

Vision System

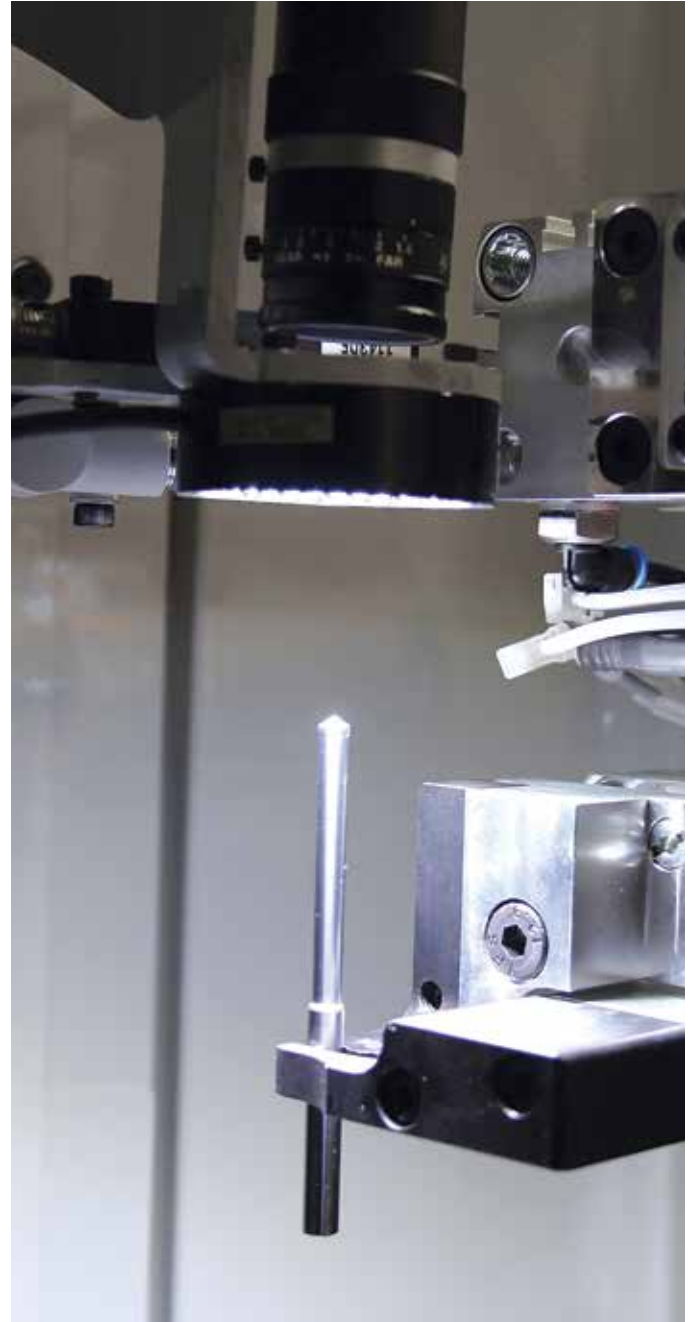
for Detecting Coolant Holes

New RoboMate Vision System detects coolant holes automatically

The new RoboMate Vision System detects internal coolant holes on drills that deliver coolant directly to the tip of the drill. The RoboMate Vision System uses the robot to place the drill under the camera before loading it into the machine. The camera ensures it is loaded into the collet in the correct orientation for flute grinding. This is a faster option than using touch probe digitising of coolant holes.

Overview

- Automated detection of coolant holes
- Reduced set-up and cycle times by not probing coolant holes inside the machine
- Non-contact measurement removes possibility of tool damage
- Retrofitting is possible on machines which have RoboMate fitted
- Available on the TXcell, TX7, MX7, MX5, MX7 Linear and MX5 Linear tool grinders
- Requires no operator intervention
- Higher efficiency and productivity



Locate coolant holes down to 0.1mm automatically

The Vision system takes a snapshot of the tool and then analyses the image. The system identifies the different contrasts between the light and dark areas. The coolant holes are then detected by searching for dark areas on the tool. The Vision system can recognise and locate coolant holes as small as 0.1mm (0.003") diameter. The camera used with the Vision system can capture an image and locate two coolant holes in less than 10 seconds (with the machine still grinding while the Vision system inspects a tool).

RoboMate Vision System reduces manufacturing time

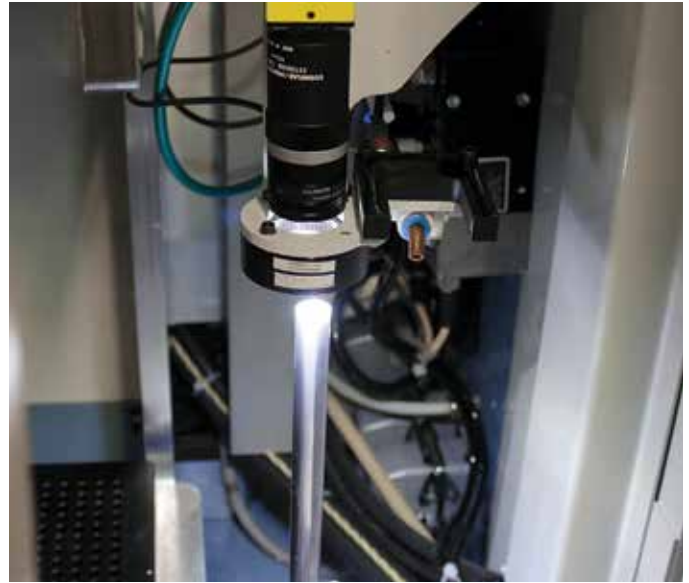
When manufacturing drills with coolant holes, the position of the holes must be known so the flute does not break into the coolant hole running through the centre of the carbide. The coolant hole positions must be identified and the drill set at the correct orientation prior to flute grinding. This is typically done inside the machine with a touch probe, but this adds to the grinding cycle time. The vision system is an automated inspection process using a camera in the RoboMate loader to locate the coolant hole positions. The coolant hole position data is then transferred from the RoboMate loader to the machine grinding program and the flute grinding operation can begin immediately.

RoboMate is a Robotic automation system available on most ANCA tool grinders. ANCA has integrated a Vision recognition system using a Cognex camera inside RoboMate. By integrating the vision system with RoboMate, inspection and coolant hole location is determined outside of the grinding process reducing overall manufacturing time.

The Vision system can also manage scrap or rejected tools. Tools that do not meet specification, or tools where a coolant hole can't be detected, will be rejected and stored in the reject station. If a total of six tools are rejected in a batch the schedule is cancelled. In addition to measuring coolant holes, other types of tools can be detected and measured using the Vision system.

Specifications

| | |
|---|---|
| Tool Type: | Drills & Endmills |
| Material: | Carbide |
| Diameter Range: | 3 mm - 16 mm (1/8" - 5/8") |
| Length Range: | 60 mm - 300 mm (2.3" - 11.8") |
| Diameters of Coolant Holes Detected: | 0.1, 0.3, 0.5 mm (0.003", 0.012", 0.019") |
| Point Angle Range: | 120° - 140° (Also tool blanks with no point angle 180°) |
| Method of Cleaning the Tool: | Air Blast |



The Vision system can recognise and locate coolant holes as small as 0.1 mm (0.003") diameter



The tip of the tool appears white while the 2 coolant holes appear darker