

# Canadian METALWORKING

## Driving Back from the Brink

With the recessionary upheaval behind it, the automotive industry is in comeback mode



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# Grinding for Success

Investment in new grinders helps Ontario job shop capture business in new markets

By Jack Kohane

Being good is better than being big. Such is Thomas Johansson's simple secret of success. As president of H&O Centerless Grinding Co. in Waterloo, ON, his approach to sustained growth is building on the company's strengths and continuously taking calculated risks to improve.

Keeping costs down and staying competitive by spending next to nothing on advertising, web pages, commissions or external sales, Johansson's team supplies large companies such as General Electric, General Dynamics, Ingersoll Rand, Pentair and General Kinetics, a Canadian specialty engineering company servicing the military. Industries H&O now serves include heavy equipment, plastics components, tooling, automotive, and nuclear energy. Its product mix ranges from shafts, bushings, rings, dowels, and valve stems, to spacers, pistons and locating pins

But there's been no cutting corners in allocating large capital outlays in plant, processes and people. Among the 125-plus pieces of equipment housed in the 60,000-sq ft facility are 22 centerless grinders and five Studer CNC cylindrical grinders, as well as honing, milling, drilling and turning machines. "Although centerless grinding is in our name, we have always been a complete machine shop with all forms of turning, drilling, milling, as well as CNC machining and grinding," explains Johansson.

Founded by the late Herbert Odd in 1945, H&O began with a single spindle screw machine and centerless grinders. Earl Hillier, who had worked with Odd during the war, became an early partner and later purchased the company. In 1996, Johansson (who was just 28 years old at the time) purchased the company from Hillier's sons. "I had just completed five years at Goldman Sachs, and was looking to run a business with challenges and growth prospects. H&O met all of his criteria and he made the entrepreneurial plunge. Though transitioning from cutting his teeth in finance and credit analysis to cutting metal parts, Johansson says he's never regretted this career move.

H&O's initiative to segment processes into distinct cells to create more product specific work zones is gaining steam from the company's staff of about 100. Currently, there are six cells at H&O (including a tube processing area, a shaft cell, and form grinding), with the long term goal of creating 15 semi-autonomous groups. "Efficiency gains by these means can be as important as the gains available by investing in new and



Mike McDougall, plant manager, with the Studer S22 CNC grinder, which can be used for high speed grinding and high speed machining.



Mercy Lang, form grinding area leader in front of the Amada Wasino CNC surface grinder.



Top Image: A wider view of the machine.

alternative process equipment," notes Johansson.

When purchasing new equipment H&O looks for high quality and good value, coupled with flexibility and simplicity. "However, no matter what machinery we purchase, we believe the greatest gains are achieved by the growing skills of the operator and not the sophistication of the machine tool," says Johansson. Process planning and lean tools, including one-piece workflow, are further efficiency gains he credits to the expertise of his operators. "We respect and value long-term experience and stability and many of our employees have been with us for 20 years and more."

For many years, the company's olive-green, cast-iron Cincinnati grinders—rebuilt and rejuvenated over the decades—served the company's needs well. "They're our workhorses and they still hold good tolerances," says Mike McDougall, who has been the plant manager at H&O for more than 25 years.

Yet to take the company into a new era to capture new markets such as aerospace, it was clear that newer technologies had to be taken into the fold. And having partnered for many years with Toronto-based distributor Machine Tool Systems Inc., Johansson knew who to turn to.

"First of all, machines with greater tolerances are a must-have for a company like H&O," says Machine Tool Systems president John Manley. "With old equipment, there's a lot of quality control required. New machines can make 100 or 1,000 parts the same way so there's no need to constantly check for errors."

The right fits for H&O's ambitious expansion plans were the Studer CNC Universal Grinders and the Amada Wasino CNC surface grinder.

