



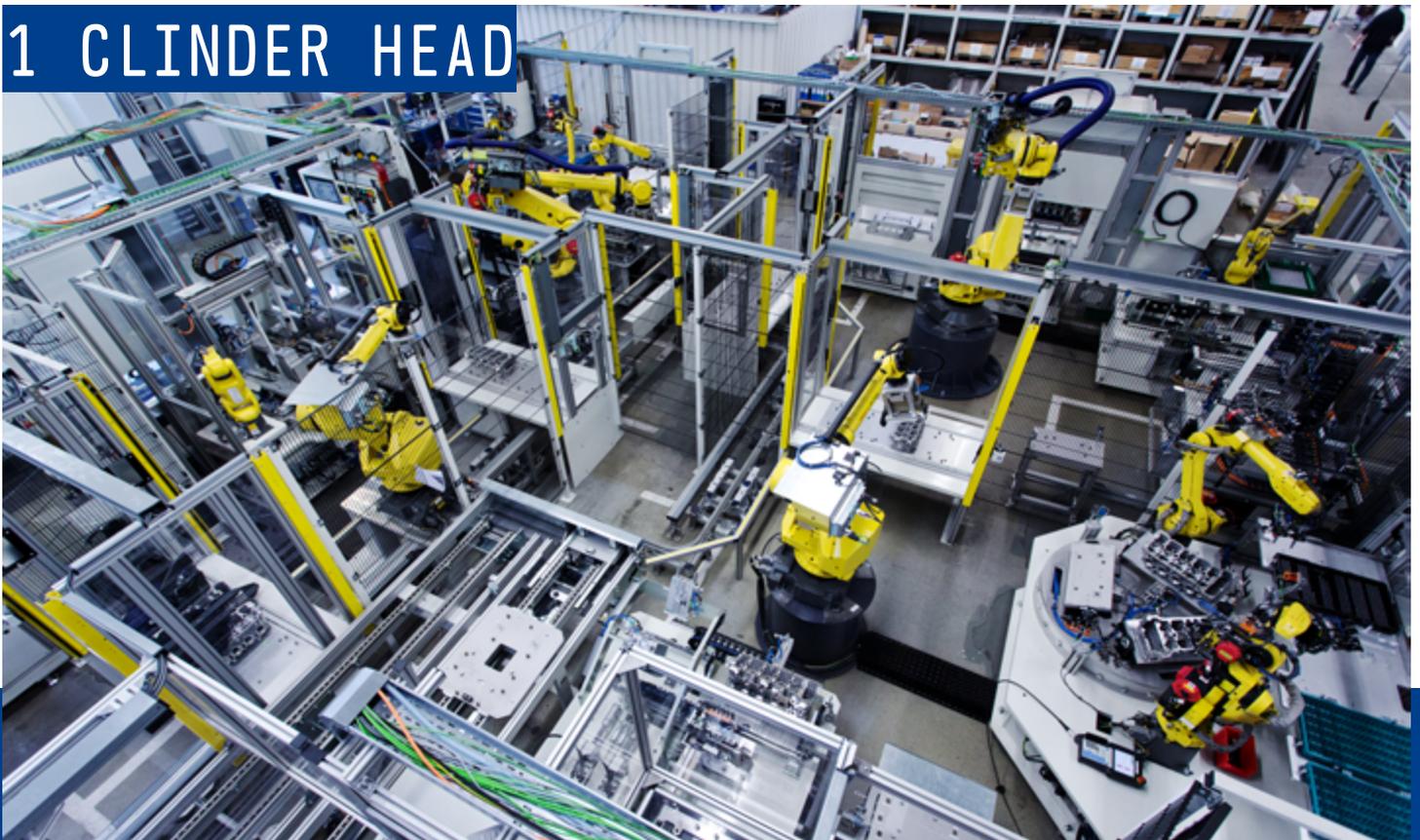
Paul Köster

Medebach • Germany

CYLINDER HEAD ASSEMBLY PRODUCTION LINE

16 ROBOTS, 2.88 MINUTES,

1 CLINDER HEAD



It takes less than three minutes for a complex cylinder head to be assembled from a series of sometimes very delicate individual parts and to leave the line. This system, built by Paul Köster GmbH, makes it possible to perform multi-step assembly operations in no time flat and check components for leaks in six different test cavities in a total of seven individual tests.

The nearly 25-meter long system for a well-known supplier of a leading car manufacturer in southern German was built and commissioned for the customer after detailed planning, design and production in Medebach. The highest precision, intensive coordination and deep process know-how ensure a reliable process for 18 individual operations.

Everything is provided by Paul Köster GmbH in this turnkey project, from the initial system designs to the overall comprehensive system.

SOME INDIVIDUAL OPERATIONS AT A GLANCE



Component feed transport system



Cylinder head cover leak testing



Cylinder head leak testing



Spring plate assembly below



Valve assembly



Valve key assembly



Hammering in valves and leak testing



HVA element and roller cam followers assembly



Spring and spring plate assembly

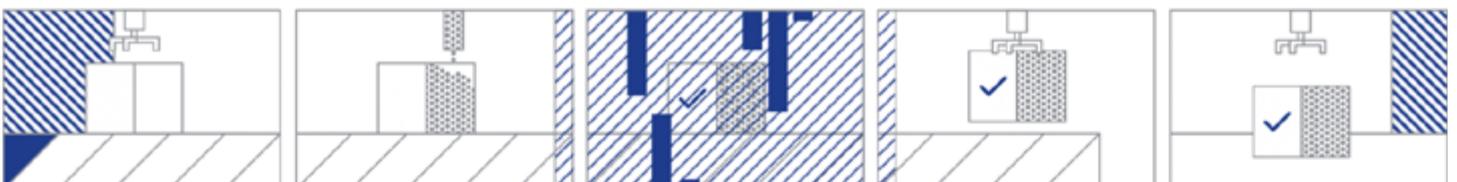
THE PROJECT IN FIGURES

Numerous interfaces were optimally coordinated for a smooth flow and consistent cooperation of the individual cells.

The complexity and multi-faceted nature was reflected not only in the individual assembly and testing operations, but also in the coordination and timing of all related processes.

Facts

- System approx. 25 m long
- 7 process steps
- 18 individual operations
- 16 robots
- Cycle time of <2.88 min per cylinder head



INDIVIDUAL OPERATIONS IMPLEMENTED

This project required all our core areas in order to ensure a functioning and well-tested component assembly.

The transport and provision of parts and individual components holds all individual processes together. The assembly stages were coordinated with the interspersed leak tests of the various test cavities so that, in the end, all essential steps run into each other rationally.

Automation

- Component feed transport system
- Visual inspection of cylinder head and cover
- Use of handling robots

Assembly

- Ball assembly
- Screw plugs, spacer screws, check valve
- Valve stem seal and spring plate below
- Valve assembly
- Spring and spring plate assembly
- Valve key assembly
- Assembly of spark plugs with type recognition
- Hammering in of valves

- HVA element and roller cam followers assembly
- Assembly stud bolts
- Camshaft manual pre-assembly
- Laser marking
- Manual unloading and packaging

Leak testing

- Cylinder head cover leak testing
- Cylinder head leak testing (water chambers, pressure oil channels, pressure-free oil chamber, air ducts)
- Leak test (combustion chambers, spark plug chambers)



Christof Nölke, Sales
inquiry@paul-koester.de
+49 (2982) 92 11-866

CONTACT

ARE YOU FACING SIMILAR CHALLENGES?

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