

# Hot prospects

Ceramicx has been supplying infrared heating systems worldwide for the past 21 years. Founder Frank Wilson talks to Patrick Raleigh about the business and the new horizons for this technology

## ► BIOGRAPHY



frank  
wilson

### JOB TITLE

Director, Ceramicx Ireland Ltd

### EDUCATION

Educated at schools in Northern Africa, where his father worked for the international petrochemical industry, and at Black Rock College, Dublin

### CAREER

A native son of West Cork, Ireland, Wilson's earliest work was in the family farming business. He subsequently worked in the machinery supply and service sector: specialising in industrial heating and plastics processing machinery. He then worked as a manager of the IR heating business on the company's Ballydehob site prior to taking it over and renaming it Ceramicx Ireland Ltd in 1992.

When Process Engineering first caught up with Frank Wilson of Ceramicx some two years ago, the topic of educating manufacturers in the science of infrared heating was never far from the conversation.

Is IR heating still misunderstood and under-used? "In the main I would still say so," says Wilson, "although we are now entering an era in which many 'legacy' IR heating products are being re-examined and overhauled. Customers are generally a little more aware and thus a little less inclined just to walk through the motions of what they've always done with their heat work. This is good – they now have the prospect of making more time and money."

Ceramicx has a class of business that Wilson terms "applications engineering". Here the company is increasingly finding a sophisticated user base at the upper end of the process industries, for example in plastics; chemicals; toughened glass; material bonding; and also in the food industries. These practitioners know their process technologies and their heat work pretty well. "However," says Wilson, "they're coming to Ceramicx to get more from their process work in terms of productivity and process control."

Last year, for example, a total of eight US-based clients worked with Ceramicx on new systems for plastics heat forming. "Each one of those systems had its own challenges in providing a unique interface and diagnostics in order to maintain the familiar control within the operating environment. IR heating is specified every time because it amounts to; decreased

energy usage, increased production, reduced scrap and downtime. This is particularly important in a competitive-margin environment such as plastics vacuum forming."

Wilson says that getting these new IR heating systems designed and installed routinely requires up to four days onsite for integration, including a 24-hour runoff. Project turnaround times can be achieved in less than six weeks for a complete oven control system.

One of the key features of a good process control system lies in its diagnostic features – the ability to alarm the operator in the event of a

☞ **It still baffles me why so many continue to turn a blind eye to their use of energy. It's almost a taboo subject**

single heater loss, a shorted wire or bad fuse. This feature operates in conjunction with a split-second option for process shutdown. "The ability to review alarm pages also helps determine not only where the production problem lies but at what time it occurred. "Tracking this data can help find problems or nuisance errors in a system," says Wilson. Other important features are synchronised firing of individual zones to reduce the overall amperage draw.

And tracking the use – and the cost – of heat in any process engineering system is one of Wilson's passions. "It's often pointed out that 'to measure is to

manage", he says. "And we practice it daily at Ceramicx. And so it still greatly baffles me why so many businesses – perhaps especially those in the process industries – continue to turn a blind eye to their use of energy. It's almost a taboo subject, as if somehow measuring it too much will put the process in jeopardy."

Ceramicx, therefore, is working as hard on its systems of thermocouples and energy measurement devices for clients as it is on the production and delivery of IR heaters. "We expect our clients to measure their energy and we equip them to do so," he says.

Wilson adds that thus far in 2013 much of the cutting edge IR heat work is being generated from UK process manufacturers.

"The best process companies in the world are now questioning and re-evaluating their heat technology and production efficiency, and many of these are currently in the UK. Carrying on regardless with the same heat legacy issues is neither sensible nor profitable. A time for review inevitably means taking a fresh look at Infrared (IR) heat technology."

Oftentimes, this review can go hand-in-glove with a push on establishing green credentials. "We realised last year that, for the first time, US manufacturing industry is being incentivised to go green. Now, replacing an entire process manufacturing system was too big a step for many but an IR upgrade improved the performance of an expensive fixed capital asset and paid for itself within months," says Wilson.

Wilson reckons that time and tide are on the side of a change to infrared. Non-IR heating legacy



issues in process manufacturing can include burn outs, electrical faults and problems with older style and non-directional heating. Tubular and magnesium filled heating solutions; black rod heating and other kinds of non-infrared sources can all make a contribution to inexact systems and amount to a waste of energy and electricity cost.

"In a completely enclosed system or oven, this kind of non-IR based heating becomes uncontrollable. Operators are being continually forced to ramp up the power and the electricity input in order to try and maintain an even temperature."

