OKUMA CASE STUDY | JOHN G. WILSON MACHINE LTD. | MACTURN SERIES

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JOHN G. WILSON MACHINE LTD. AND MACTURN

EMEC AND OKUMA GO THE EXTRA MILE TO BRING A LONG TIME OKUMA CUSTOMER THE SUPPORT AND SOLUTIONS FOR FUTURE SUCCESS.

Knowing when and how to expand machining capability to meet customer demand is a challenge that occurs regularly for successful shops.

At John G. Wilson Machine Ltd. in Princeton, Ontario, that challenge is even more significant because of the shop's diversification and the large number of customers it serves.

John G. Wilson Machine Ltd. is a mid-size job shop that began operations 52 years ago making parts for local farmers. Today, John G. Wilson Machine Ltd. machines and fabricates some 3,000 to 4,000 different types of parts a year, including urns for cremation, parts for school buses, park benches, cooking woks, and V-belt pulleys for approximately 300 customers. Their primary product is package strapping dispensers, and they are the world's largest producer of them, turning out 50,000 units a year. In addition, the shop offers a wide range of services including tube forming, punching, turning, laser cutting, and welding, as well as full service machining.

In order to meet customer requirements, the shop uses a variety of machine tools. Recently, shop management determined the need to add production capability and had initially considered purchasing several machine tools to handle the existing and anticipated workload, according to Reg Henry, Manufacturing Operations Manager.

Just as important as capacity, however was to create a machining solution that not only met production goals, but business goals as well.

Shop management met with its long-time distributor, EMEC Machine Tools, Mississauga, Ontario, the exclusive Okuma distributor for Manitoba, Ontario, Quebec and the Maritimes to determine the best approach to the situation. EMEC Sales Representative Brendan Cunningham recommended that the shop consider an Okuma MacTurn multi-function machine. The shop has had a long history with EMEC and Okuma machine tools. Of the 35 CNC machine tools the company operates, 18 are Okuma machines.

The MacTurn Series machines from Okuma are designed specifically to improve the machining throughput of complex parts. The MacTurn virtually eliminates the need to handle and fixture parts by enabling the completion of complex parts on a single machine. The result is a reduction in cycle time and reduced part handling time. A wide range of options, including an expandable automatic tool changer, optional sub-spindle, lower turret with optional milling, and 9-axis machining/turning functions make the MacTurn ideal for high technology operations.

"John G. Wilson Machine Ltd. was the ideal candidate for the MacTurn series machine," Cunningham said. "Because they machine such a diversity of parts in a wide range of materials they needed an approach that would result in a high level of flexibility on the shop floor. The MacTurn machine gives them the flexibility to produce many of these parts on a single machine in a single set up from start to finish. The flexibility of the Automatic Tool Changer, and the ability to hold up to 44 tools in the upper turret, also gave them the capability to run an unmanned 3rd shift, effectively adding to their production capacity," he added.

COMBINING OPERATIONS

The shop purchased a MacTurn-250 machine and began to methodically transfer jobs to it. The first job combined four machining operations. Now, the company is in the process of transferring more complex jobs to the MacTurn.

One of them is a 8620 high carbon steel bearing stud used in a lift truck application. The part required a varying taper along the full length of its outside diameter and along the length of a hole hollowed in its center.

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>
> *Tom Wilson, Manager of Dispenser Operations*
> *John G. Wilson Machine Ltd.*

"We produce 30,000 of these parts per year and we were producing them using multiple operations on existing machines – it was costly and time consuming," Henry said. The shop saved one and a half minutes per piece by switching the part to the MacTurn.

One of the features of the MacTurn that made it a good choice for John G. Wilson Machine Ltd. is the full B-axis that allows the cutting tool to be positioned at any angle. This, in addition to the full milling capability of the B-axis – 15-20 full milling horsepower – gives the shop the ability to produce a wide range of part geometries from even hardened materials.

Another part that has been successfully transferred to the MacTurn system is a tension shaft that requires a thousandth and a half tight tolerance, three thousandths on its square edge and a total of 3 thousandths on the hex tolerance. On the MacTurn, it's a continuous-operation part, with 1,000 pieces produced in each run. Before the MacTurn, broaching and finishing operations were done after machining, adding significantly to overall part production time.

"Being able to maintain dimensional control throughout multiple operations is extremely important when machining complex part features," said Tom Wilson, Manager of Dispenser Operations. "The heavy frame and the rigidity of the MacTurn make it possible to hold very tight tolerances, and that capability helps reduce the need for secondary finishing operations."

Tension shaft produced on the Macturn 250.

The MacTurn also offered cycle time advantages when producing part families, a large portion of the shop's business. "Because we can produce a part from start to finish in one set up, we can satisfy a customer's delivery needs quickly, reducing queuing time to a minimum," Henry said. "With the MacTurn it takes only about six minutes to change from one part in a family to another."

THE CHALLENGE OF HIGH TECHNOLOGY

Moving up to high technology machining is not without its challenges. Since the MacTurn system is specifically designed to produce complex parts in one set up – from stock to finished workpiece – it requires a significant amount of detailed part programming. Machine installation is also critical, and John G. Wilson Machine Ltd. did experience some start up problems.

Throughout the start-up process, the EMEC technical services staff was involved in part programming and training operators. "The people at EMEC have been a big part of the equation," Wilson said. "They know what we're trying to accomplish and their support is geared to helping us reach our goals."

Because shop managers could see the performance improvement offered by this change in approach, John G. Wilson Machine Ltd. purchased a second MacTurn machine. They now have about a dozen parts running on both MacTurn machines.

BUYING INTO TECHNOLOGY

The MacTurn machine is a large capital expense for a shop, and it's not necessarily the right choice for every shop. For John G. Wilson Machine Ltd., however, the MacTurn represented a good investment in the future, not only in terms of the bottom line, but also in terms of business philosophy.

"The MacTurn machines represent a giant step forward in production technology. The machines give us the capability to grow our business in terms of capacity and build on our reputation for precision machining. In today's job shop business, if you don't buy into technology, you're left behind," Henry said.

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