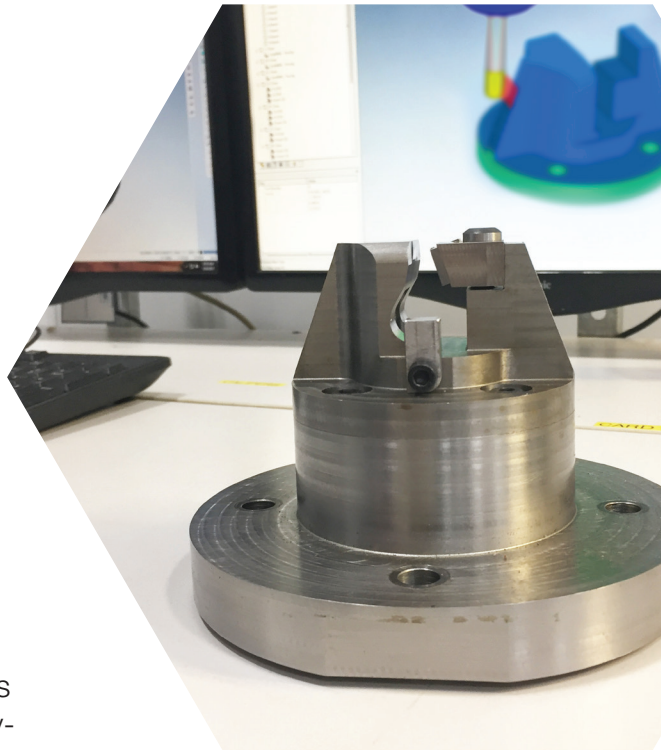
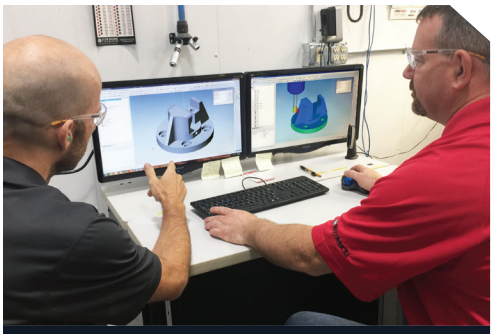
ESPRIT®
CAM System

Challenging metals made easy with ESPRIT®



Not all parts are created equal. In some industries, components made from standard issue materials just don't have what it takes to perform over the long term. Depending on the industry, sometimes you need a component that can withstand tougher-than-usual conditions. That's where Winsert comes in.

Marinette, Wisconsin-based Winsert develops, casts and machines a number of heat-, wear- and corrosion-resistant alloys into parts that can withstand high load pressure, corrosive fuel environments and high temperatures. These products include valve seat inserts; exhaust gas recirculation (EGR), engine brake, exhaust brake, and turbo system wear components and assemblies; and valves and blades for various applications used in the medium- to heavy-duty engine, food and chemical processing, and forestry industries.



From left, Paul Dickinson, vice president of special projects at Winsert, and new product technician machinist Jeff Kubash use ESPRIT to examine a custom fixture to support 5-axis machining of a part that requires very high tolerances and experiences high tool forces during machining.

Winsert's R&D center focuses on solving issues related to material wear by determining the optimal materials, system wear and performance for each application, with an emphasis on providing the highest quality solution at the lowest cost.

Nearly 40% of the company's projects begin in the prototype sample cell department, which creates pre-production parts from Winsert's proprietary cobalt-, nickel- and iron-based alloys. The very thing that makes these materials so special is also what makes them difficult to manufacture: the heat-, wear- and corrosion-resistant alloys are a challenge to machine because they cause extreme machine tool wear. Because these materials are developed to address specific customer needs, there are also no standard cutting recommendations. But Winsert can't compromise on the robustness or uniqueness of its materials. "We can never relax or do what our competition does with industry-standard materials," says Paul Dickinson, VP special projects at Winsert. "We have to machine cast alloys that easily rival the most challenging cobalt and nickel base materials."

While Winsert's parts vary in complexity, foundry patterns require very clean toolpaths that will generate the required finishes at a consistent draft without wasting time cutting air. Confidence in the code and simulation is a

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-- Jeff Kubash
new product technician machinist, Winsert

must, as many of the programs have long cycle times and often machine only one part. And Winsert is often asked to commit to short lead times on projects that require foundry tooling.

All told, there are a lot of challenges to surmount, and Winsert needs an exceptional machine shop to ensure it can rapidly evolve alongside its customers to manufacture functional and high-quality designs. The shop runs more than 70 proprietary CNC 2-axis lathes, three Miyano BNE and BNA series 6-axis lathes, a Hurco 3-axis mill and a Kitamura 3XiF vertical mill. While it was still only a lathe shop, Winsert began running ESPRIT in the late 1990s, due to its "impeccable" lathe CAM capability and versatility. When the company added milling operations in 2009, ESPRIT continued to deliver, even though other brands were evaluated.

"ESPRIT became the clear choice," Dickinson says. "And yes, we would have changed to a better system if we'd found one because productivity is that important." ESPRIT enabled the company to save processes and create better toolpaths; it also provided better options for 3D machining and clean, accurate G-code.

"The proof is when I am talking shop with other professionals, listening to their frustrations and limitations with their CAM system," Jeff Kubash, new product technician machinist at Winsert says. "They explain how much time is spent generating toolpath, editing code at the machine, and their complete lack of confidence with the code. It is nice to be on the other side of that coin with ESPRIT."

Kubash says that the special features ESPRIT has developed over time — including templates, tool libraries and saved processes — have helped Winsert reduce time spent on front-end programming.

Cycle times have been reduced by as much as 90 minutes through superior roughing toolpaths and enhanced 3D processes. ESPRIT also allows the company to control cycle times and eliminate extra tool moves that once left tool marks on the work piece.

The future of Winsert lies in expanding its heavy-duty alloy success into new industries. With new product lines being introduced all the time, Winsert and its prototype sample cell are working to become even more responsive and flexible in order to accommodate demanding customers with highly specific needs.

"We create our future by excelling at what we do every day," Dickinson says. "The future of Winsert is to continue to diversify our portfolio, both inside and outside the engine. We'll do that by consistently exceeding customer rapid-response requirements. And that's why we choose to use ESPRIT."

Kubash and Dickinson run their ESPRIT G-code through a Kitamura Mycenter-3XiF vertical mill.

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