

Equipment know-how for customized solutions

The ZELTWANGER Group realizes powerful and economical special purpose machines for leak tests and further installation options with standardized pneumohydraulic drive systems from TOX[®] PRESSOTECHNIK.

Classical special machine manufacturing is dead - long live classical special machine manufacturing! This is roughly the situation in the field of device construction and special machine manufacturing as well as system integration. In times of maximum automation, creative process solutions might still be of high importance, but customers are no longer willing to pay any price for this. For problem solvers to get out of this predicament, a number of manufacturers of devices and special machines have become system integrators with specific process know-how and system solution competence and no longer do everything themselves due to cost and time restrictions. The focus is on know-how for individual functions and complete process solutions; whereby standardized components, assemblies and subsystems are used whenever possible for the realization of devices, special machines and systems. This philosophy is followed for example by the companies of the ZELTWANGER Group based in Tübingen, Germany, namely ZELTWANGER Automation GmbH and ZELTWANGER Dichtheits- und Funktionsprüfsysteme GmbH.

Creative special machine manufacturing uses standard components

When some time ago the task was to develop a modularly designed and universally flexible leak testing system for gearbox casings, Zeltweger started looking for suitable products to be able to meet the different requirements. Due to the different types of gearbox casings as well as some individual additional assembly tasks, and finally because of differing batch quantities, ZELTWANGER decided on building universal base machines which can be executed as single or double carriage systems and charged manually as well as automatically (per handling system). For leak tests, the gearbox casings must be placed on the sealing surface of the sliding carriage mount with the flange surface facing downwards, and pressed against the seal with specified high pressure. In order to be able to execute these combined lifting/sinking/press force operations safely and efficiently, the engineers opted for the technology company TOX[®] PRESSOTECHNIK GmbH & Co. KG, D-88250 Weingarten as partner. Based on the requirement analysis, the choice on the one hand was standardized pneumohydraulic drive cylinders of the type TOX[®]-Powerpackage, and on the other hand the pneumohydraulic unit of type KT. Parameters for the required contact pressure were the footprints of the gearbox casings and the specified test pressure. The drive cylinders TOX[®]-Powerpackage thus have the task to place the vertically moving holding-down clamp and fix it onto the sealing surface with reproducible exact contact pressure.

Requirement: Reproducible exact lifting/sinking/press functions

In addition, depending on the plant design, another standardized drive solution from TOX[®] PRESSOTECHNIK is used for the additional function "Pressing in a steel ball to close a borehole". With the pneumohydraulic unit of type KT, consisting of pressure intensifier ES and hydraulic cylinder HZL, and further completed with the TOX[®]-Components tool holding fixture, adapter and press force sensor, a complete drive system could also be offered here. It is installed in the upper tool of the system, as pressing in of the steel ball occurs only after fixing the component by lowering and pressing on the holding-down clamp. An integrated press force sensor and an external distance sensor monitor the pressing in process and the pressing in depth, ensuring highly secure mounting. By using standardized TOX[®]-Drive Units, a compressed air connection of 5 bar is sufficient for all system versions. No hydraulic unit or respective piping or tubing is required, which renders adjacent constructions, various mechanical work and installations superfluous. This way the aforementioned single carriage as well as double carriage systems are equipped with TOX[®]-Powerpackage Cylinders. The TOX[®]-Pneumohydraulic Units of type KT for the press-in stations generate 48 kN press force and have a total stroke of 50 mm. If required, for example in case of tight installation conditions, the pressure intensifier and the hydraulic cylinder can also be installed physically separate from each other and connected via hose lines. The drive technology portfolio from TOX[®] PRESSOTECHNIK in this case also enabled individually adapted and cost-effective solutions from the standard product range, and the short-term complete delivery also supported the system realization in due time.

Image descriptions:

Image 1 shows a single carriage leak testing system for testing gearbox casings

Image 2 shows the single carriage system including the mount for the gearbox casings (bottom) and the holding-down system (top), which presses the gearbox casing onto the sealing surface with a press force of max. 38.5 kN via TOX[®]-Powerpackage Drive Cylinders

Image 3 shows the TOX[®]-Powerpackage as ready to install unit

Image 4 shows a TOX[®]- Pneumohydraulic Unit type KT

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Image 4 shows a TOX[®]-Pneumohydraulic Unit type KT

