ceramicx

HEATWORKS

ISSUE 8 JANUARY 2013

"..... product developers and manufacturers either love heat or hate it."

Dr. Tony Robinson

"Call it a consultation, a road map, a sanity check or all three"

Frank Wilson

"something that is a true innovation for the market"

Hubert Wittke

HALL 11 2013 STAND A01

CASE STUDY
FIREBIRD
Heating Solutions

CASE STUDY
MECALBI
Actividades de Engenharia

HeatWorks

Partnership – the new way of business

Firstly, a very Happy New Year to all our readers and a very warm welcome also to this our 8th edition of HeatWorks magazine.

This year was scarcely two days old before the theme of cooperation asserted itself on the political stage. Over the pond in the world's largest economy US Democrats and Republicans simply had to swallow their fundamental differences and get on remedying that nation's finances - together.

The truth is that working together in a collaborative spirit can yield simply fantastic results. Savvy business practitioners may as well get on with the process and get to like it. As proof of the pudding, it seems to me that every one of the articles in this magazine issue shares some facet of that truth.

In Portugal, for example, Ceramicx achieved significant win-win outcomes with Mecalbi; for the latter's technology in automotive harnessing, also giving us a couple of very neat new product innovations into the bargain. Closer to home we got to know leading boiler maker Firebird and the paint-curing industry very well in an interesting project that has advanced both our causes. In-house we also report on some significant Innovation Partnership work with the University of Limerick on measuring and improvement of our product design and innovation.

I am also very happy to report that there is now one other good thing coming out of Dublin in addition to the Cork Road; namely our developing relationship with Dr Tony Robinson's engineering team at Trinity College, and the production of a burgeoning body of new work in IR heat research. HeatWorks also reports here on a related matter – a bright new heating consultancy initiative for industry: The Confluence consultancy will deliver ready industrial heating and production expertise for busy companies whose main focus is elsewhere. We are looking forward to telling you more about it as the year develops .

And, needless to say, Ceramicx looks forward to bringing similar good things to your table this year; engaging and working with you and with all your heating needs. Please don't hesitate to get in touch with us on any matter.

Many thanks again

Frank Wilson
Managing Director Ceramicx Ireland

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HOT STUFF FOR PLASTICS THERMOFORMERS

