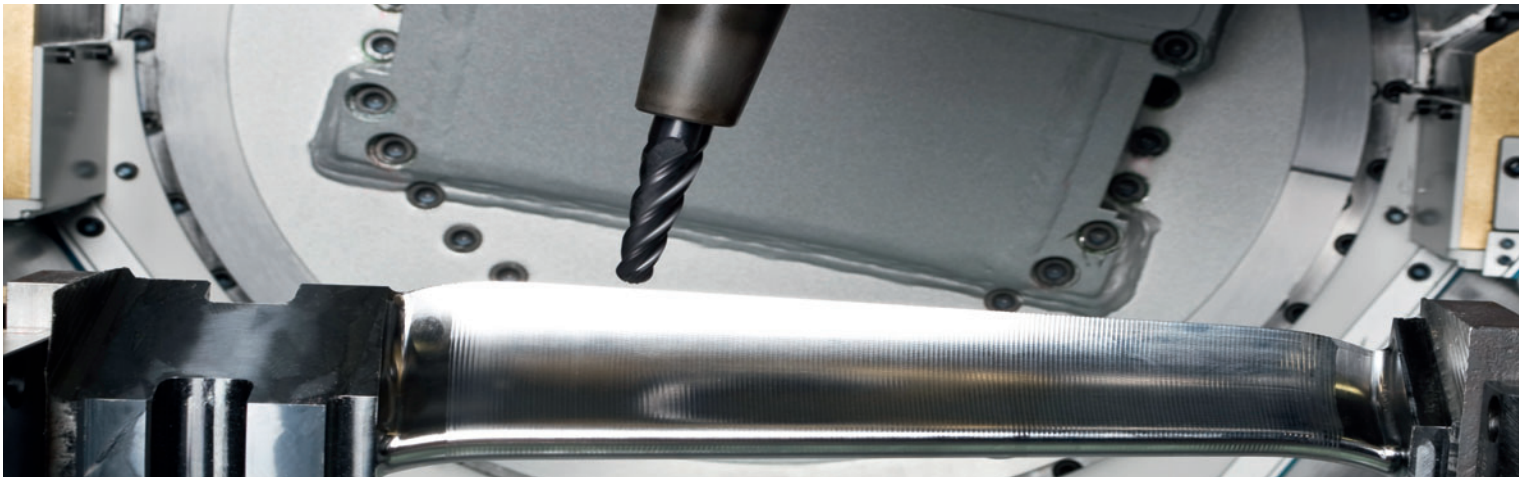
The Drive & Control Company

Rexroth
Bosch Group



Decentralized Automation for the Manufacturing of Turbine Vanes

CNC Solution for Perfect Manufacturing with Swiss Precision

Liechti Engineering AG from Switzerland is a global leading manufacturer of airplane and power plant turbines. Specifically the elaborate surface profiles of the turbine vanes demand the highest standards in terms of processing speed and control quality – this is the reason why Liechti opted for a CNC solution with decentralized computing intelligence from Bosch Rexroth.

Complex flow profiles for the turbine vanes in power plants and airplanes require sophisticated processing during the simultaneous machining of tough materials such as Titan, Inconel, Nimonic or high alloy steels. Because of their filigree structure, the vibration-susceptible components have to be processed quickly and accurately. For this end, Liechti deploys machines of the Turbomill series, which are designed to work with five synchronized axes and do not require any manual post-processing.

High Requirements on the CNC Control

In close cooperation with Liechti, Bosch Rexroth developed a drive and control solution for the Turbomill machines, taking advantage of the CNC control IndraMotion MTX advanced with an exceptionally powerful multi-core processor. The fast exchange of data with the intelligent IndraDrive motors is realized via the Sercos III automation bus. The axes are driven by synchronous linear motors of the IndraDyn L series and IndraDyn S synchronous servo motors. The decentralized system architecture with distributed drive and control intelligence forms the basis for the high computing performance required for the complex interaction between the different axis movements.

Consistency as a Key Success Factor

Rexroth's system concept helps to significantly increase the productivity and machine availability at Liechti's manufacturing plant. The electromechanical system, closed loop control and motion control are perfectly synchronized during the milling process and help to reduce the wear of the tools. For inspection, maintenance and repairs it is sufficient to put the milling machine into a safe stop condition. It is not necessary to entirely shut down the system, so that it can be put into operation again very quickly.

Tough Application

Extremely fast and robust system for the accurate machining of tough materials in turbine manufacturing

Ingenious Solution

Consistent drive and control concept for the fast and accurate machining with five synchronized axes

Exactly

„Rexroth provided us with all the necessary components from a single source. This is a great advantage because everything fits together perfectly"

Andreas Scheidegger, Liechti AG

Solved with

- IndraMotion MTX advanced with multi-core processor
- IndraDyn L and IndraDyn S synchronous motors
- Decentralized system architecture with distributed drive and control intelligence