



NIKKEN CNC260 Rotary Table

Compressor Rotor Manufacture

Manufacture of a compressor rotor on a VMC as opposed to the usual mill-turn platform

The main customer objective and challenges were simple – to eliminate potential weaknesses and risks to manufacturing processes. These were made apparent when a Mill-turn platform used for the manufacture of a particular component went down, leading to a loss of production and costly delays.

The manufacturer in question had a VMC with spare capacity that could be utilised to fill the gap in the production process, NIKKEN were tasked with replicating what was usually produced on a mill-turn platform on the VMC instead.

The project developed through a close collaboration between engineers at NIKKEN and the customer, utilising the NIKKEN Innovation Centre to demonstrate different capabilities and technologies throughout the process – from initial concept discussions through to the final result of an alternative manufacturing solution.



NIKKEN CNC260 Rotary Table + H170-S Hydraulic Tailstock with Hydraulically actuated workholding

The final solution was identified as CNC260 + H170-S Hydraulic Tailstock with Hydraulically actuated workholding to support the component during cutting cycles. With this type of set-up there is usually the need to install new control cards within the machine to actuate the hydraulics but there was no need to upgrade machine tool controls due to the Alpha21 Spec 2 being used to control the automatic clamping and movement of the steadies during the manufacturing process. All that is required is a simple M code from the machine tool, upon receiving this the Alpha 21 controller runs a program to control all the hydraulic sequences through i/o codes to unclamp and clamp the component, then sends a code to the machine control to continue the cycle.

All the operator now needs to do is load the material in to the machine and start the manufacturing programme – the machine tool and Alpha 21 controller does the rest.

The NIKKEN solution was installed within a 2-day timeframe, which included physical installation, Program integration and the manufacture of the first part. During the prove-out process of first part manufacture there were zero drop-outs throughout, something so unusual that there was a round of applause when the job finished!

Designing the solution in this modular way makes it possible to move the fixturing and manufacturing process to another machine, this is an investment in the process as a complete Plug-and-Play solution rather than limiting production to a specific Machine tool.

Quote from the customer:

Following the success of this project there is definite potential for future applications to be considered, particularly with the Plug-and-Play approach being transferrable between machines. The advantages of having flexibility in our manufacturing capability is clear and we look forward to working with NIKKEN on future projects.