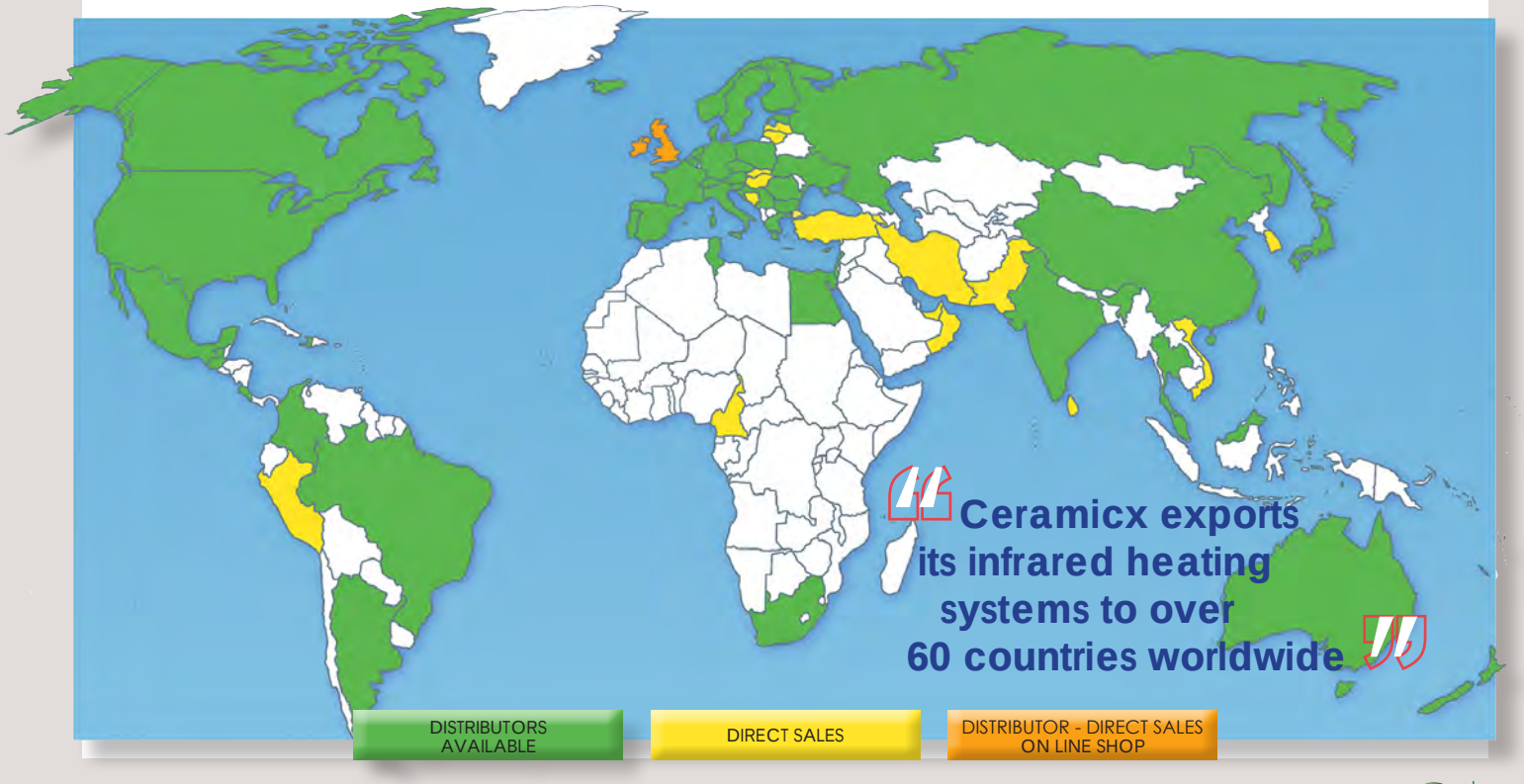
In a few short months Ceramicx will once again be exhibiting at the world's biggest and best plastics exhibition. The triennial K exhibition takes place in Düsseldorf 16-23 October 2013 and the world's thermoforming industries are already in the sights of the Infrared heating specialist.

