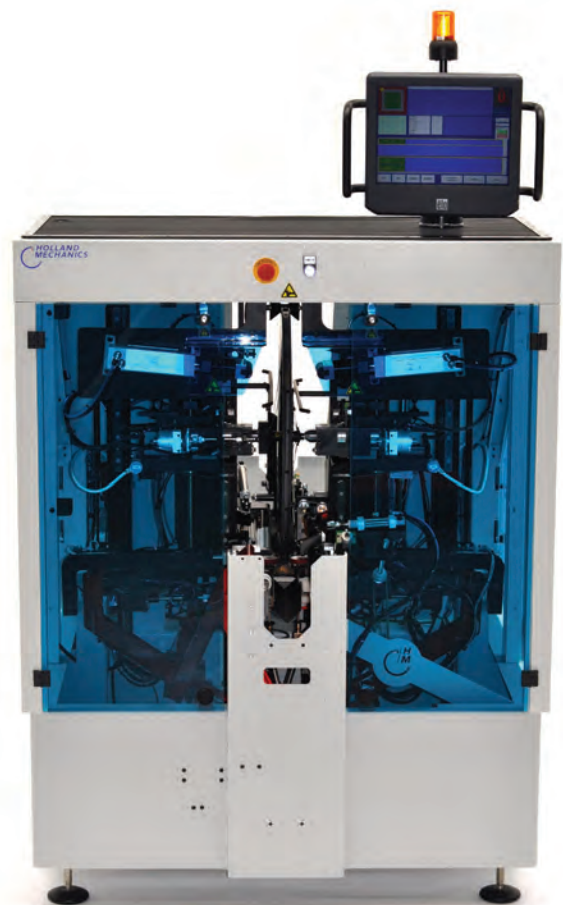
Hydraulic Brake Cylinders Improve Bicycle Wheel Truing Process

With its wheel-truing machine, Holland Mechanics BV specializes in making sure the spokes on bicycle wheels are loaded with the correct tension, avoiding rim warpage. By integrating ACE hydraulic brake cylinders into the machine's design, the company discovered it can better control the machine's motion, resulting in reduced rim tolerance and increased production rates.

Holland Mechanics BV, a company based in the Dutch province of Noord-Holland, specializes in producing bicycle wheels. Regardless of how sophisticated the bike model is, the company's wheel-truing process is the same: a machine first checks the height and lateral tolerances of the rim, and then a computer program determines the proper tension levels of the spokes.

The greater the difference in tension between individual spokes, the higher the probability the rim will suffer from lateral warping. The designers in the research and development department at Holland Mechanics therefore strive to keep the value differences between spokes as low as possible. For high-performance bicycles, the wheel-truing machine performs up to 100 tensioning operations per bike wheel.

Hydraulic Brake Cylinders Replace Rubber Buffers. Until recently, a ± 0.4 mm rim discrepancy was the standard. During operation, rubber buffers were used to absorb the movement of the wheel-truing machine, causing a rebound. This effect, combined with stricter customer requirements of ± 0.3 mm tolerances prompted the designers at Holland Mechanics to look for a different solution.



The wheel-truing machine from Holland Mechanics BV.

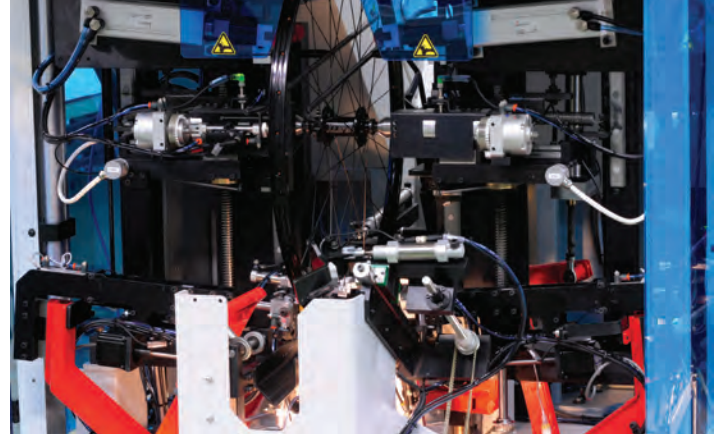


Using ACE hydraulic brake cylinders instead of rubber buffers optimized the machine's performance.

The designers decided to switch out the rubber buffers for hydraulic brake cylinders from ACE Controls to prevent the rebound effect from happening. The movement of the wheel-truing machine could therefore be better controlled, resulting in more precise gripping of the spokes.



ACE offers hydraulic brake cylinders with diameters ranging from 12 to 70 mm and strokes from 10 to 800 mm.



The wheel-truing machine during testing in the in-house research and development department at Holland Mechanics.

Reduced Tolerance Values And Increased Production Speed.

ACE hydraulic brake cylinders (model HB-12-20-EE-P), which resemble industrial gas springs in terms of their structure, have a small, compact design. As a result, they could be easily integrated into the wheel-truing machine without compromising cost or the amount of floor space.

The extension and retraction speed of the cylinders can be precisely set, enabling the designers to control the machine's speed of movement in both the push and pull directions. With diameters of 12 mm and stroke lengths of 20 mm, these components can apply compression forces of up to 180 N and have an operating temperature range of -20 to +80°C for use in virtually any environment.

Thanks to the cylinders, Holland Mechanics surpassed the required rim tolerance of ± 0.3 mm. The addition of ACE brake cylinders into the wheel-truing machine, along with improvements to the machine's drive unit, contributed to new tolerance values of ± 0.1 mm.

Since the modifications were made, production speed has also increased by 10 percent. With the machine's movement under control, gripping accuracy has improved. Because the machine's grippers don't miss the spokes, production is no longer brought to a halt.

To learn more, please visit: www.acecontrols.com