MACHINING CENTRES + TURNING TOOLS + WATERJET CUTTING + WELDING AUTOMATION

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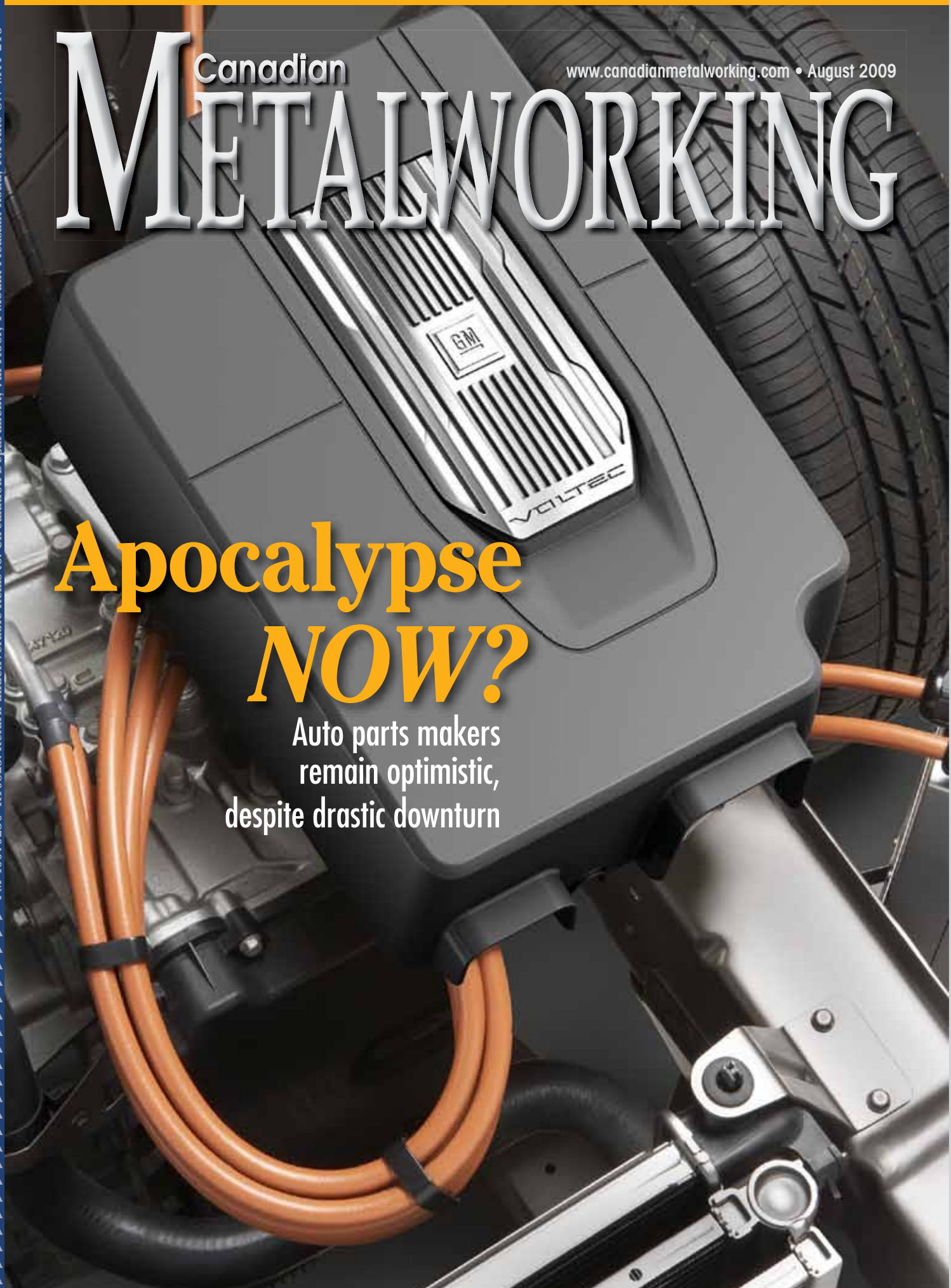

Apocalypse *NOW?*

Auto parts makers remain optimistic, despite drastic downturn

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Advancing its Profile

Large waterjet cutter with bells and whistles gives Ontario fabricator an edge over competitors

A once popular song opined about love being better the second time around. But does that sentiment apply to machining? Dennis and Paul Zuccato think so. The brothers dove right back into business just two years after selling their first machine shop, opening the doors of Advanced Profiles in January 2008.

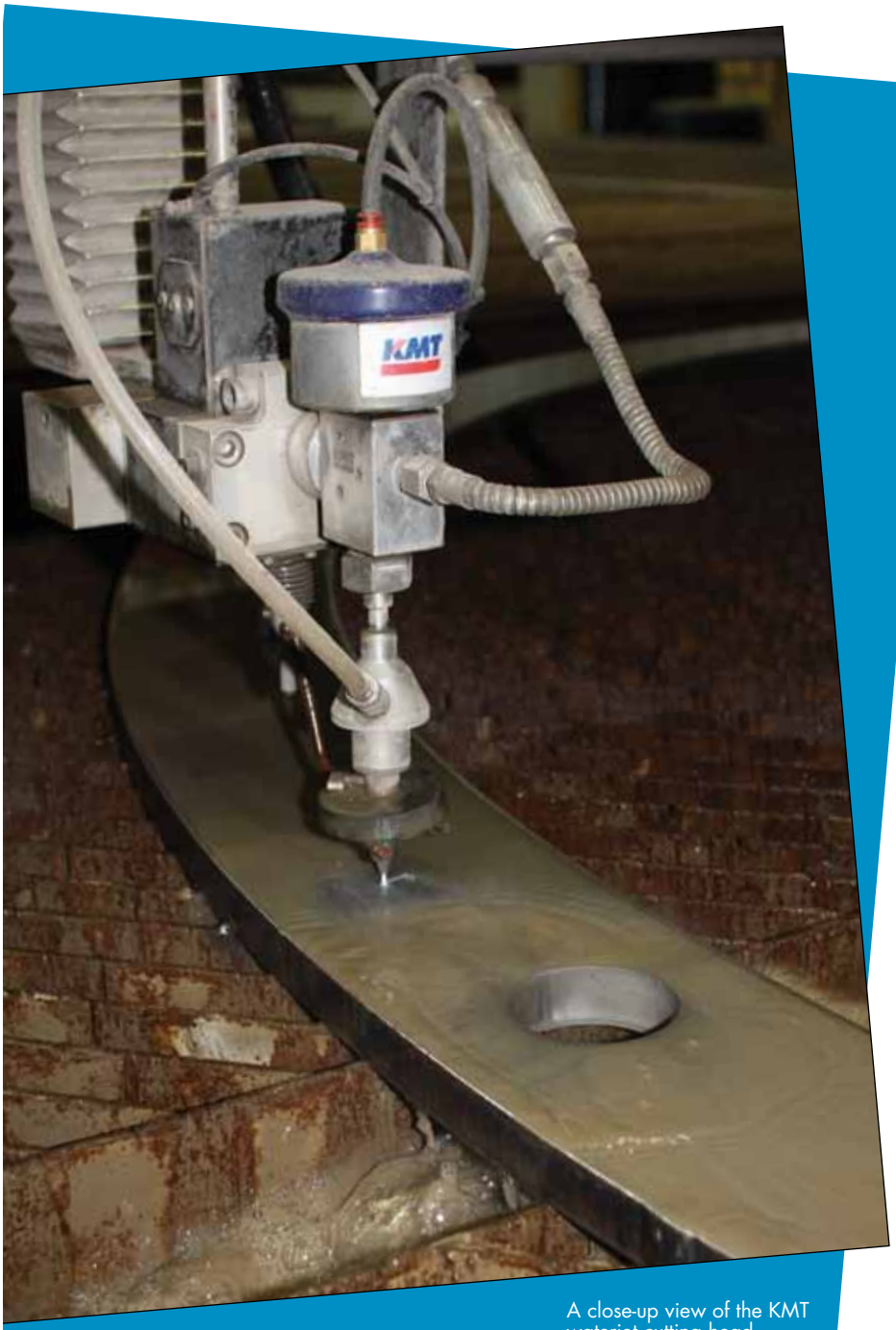
It's an amour with machining that runs in this family. Their dad studied various trades in Italy, later coming to Canada to hone his eclectic skills in tool and die, design and drafting, metalworking and welding, and machining. His sons studied hard in disciplines that married the science and art of metalworking. Paul, 28, received his academic training in tool and die from Humber College (2002), earning a diploma in Mechanical Engineering Technology from Toronto's George Brown College in 2005.

Two years after selling their first machine shop business, brothers Dennis (left) and Paul Zuccato got right back into business with the Advanced Profiles machine shop.

Forty-year-old Dennis graduated from the University of Toronto in 1994 with a B.Sc. in Metallurgical Engineering and Material Sciences. "What I learned at university did provide me with wide knowledge, insight, and understanding of the properties of materials used in machining," he says, adding that his studies taught him to think outside the box as an entrepreneur. "It helped me understand our experiences (in machining) and put that understanding to use quickly."

That's evidenced in Advanced Profiles' quick corralling of customers in the petrochemical, nuclear, marine, and solar energy sectors (cutting and shaping glass for solar energy collectors), slicing and carving stainless steel, aluminum, copper, titanium, as well as stone tile and marble for the architectural market, and plastics used in manufacturing insulators for electrical applications.

A part of the Zuccatos' zeal to found Advanced Profiles is the support of the owner of Superior Machining & Repairs Ltd., Peter Boaretto. "He's our family friend, our biggest client, and our landlord," smiles Paul. Located in Concord, ON, north of Toronto, Superior Machining & Repairs is a full-service machine shop providing parts, assemblies and repair work for the construction, oil extraction, pulp and paper, automotive, and forestry industries. Advanced Profiles rents half of Superior's 40,000 sq ft work area. It's a symbiotic relationship. "For our part, we bring new technology for several of Superior's customers," nods Dennis. In return, the Zuccatos have access to Superior's two overhead cranes—one with a 30,000 kg (66,000 lb) capacity, and the other a 10,000 kg (22,000 lb) capacity unit—a 5,000 kg (11,000-lb) Caterpillar forklift, and two magnetic lifting devices.



A close-up view of the KMT waterjet cutting head.

Powering the Zuccatos' machine shop is the zippy KMT Waterjet cutting system. Paul points out that KMT supplied the intensifier, all high pressure lines from the intensifier to the cutting heads, high pressure fittings, cutting heads, mini feeders, and large garnet hopper. Advanced Profiles has incorporated the KMT equipment with the gantry, cutting table and garnet removal system made by ESAB, welding consumables and equipment supplier.

Priced at USD $650,000, Paul professes pride in making this hefty investment. "We purchased all the latest bells and whistles from KMT," he insists. "That includes the Streamline SL-V 100R Plus (the system's ultra high pressure pump) that allows us to cut just about anything." The pump pressurizes the water to thousands of pounds per square inch then pushes it through to the cutting head where it is emitted at high velocities through a tiny orifice.

Canadian Area Manager for KMT Waterjet Systems, Pat Angiolillo, agrees that the pump is the heart of the waterjet system. "With such an important role to fill, the pump must be able to meet high usage demands and precision requirements," he emphasizes.

> "The KMT waterjet system features one of the industry's largest cutting tables stretching 18 ft (5.5 m) wide by 37 ft (11.3 m) long."

Dennis delights in detailing his 100-hp waterjet's capabilities: a positioning accuracy of +/-0.015 in.; repeatability of +/- 0.005 in.; two cutting heads, and a transverse speed of 1,000 ipm. It's armed with a ceramic plunger that uses long, slow strokes to move more water with each stroke, providing more uptime and longer seal life. One of the industry's largest cutting tables, according to Dennis, this KMT stretches 18 ft (5.5 m) wide by 37 ft (11.3 m) long, with clearances of 13 in. (table to torch), 17-3/8 in. (table to gantry), and 23-3/8 in. (base to gantry). "The immense table gives us an edge over other job shops," he remarks. "We aren't limited by table size. We can handle the biggest sheets. Using this table, we never need to say 'no' to work."

The equipment also features a single intensifier that produces 60,000 psi for fast cutting and clean edges which the Zuccatos say results in lower maintenance costs and quieter operation with fewer parts.

Paul says that the KMT waterjet is an intelligently designed system. The high-tech software uses a touch control panel for rapid programming and troubleshooting, including a plunger location control (the plunger can be moved to a specific side to facilitate maintenance). The system has dual pressure controls in that pumps are equipped for a high and a low setting—ideal for brittle materials (the low setting is used for piercing and the

high setting for cutting).

The technology makes stone, tile, and marble cutting easier. "Waterjets are perfect for creating countertop parts and sink holes," says Dennis. "By closely nesting raw materials, stone and tiles can be cut to any shape or size and create a better yield."

Abrasive waterjet cutting is also extensively used in the aerospace industry for titanium, Inconel, brass, aluminum, and steel cutting, as well as cutting composites from 1 mm to 150 mm. The six-axis motion control of Advanced Profiles' waterjet system allows for precise metal cutting for aircraft fuselages, tail and wing sections, rotary blades, and sheet metal parts up to eight in. thick, depending on the material.

To complement their new waterjet, the brothers are also banking on boosting business with a second powerful metalworking tool—an ESAB high definition plasma cutter that offers increased production with a consistent cut quality. This VBA five-axis model, which is sticker priced at US $600,000, features a production mode for high speed quality cutting as well as precision mode to enhance cut edge squareness and top-edge sharpness. It bevels at angles from -45º to 45º, coupled with multi-pass beveling for "Y" beveling capability.

"Plasma's cut time is short, only a couple of minutes are needed to cut aluminum and make the part ready for secondary operation," explains Paul. "Many of our customers start out wanting the plasma cutter, but they eventually graduate to the waterjet because they like its greater flexibility and precision."

As one of those rare startups that zoom out of the gate with an established client base, the Zuccatos do zilch in terms of marketing, preferring to raise their company's profile by touting their tried and tested track record. "We spent months trying to come up with a simple yet effective name that describes what we do," says Dennis. "Ultimately, we opted for 'Advanced Profiles' because we cut profiles and we excel at what we do." CM

Jack Kohane is a freelance writer based in Toronto.

The KMT waterjet is equipped with what Dennis Zuccato says is one of the industry's largest cutting tables, stretching 18 ft (5.5 m) wide by 37 ft (11.3 m) long, with clearances of 13 in. (table to torch), 17-3/8 in. (table to gantry) and 23-3/8 in. (base to gantry).