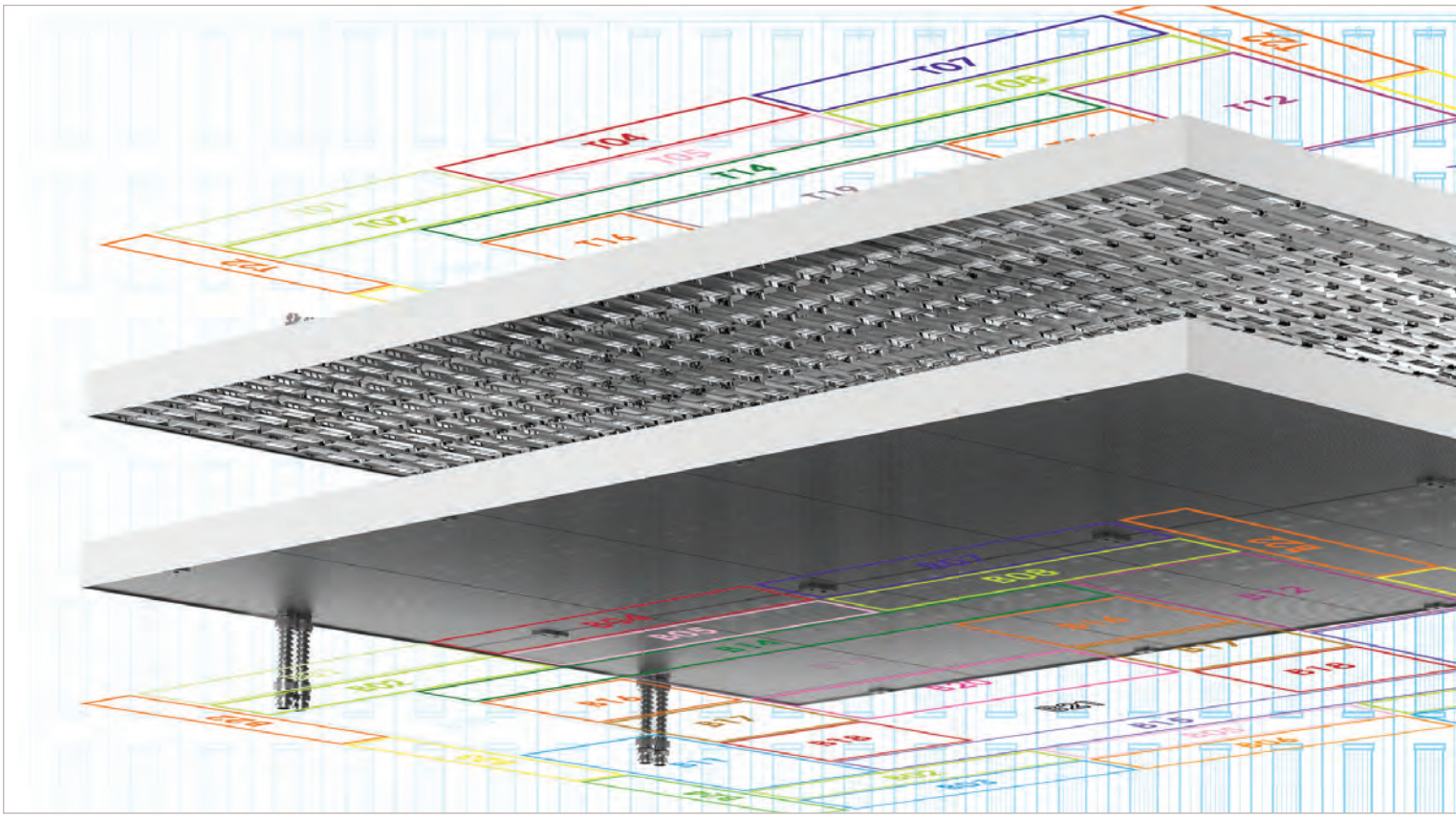
'The best thermoformers in the world are now questioning and re-evaluating their heat technology and production efficiency,' says Frank Wilson. 'Carrying on regardless with the same heat legacy issues is neither sensible nor profitable. A time for review inevitably means taking a fresh look at Infrared (IR) heat technology. This is good news for Ceramicx and good for the thermoforming industry.'

Ceramicx exports its infrared heating systems to thermoformers and blow moulders in over 60 countries worldwide. The company has posted an annual average of 20% sales growth in the past three years. Its exhibiting presence at both NPE USA 2012 and Chinaplas 2012 enabled it to get further outreach with the thermoforming sector.

'We realized that, for the first time, US manufacturing industry is being incentivised to go green and we trust that this movement will continue through 2013. For many thermoformers this means an adoption of IR-based heating + sophisticated control as a way of increasing accuracy and saving cost,' says Wilson. 'Subsequent to NPE Florida 2012, Ceramicx shipped several significant orders to US thermoformers making goods for the fast cycling food service sector. 'The key to our success,' says Wilson, 'is firstly great IR thermoforming platen build, then combined with pin-point accurate electronic and process control.'

2012 saw a total of eight US thermoforming businesses take up the Ceramicx heat and control solutions for new and retrofit thermoforming machines. Each system supplied has had its own challenges in providing a unique interface and diagnostics in order to maintain the familiar control within the operating environment. Ceramicx expects the trend to continue in 2013 and for the update to be followed in Asia and Europe.





