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**PISTON MEASURING AND ASSEMBLY LINE**  
LINE CONCEPT

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# OUR PISTON MEASUREMENT AND ASSEMBLY CONCEPT

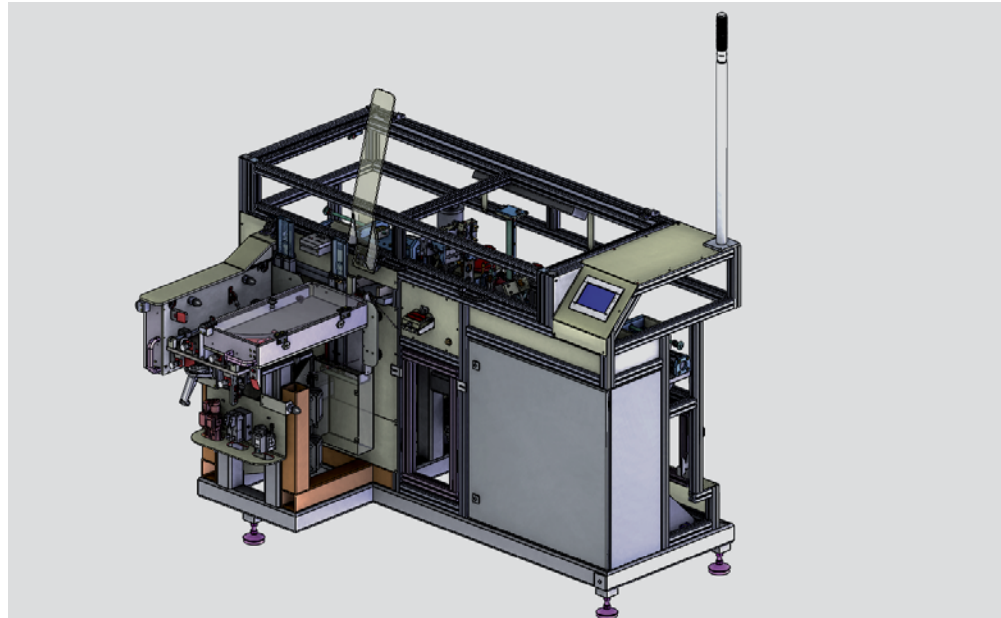
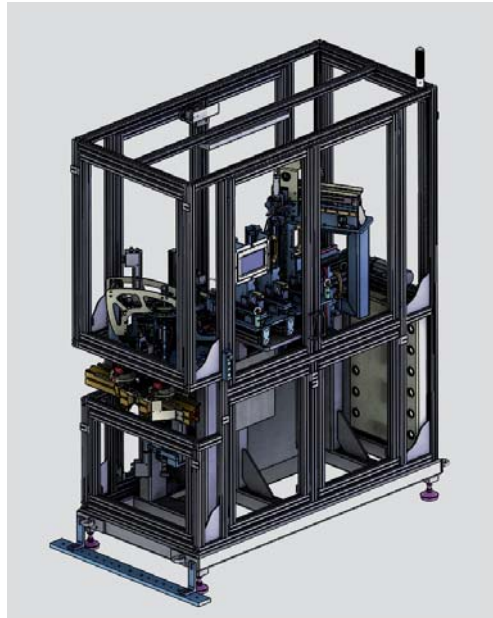
With more than 90 years of experience within the field of production measurement technology HAFNER decided to acquire the business activities of Mess-Tec in 2016, targeting to set benchmarks in the area of piston measuring and assembly technology. All existing concepts on the market have been profoundly analyzed, rethought and consistently developed. New developments are largely driven by market requirements. Significant improvements were particularly realized in the following areas:

- Flexibility for future requirements such as the output rate per shift and the adaptation to changed measuring and assembly tasks
- Convenient and quick retooling procedure
- Traceability of all components belonging to the assembled and checked piston

The concept covers all common measuring, testing and assembly tasks on the piston using independent stations. The overall function of the complete line results from interaction of all stations via a circulating conveyor belt. An independent use of each station is also possible. RFID chips in each workpiece carrier allow pistons to find their way through the measuring and assembly line.

## RANGE OF TASKS

- | **Measuring:** Offset of the pin boss, compression height, bowl depth, diameter of the piston, diameter of the pin boss, weight, ovality, perpendicularity, twist of the ovality etc.
- | **Assembly:** Pin, circlip, piston rings and spacer expander, cover plates
- | **Check:** Detect chips, surface damages, contour accuracy, coating quality, positional orientation, ultrasound, eddy current
- | **Mark:** Laser marking on the crown and window, ink marking on the crown



**Convenient and quick retooling**  
Increased equipment availability enables productivity increases at unchanged fixed costs. Retooling activities do not require any adjustments. They can be performed directly by the operator.

**Full traceability**  
Marked batches and individual components are recorded electronically and stored permanently. A fast and transparent data analysis allows immediate optimization of internal processes. Also it allows precise assignment of ready assembled pistons to batches of rings, pins, circlips etc.

**Flexible scalability**  
The expansion or duplication of tasks is easily possible by adding new stations. This gives confidence to customers to be able to deal quickly with modified requirements concerning quantity or new measuring and assembly tasks.