According to Wilson, IR heat sources come with a number of in-built benefits:

- Major reduction in capital equipment wear and tear
- Like-for-like infrared for tubular replacements
- Elimination of 'hot box' tubular problems
- No need for changes in control or instrumentation

- Poor performing infrared to be replaced with superior platens
- Savings in directional heat
- Better resultant product quality
- More complex parts possible
- Cooling requirements also reduced
- Improved environment for operators
- Reduced material wastage and scrap

"IR systems also allow us to get a 'lock' on guaranteed quality assurance," claims Wilson.

Ceramic quality assurance work centers on developing systems of closely specified nominal wattage tolerances for the ceramic and quartz electrical elements. This control applies throughout the company's products. The semi automated validation system with closed-loop process-control is designed to guarantee product quality. It also assigns and records performance characteristics for each IR heating part as it is produced.

Wilson points out that the quality of system build is all-important. In the heat forming of plastics, for example, a number of infrared ceramic heaters are generally mounted on reflectors which are then arrayed upon a platen – or two – which is part of

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the production line. The performance of the background reflectors - their material composition - and the performance of the platen in general – these factors are all vital in directing the infrared heating to the material.

Wilson says, for example, that

stainless steel is not an adequate material for use in infrared reflection work. "It will absorb a high percentage of the emitted energy and will therefore over time cause burnout of the electrical wiring behind the reflector and will also start to discolour from 120°C. Polished aluminum, on the other hand, is in most cases the best reflector for ceramic infrared heating – though above 500°C it also will start to fail. The business of thermoforming thin and clear plastic sheet needs some installation of passive ceramic tiles in the base of the platen in order to reflect back the heat."

Every thermoforming system, in other words has its custom features depending on products, materials and cycle time. The same goes for ovens, platens and other systems used in process manufacturing.

Wilson's belief is that sooner or later IR heat sources will take a major part of heat work for all non-contact process applications. ■

## questions&answers

### AS AN SME COMPANY BASED IN IRELAND, HOW DO YOU INTERFACE WITH THE GLOBAL MARKETPLACE?

Firstly, we have a 20-year global trading history behind us. From the start we always set out our stall to give first class service to all world markets. This has meant that our grasp of logistics, scheduling, service and supply has had to be first class. In these matters being an SME is often an advantage. The decision-making process is shorter; quicker; we can tear up the rule book when we need to; we can flex and think on our feet in order to give the service that the customer needs.

Secondly, we invest in our marketing. Global marketing often means effective internet marketing. Consequently, and over the past three years, we have ensured that the good Ceramic name goes ever before us - and in many languages. We are committed communicators - of all our news and all our products. We openly discuss and promote our detailed work in Infrared (IR) heating, much of which is also published in our HeatWorks magazine.

Thirdly, we do whatever it takes to

support our distributors. Around the world we tend to pick companies with similar values to ourselves; those with whom we can work most simply and directly.

### ARE THERE ANY PARTICULAR 'PROCESS' APPLICATION THAT ARE MISSING OUT ON THE BENEFITS OF INFRARED HEATING?

I have to say that most process industries are currently missing out on the benefits and opportunities in IR heating. Where does one begin?

The food industry, for example, is just scratching the surface in terms of what IR heat can do; for the industry and for consumers in terms of IR heating innovations in the home. Healthcare applications; chemical and process plant work; curing and bonding of materials; plastics, glass and metal fabricating industries. The world of building and construction and the whole attitude to heat work in the built environment - all of this can learn and profit from the energy saving qualities of IR heating; especially in combination with other heat sources.

### HOW SHOULD START-UPS SET ABOUT COMMERCIALISING TECHNOLOGIES?

Maintain an open and outward-bound attitude. Don't become introverted but seek to choose partners and form powerful coalitions around great ideas - your ideas - that will get made. Successful engineering and successful business today is a collaborative process. Sharing is part of the new competitiveness. It's a comparatively new skill that needs to be practiced.

### ANY ADVICE FOR PROCESS ENGINEERS STARTING OUT ON THEIR CAREERS?

Be aware of your strengths and weaknesses in relation to those issues. Then answer the question - where do I want to work? In what people environments do I want to work - and how specialist or general would I like my role to be? Be aware of the opportunities that lie in pursuing your career in an SME rather than a multinational. The SME environment offers opportunities to gain skills in the multiple disciplines that are required to perhaps successfully run your own company one day.