'The primary benefit to thermoformers of such a refit,' says Wilson, 'is that the customer is offered improved efficiency through decreased energy usage, increased production, reduced scrap and downtime.'

Getting new IR heating systems designed and installed for plastics thermoformers typically requires 3-4 days on site for integration, including a 24 hour runoff. Ceramicx believes that any thermoforming control system should provide early warning diagnostic features; the ability to alarm the operator in the event of a single heater loss, a shorted wire or bad fuse.

Some thermoforming machinery builders, of course, seek to build all of this in at the outset: Chinaplas 2012 proved the value of Ceramicx world class IR components to both thermoformers and thermoforming machinery builders alike. Subsequent to Chinaplas Ceramicx consolidated a deal with Hangzhou - based Holin Plastic Machinery.

'Our world class credentials are extremely important to the thermoforming machine building industry' says Wilson, 'And Chinese machinery builders are among the fastest reacting in the supply chain.'

Holin Plastic Machinery did a long period of market and technical research before finally selecting its infrared heating components from the Ceramicx quartz heater "FQE series". At Chinaplas, Shanghai, the decision was seen to pay off handsomely and Chinaplas 2013 is expected to see similar success.

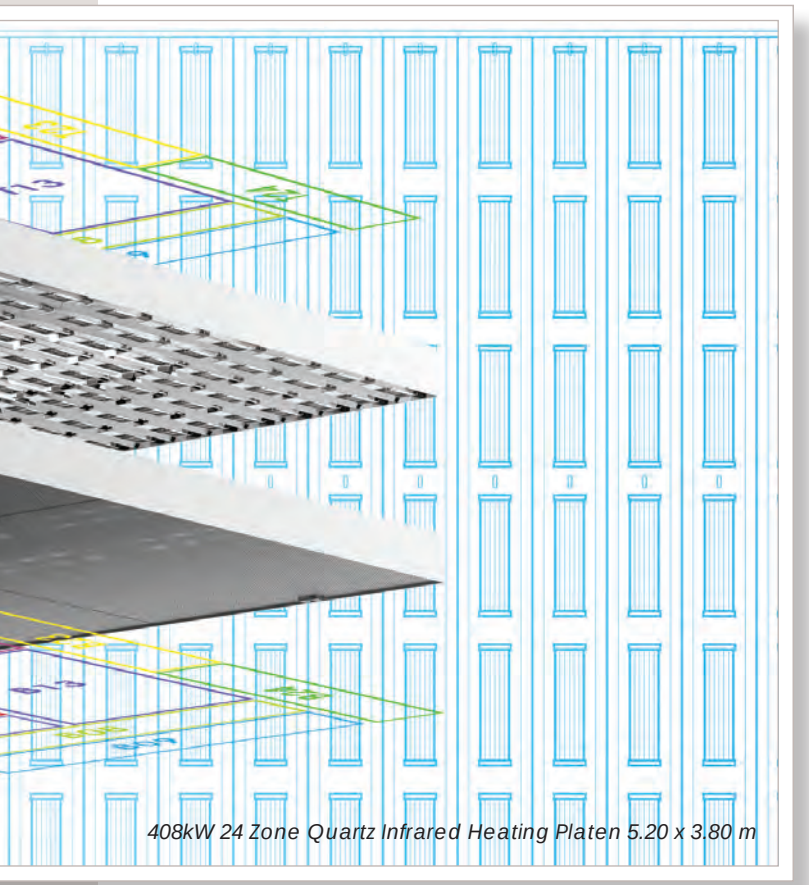
The newly IR equipped Holin thermoforming machine - design and performance - continues to gather plaudits and enquiries from customers inside and outside China.

Holin recognized that the non-IR heaters that were previously fitted to its thermoforming machine were blocking the company's renewed quality-based goals. In making the change to IR Holin was also mindful of the fact that Ceramicx products have both CE and UL certification. Each IR ceramic heater supplied to them and for every Ceramicx customer is also equipped with its own exclusive identity number and 'birth certificate'. And should any customer wish it they can examine the exact heater performance and parameters for every IR component supplied.

