



SHRINK FITTING WITHIN AN AUTOMATIC ASSEMBLY LINE

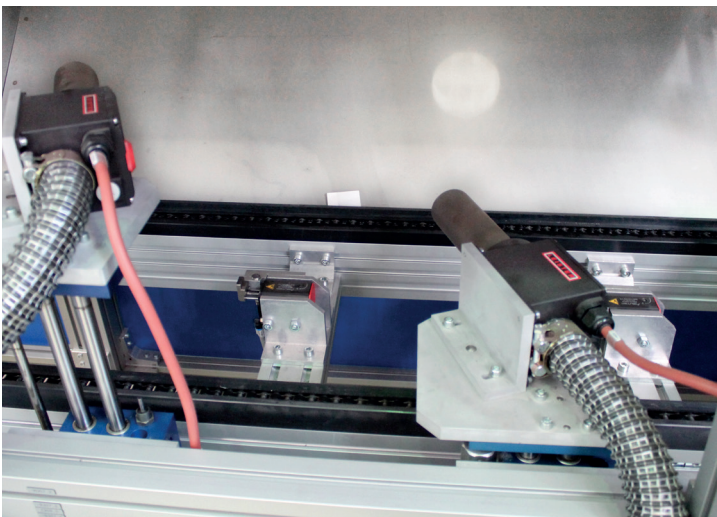
- Cold stretching by means of liquid nitrogen
- Automatic shrinking module with workpiece carriers

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The production of a press-fit connection between an aluminum casting and a steel part is problematic at room temperature and can lead to seizure of the parts without the aid of lubricants.

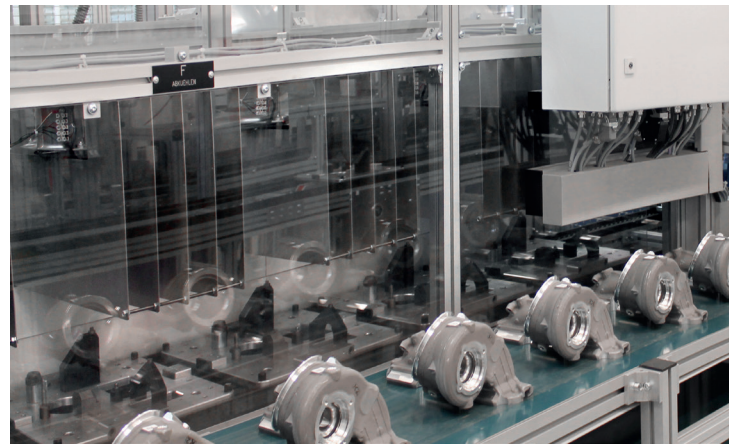
An alternative to conventional press-fitting is cold expansion using liquid nitrogen. This process has the advantage that the joining process can be carried out with low joining force or without force.



COSTUMER BENEFIT: FLEXIBLE PROCESS SOLUTION

Two steel bushings had to be joined with high precision in a cast aluminum motor housing. The joining process was integrated into a modular, fully automatic assembly and testing line, with the workpieces to be machined being transported on workpiece carriers.

First, the aluminum housing is heated to approx. 120 °C by a hot air blower. At the same time, the bushings are cooled to -150 °C in liquid nitrogen. Sensors monitor the temperatures so that only parts with the ideal parameters are joined. parameters are joined.



Two electric screw presses are each fitted with the corresponding bushing by a robot. The presses insert the bushings into the housing with speed control and force-displacement monitoring. The temperature of the parts is monitored by sensors.

After joining, the ZSB parts are cooled to room temperature so that they can be safely fed into further processes. The nitrogen consumption of the system is monitored and the loss is automatically compensated.

The cycle time is 40 seconds per part.