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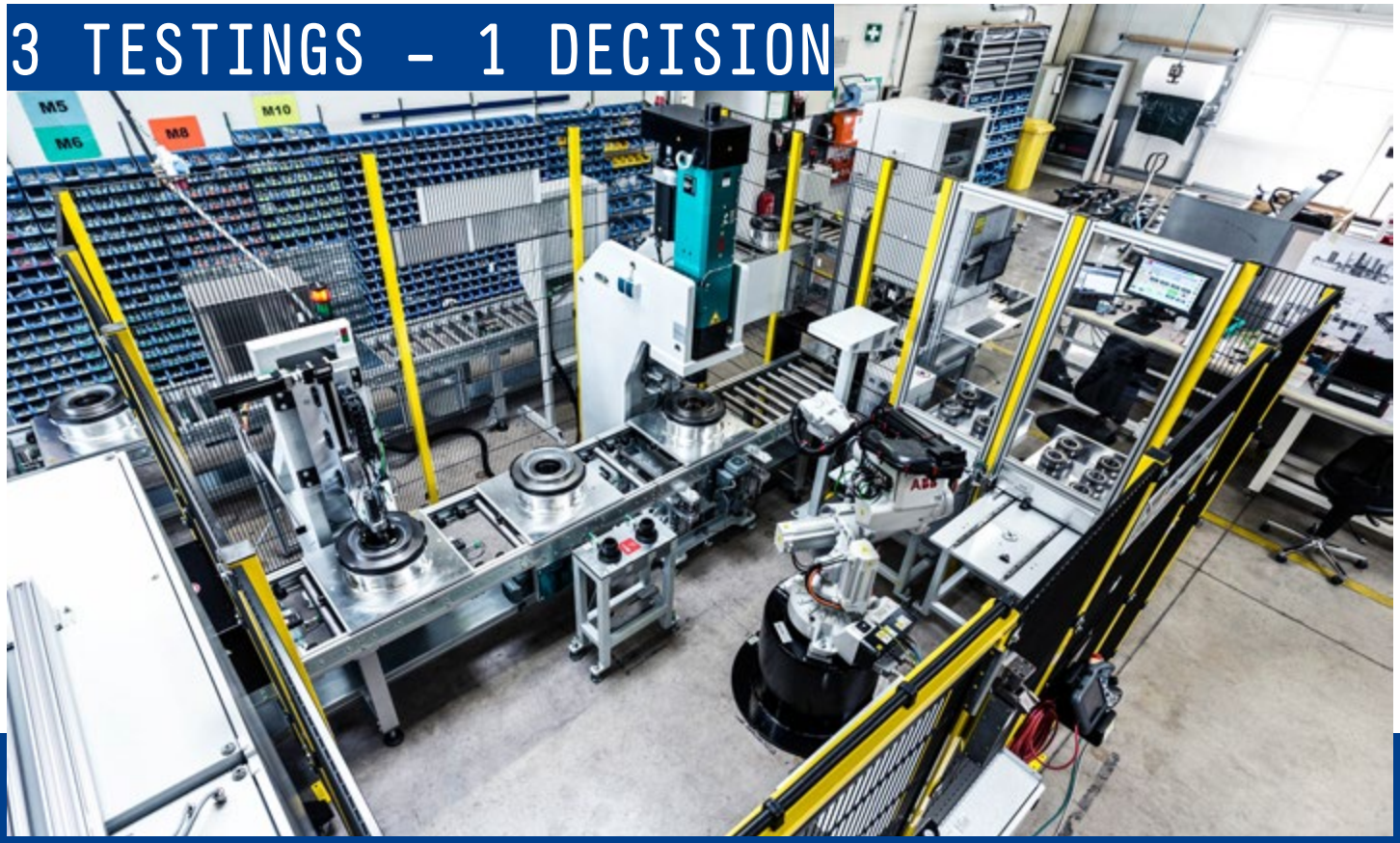
ASSEMBLY LINE FOR TRUCK AXLE HUBS

A DIFFERENT TYPE OF POWER STRUGGLE

3 TESTINGS – 1 DECISION



The question here is: OK or NOK?! The customer, a manufacturer of trucks and buses, attaches great importance to quality. Not every component reaches the end of the machine for withdrawal. Prior to this, they need to pass three different testings within the assembly process. If only one of the criteria doesn‘t fulfill the requirements, there is no possibility to pass the red light and NOK stopper. Sounds like an interesting story? Not really, the quality control is part of our customers‘ daily business and for us as a special mechanical engineering company it is one of our core competences.
So why is this machine so impressive? In the end the overall concept and the invested know-how of our designers and engineers make the difference: Various process steps have been combined time- and space-savingly, even though the component weighs around 30 kg and is anything but easy to handle. The assembly line seems to be small and without attracting attention, but who expects forces up to 150 kN behind this pressing unit?! Also, the detailed data, which is stored and visualized throughout the entire process, enables a completely new level of live information supply.
Maybe after all this is turning into an exciting story...you decide!

SOME INDIVIDUAL OPERATIONS AT A GLANCE

manual part loading into special workpiece carriers

inward transfer via separating stops

entering the measuring station including DMC-reader and DIATEST measuring system

testing diameters regarding different drill depths

manual loading of storage cabinets

withdrawal of the bearing via robot and automatic DMC-reading of each part

positioning of the bearing for temperature measuring

temperature difference >2°C between housing and bearing: positioning on the NOK-storage

temperature difference <2°C: pressing in with forces up to 150 kN

in case the measured force/stroke curve is NOK: transport to the NOK stopper, no laser marking takes place

measured curve is OK: transport to the laser cabin for DMC-reading and laser marking with the collected data

quality of the DMC is OK: transport of the assembled component to the unloading stopper

THE PROJECT IN FIGURES

3 decisions are crucial in this project:

- Is the prior mechanical processing alright?
- Is the temperature difference between the bearing and the housing within the rated range?
- Is the force/stroke curve of the pressing-in process as specified?

In case only one of these questions is rated negatively by the system, the outward transfer takes place at the NOK stopper with indication of the error data.

Facts

- component weight of ca. 30 kg
- 3 testings with DIATEST measuring system
- maximum pressing-in force of 150 kN
- collected data: geometric measured values, temperature data of housing and bearing, force/stroke values of the pressing-in unit & timestamp of the laser marking

INDIVIDUAL OPERATIONS IMPLEMENTED

This assembly line is not only an intelligent system which decides with the aid of modern techniques autonomously whether the component part is OK or NOK but also bundles information to keep the reason for the decision transparent. At the same time, it offers possibilities for interaction whereby it was paid attention to visualize only the most important parameters at different positions via IPC & touch panels.

Automation

- conveyor technology including inward transfer & constant traceability of the components
- integrated control of the prior mechanical processing quality via DIATEST measuring system
- handling of the bearings via robot including DMC-reading as well as positioning for temperature measuring with subsequent NOK outward transfer or handover for further processing

Assembly technology

- servo-motor-driven pressing-in of temperature tested bearings into the components
- laser marking of the assembled OK parts

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CONTACT

ARE YOU FACING SIMILAR CHALLENGES?

We would be happy to advise you on comparable projects and answer any questions regarding our reference cases.

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