Holin Plastic Machinery's new generation full-auto high-speed thermoforming machines use the full servo system. All of these factors help Holin build technical superiority into their thermoforming machines, which can be exported worldwide.

Ceramicx experience is that most plastics thermoformers experience heating problems and issues at some point in the life of their machine. 'The heating issues of the past ten years for plastics thermoformers worldwide are broadly the same, says Wilson, 'and until we see a wholesale adoption of IR based heating – the core messages to all thermoformers will be the same.'

Those messages include the assertion that a simple infrared heating upgrade to a company's



408kW 24 Zone Quartz Infrared Heating Platen 5.20 x 3.80 m

conventional heating system can increase profits for thermoformers by at least one third, according to Ceramicx.

Replacing an entire thermoforming machine is too big a step for many but an IR upgrade can improve the performance of an expensive fixed capital asset and typically pays for itself within months.

Heating legacy issues 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 of thermoforming production and – above all – to a waste of energy and electricity cost.

In a completely enclosed system or oven, this kind of heating becomes uncontrollable. Thermoforming operators are being continually forced to ramp up the input power in order to try and maintain an even temperature.

Effective plastics thermoforming means that all energy inputs have to be properly measured and then specifically applied.

According to Ceramicx, IR heating for thermoformers includes the following 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 infra red to be replaced with superior platens
- Savings in directional heat
- Better resultant product quality
- Improved set up time and tool change time
- More complex parts possible
- Cooling requirements also reduced
- Matching of heating controls to polymers being processed
- Improved environment for operators

Ceramicx-designed thermoforming systems essentially convert incoming electrical wattage into infrared output more quickly and efficiently.

The core of the Ceramicx quality assurance (QA) work centres on developing systems of closely specified nominal wattage tolerances for the ceramic and quartz electrical elements. This control applies throughout the entire range of Ceramicx products. The semi automated validation system with closed-loop process-control guarantees the product quality. It also assigns and records performance characteristics for each part as it is produced.

In thermoforming production a number of infrared ceramic heaters are generally mounted on reflectors which are then arrayed upon a platen – or two – which is part of 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 plastic.

For example, Ceramicx points out that stainless steel is not an adequate material for use in infrared reflection work. It will start to discolour from 120°C, causing a high percentage of the emitted energy to be absorbed, and therefore over time may cause burnout of the electrical wiring behind the reflector. Polished aluminium on the other hand is in most cases the best reflector for ceramic infrared heating but > 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 some way, has its custom features depending on products, materials and cycle time. The Ceramicx belief is that sooner or later most of these will migrate over to IR based systems in the coming years.

FIREBIRD CASE STUDY

Heating solutions company Firebird is on an upward track: The company's expansion since foundation in 1980 now sees it selling its boilers, solar thermal systems, biomass energy systems and domestic cookers in markets as diverse as France, New Zealand, USA, Germany, UK, Scandinavia and the Middle East.

Based near Macroom, Co Cork, Ireland, with distribution end sales in Co. Down and Devon.

Firebird's continuing growth has also seen it working with Ceramicx, another Co. Cork-based company, in order to create a bespoke system of heat work in its own factory; designed to help optimise the company's evolving production needs.

For example, Firebird had a recent requirement to streamline and increase the throughput of its boiler production line. This was primarily needed in order to satisfy continuing demand and to circumvent seasonal bottlenecks for Firebird heating products.

As part of the redesign of the workplace and the upskilling of production Firebird decided that the work of spray painting its boilers needed to be automated. The paint curing time on the sprayed boilers also then needed to be optimised in order that the products could be regularly shipped at a predictable rate. Paint curing time also needed to be freed from reliance on ambient temperature and weather conditions in order to help guarantee finished production.

After some careful research Firebird realized that the best and most effective heat source to use in these instances was Infrared heating. