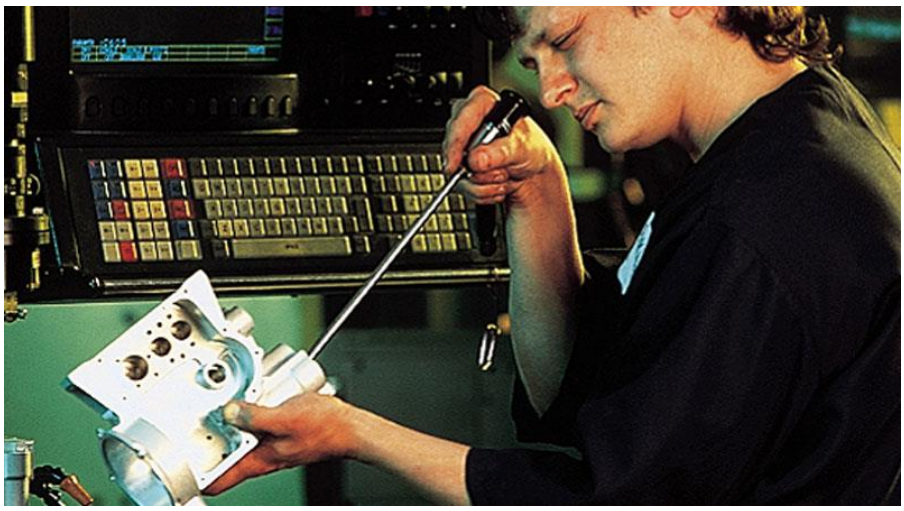
USER CASE STUDY

Tactair Fluid Controls, Inc



Seeing Is Believing: Looking Inside Saves Time, Money

Liverpool, N.Y.-based Tactair Fluid Controls, Inc., had been looking for a better way to inspect the intricate internal features of its products. An ISO 9001 certified designer and manufacturer of hydraulic and pneumatic controls for the aerospace industry, Tactair specializes in systems for wheel-brake control, landing-gear control, nose-wheel steering control, flight control and engine/nacelle control

In these kinds of applications, packaging, weight and contamination resistance are critical. The maze-like flow-path geometries, very fine surface finishes and precision metering edges that result are common. Such internal features defy easy inspection.

Over the years, Tactair had acquired a variety of equipment for visual inspection. It all was underused, according to Tactair manager Bob Buttner, because image quality was poor. Tactair had looked into borescopes, but had not found a moderately priced scope capable of delivering the sharp, clear images the company required.

Today, Tactair uses Hawkeye Precision Borescopes from Gradient Lens Corporation to quickly and easily inspect parts. They use scopes for inspections at each stage of manufacturing:

- In the CNC turning and milling areas where bores, ID grooves and chamfers, and seat edges are completed, machinists use borescopes to look for tool marks and burrs.
- In the electrical discharge machining (EDM) area, where they reach deep into a bore to create a metering hole or oil passage, machinists use borescopes to check that they've placed the feature correctly and that edges are clean and sharp.
- In the manual machining area, toolmakers use borescopes to check a feature's placement, surface finish, burrs and tool marks.

"We can go right in there with the borescope and see which one of these processes, or which combination, is giving us the result we want."

Bob Buttner

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Tactair uses both forward view or (with a simple adaptor) 90-degree view configurations extensively, sometimes switching between them on the same job to check different features.

By using borescopes, Tactair has saved substantial labour and materials costs. On one job alone, the company estimates these labour and materials savings have already paid for the cost of the scopes. But the company also has reaped an unexpected bonus: engineers and machinists have begun using scopes to optimize the set-up process with less trial and error – thus saving the company more money.

Tactair can't put an exact number to the productivity gain and cost savings that borescopes have made possible, but Buttner has little doubt that they've contributed to Tactair's bottom line. "On jobs where we used to set up, run, and then cut the first piece (in half) to see if everything was all right," he explains, "we now use borescopes. That's one production piece saved. We do a lot of short runs–typically between 10 and 50 pieces–so that's important."

The Hawkeye borescopes also help Tactair people to optimize the manufacturing process itself, by letting everyone from design engineers to machinists see what's really going on as tools cut through materials. That gives them a clearer understanding of how materials behave under certain conditions. For instance, says Buttner, "For an offshore valve body we make, we use a tough 316 stainless steel. It's a hard-to-machine material: It can be gummy, it can work harden, it can give you poor surface finishes. So we experiment with different tools – boring bars, reamers, roller burnishers–and different processes, like using a coolant or special cutting oil. We can go right in there with the borescope and see which one of these processes, or which combination, is giving us the result we want."

Tactair personnel also employ the scopes in video viewing of internal features, using a video adapter with a camera and large screen monitor. Groups including engineers, machinists, and test technicians can examine parts together on the monitor to solve problems and improve processes.

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