"The purchase of these machines illustrate our view of the business," explains Johansson. "For example, most of our Studer machine time has been dedicated to a customer requiring highly engineered chrome plated and profiled tubes (parts that look and work like a landing gear) to be ground. To ensure timely grinding of this product, along with an increasing range of other parts that are being ground on the Studers for other customers, we selected the Studer S22 (just being installed at H&O at the time of writing). The key to the decision was that we have a customer who has put a lot of faith in us, and we want to ensure we continue to give them the turnaround they require."

Manley says that at the heart of the Studer S22 is StuderWIN, a new Windows-based operator interface that offers many new advantages. The S22 is equipped with a 310i-A series Fanuc CNC control with integrated PC. The advanced brain of the S22 provides peripheral device integration via the controller screen directly (no black boxes for gauging, balancing, gap elimination, and length positioning); rapid navigation with quick access Windows Explorer formatted drop-down menus, rather than keypad dependent programming; simplified networking; and material dependent technology pages. It also offers worksharing software for job shop scheduling between multiple machines and multiple workpieces.

"The S22 has sophisticated loading, dressing and gauging capabilities that will no doubt contribute greatly to H&O's grinding expertise," emphasizes Manley. "And with the tight tolerances afforded by the Amada and Studer S22 ( $\pm 0.005\text{mm}$  or  $\pm 0.0001\text{ in.}$ ), H&O can service the most precision-minded customers."




The Studer S22 can be used with one or multiple grinding wheels to complete a part with different features in one clamping.

At the basis of the Studer Model S22 Modular Grinder is its dynamic axis drives with linear motor technology, short reaction times and optimized travel. The high speed grinding option (HSG), with circumferential speeds up to 140 m/s, also contribute to increased productivity. The X and Z axes are designed as cross slides, and the longitudinal table is bolted permanently to the machine. This cross slide system has been used and proven over the past decade.

The S22 can be used with one or multiple grinding wheels to complete a part with different features in one clamping. The machine can also be used to do high speed grinding as well as high speed machining in conjunction with the C axis. The machine can even have a rear roll dressing device to minimize dressing time.

Specs for the S22 are centre distance 25.59-43.3 in. (650-1100 mm); grinding length of 25.59-31.49 in. (650-800 mm); a centre height of 6.9 in. (175 mm) and a swing diameter of 13.8 in. (350mm).



Johansson is also impressed with his Amada Wasino CNC Surface/Centerless grinder. "The purchase decision of the Wasino was driven by the increasing tolerance requirements on small components going into the injection mould industry." When compared to even his newer machines, some purchased just a couple of years ago, he's found that the Wasino has superior rigidity and capacity to hold the tolerances required for certain parts.

Key characteristics of the Amada Wasino CNC Surface

“We invest in equipment best suited to produce the wide range of products we manufacture.”

Grinder are the machine geometry: flatness of 0.000024 in. over the full table, high speed stroking of 600 strokes per minute at 0.625 length and precision stop grinding to within +/- 0.0008 in. of shoulders. The menu driven software affords the job shop the ability to SWOT grind and profile grind with incorporated dress and compensate cycles.

Integrating the latest high tech tools on H&O's shop floor has created challenges, particularly in the filtration of coolants.

“When buying our first Studers, the filtration units were underpowered,” recalls McDougall. When H&O purchased the recent Studer machines, Manley provided

a Barnes centralized filtration system, requiring less paper and less maintenance.

As a job shop with aspirations to take on greater capacity, H&O's top management is determined to offer clients a comprehensive range of tools and equipment.

“We invest in equipment best suited to produce the wide range of products we manufacture,” says McDougall. Grinding machinery that requires large investments makes perfect business sense because of the ability to produce parts to tight tolerances and micro finishes.

“We have made a conscious decision to be in the forefront of technology and skill when it comes to precise cylindrical components,” says Johansson. “In this regard, we want to be all things to all customers, be they in medical technology, automotive, aerospace, or oil and gas, whether here in North America or world wide.” **CM**

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