



‘Cutting it fine’ in County

Irish manufacturer of industrial heating systems invests in EDM wire-cut and hole-drilling machines

Ballydehob in rural County Cork is about as far South as you can get in Ireland — not the place you would expect to find one of the world’s leading designers and manufacturers of ceramic infra-red heating elements, turn-key infra-red heating systems and ovens for industrial and commercial applications.

Founded by Frank and Gráinne Wilson in 1992, Ceramicx has some 65 staff and sees its products and systems used in a wide range of industries (such as packaging, automotive, medical and aerospace) for applications that include thermoforming, preforming, pressure forming, welding, non-contact drying and spot heating — plus many other industrial processes that require the application of controlled ‘radiant’ heat.

Under the auspices of Frank Wilson, the company has gone from strength to strength by adhering to a policy of ‘backward integration’ — bringing the necessary skills and capabilities in-house instead of outsourcing. Today, about 99% of its business is based on exports — to over 80 countries. Its primary markets include Germany, the UK, the USA, Russia, Turkey, India, and China.

Over the past decade, Ceramicx has achieved an average growth of 15% annually; the company has also invested heavily in R&D, as well as in people and equipment, thereby allowing it to become a one-stop provider of solutions,

components and equipment builds. In 2017, the company completed a major expansion project that gave it new office space, larger machine/oven-building space and clean-room facilities. The extra space also supported Ceramicx’s already mentioned policy of backward integration, with new sheet metal-working equipment and a well-equipped tool-room to provide the day-to-day support required for producing ceramic mouldings.

Mr Wilson said: “We make the tooling needed to compact ceramic powder to produce the various heat insulation and control parts required for our products, so developing a fully capable and self-sufficient tool-room was a part of achieving our policy aims.”

Some of his team visited the *MACH 2018* exhibition and subsequently went to the showrooms of Warwick Machine Tools (www.warwickmachinetools.co.uk), which are near Kenilworth, in the heart of the Midlands. Mr Wilson said: “A demonstration of the Excetek V350 CNC wire-cut EDM machine and HD30Z

EDM hole-drilling machine confirmed that they met our needs, providing my team with the confidence to recommend buying them.”

In-house development

Reflecting Ceramicx’s own philosophy regarding development, all Excetek’s machine tool R&D is also done in-house. Indeed, the software and high-frequency pulse control generator have been developed by the company, as has the CNC system (this uses a 64-bit architecture and an LCD touch-screen for programming). Excetek says that because most operators are already familiar with the ‘look and feel’ of the Windows environment, this arrangement reduces the training time; one day’s training is all that is required before operators are competent to program and run a machine.

Programming can be undertaken using standard ISO G code or Excetek’s Icon Assistant conversational software, which uses the control’s “extensive database of cutting technologies”. The control system can also apply offsets to allow for any misalignment during workpiece loading. Before machining, an edge-finding operation sets the actual position of the raw material, allowing the control software to reset its datum points accordingly.

Excetek’s automatic wire-feed and threading system (AWT), which is also produced in-house, has been designed to allow continuous round-



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the-clock unmanned operation. With AWT, an automated annealing system straightens the wire so that it can be threaded at the break point during machining — with almost 100% reliability and without the need to return to the start position. Furthermore, submerged wire threading removes the need to drain and refill the tank; and a water-jet assist system is available for automatic wire feeds on tall workpieces.

Featuring a 600-litre tank, the Excetek V350 can accommodate workpieces up to 700 × 500 × 215mm and weighing up to 450kg. It has U- and V-axis travels of 80mm and a ±30deg taper capability — and an accuracy of 3µm over 100mm.

EDM drilling

Meanwhile, the HD30Z high-speed small-hole EDM drilling machine has been designed for engineering companies looking to produce single or multiple holes accurately in metallic components. With a 450 × 210mm table, it can accommodate workpieces up to 690 × 440 × 120mm and weighing up to 150kg. This machine also offers “sub-micron precision and outstanding surface finish; plus it can very quickly drill holes in any conductive material — including hardened steels and challenging aerospace alloys”.

Excetek says drilling by EDM uses low-cost electrode tube (normally made of brass or copper) to machine holes in electrically conductive materials — at a very high speed. The hole depth/diameter ratio is exceptionally large; the HD30Z can produce hole diameters from 0.2 to 3mm and is widely used for hole machining in aerospace, energy, cutting tools, automotive,

medical, mould and die, and general precision engineering industries.

Mr Wilson said: “We are using this drilling technology specifically to create start holes for our wire EDM jobs, as we can now cut pre-hardened workpiece materials, thereby removing a couple of problems for our tool-room. The first of these was being required to program, locate and drill the start hole by conventional machining methods in the ‘soft’ workpiece before heat treatment. The second is that by heat-treating before drilling the start hole, all the stresses are removed from the workpiece prior to EDM cutting.”

Mr Wilson also says that while specialising in infra-red heating and associated processes for over 25 years, the business has also been reducing the carbon footprint of its products.

“Our manufacturing philosophy is fairly simple and concise: we do it all here. We provide an ‘end to end’ solution starting in R&D, followed by defining the optimum infra-red emitter for the material or process and providing a proposal that can be effectively carried through to an oven/equipment build.

“We know that by keeping all the creative and production elements surrounding infra-red solutions in-house, we can give the customer a product that we know intimately. Moreover, because we make one of the small insulation components at a rate of 85,000 a day, the capabilities of both Excetek EDM machines, along with the support provided by WMT, have been invaluable. Moreover, Paul Barry — the company’s sales and service engineer — is based here in Ireland, so our remote location is not an issue.”

