Case Study: Prototyping

Concept check of special tightening tool with geared offset head

Problem

During the product development phase, the customer specified a tightening system with a geared offset head and a mechanism that would enable hand-guided tightening for fittings that are difficult to access with a tightening angle (high final torque) and different installation locations on the process side in the final plant. Both the relatively high costs and the estimated delivery times for this special solution made it necessary to order the entire system during the prototype phase and also to commission the corresponding infrastructures at the final plant (steel construction, IT, etc.). Otherwise, the availability of the tightening system for startup would have been at risk.

Solution

As this was a special joint with a relatively high investment in tightening technique, the tightening point was examined in detail by Atlas Copco on the first vehicles in prototyping before the ordering process was initiated. This involved using a 3D print of the configured geared offset head together with a model tightening tool. During the investigation, an interfering contour was found on the component with the geared offset head, which prevented the screw from being tightened correctly. Based on these findings, the design of the geared offset head was corrected in good time before the order process was initiated.

AVOIDANCE OF ADDITIONAL COSTS OF
135%

Added value for the customer

Due to the early inspection during the prototype phase and the finding of the interference contour, it was still possible to influence the design of the geared offset head and avoid a bad investment. There would not have been any other application for the geared offset head, so scrapping would have been the only option in the start-up phase. Furthermore, if a defect had been detected during start-up, a new order would have been necessary, which would not have been available until after the SOP (Start of Production) due to the long delivery time. The consequence would have been manual tightening, which would only have been possible with an additional employee in the cycle due to the angle.

INVESTMENT SAVINGS
OF APPROXIMATELY € 100,000 FOR A NEW ORDER

DELIVERY ON TIME OF THE PLANNED TIGHTENING SYSTEM
MINIMIZES THE HUMAN INFLUENCE FACTOR FROM THE BEGINNING (HANDGUIDED VS. HAND-HELD)

SAVINGS IN ADDITIONAL PERSONNEL COSTS
OF € 35,000 (BRIDGING PERIOD OF APPROX. 3 MONTHS OVER 2 SHIFTS)

ERGONOMIC TIGHTENING
STARTING WITH THE FIRST VEHICLE (HAND-HELD TIGHTENING AS A TEMPORARY SOLUTION WOULD NOT HAVE MET THE ERGONOMIC REQUIREMENTS IN THE PRESENT JOINT)

Atlas Copco

Atlas Copco Tools Central Europe GmbH

Langemarckstraße 35, 45141 Essen
✉ ac-consulting@atlascopco.com | www.atlascopco.com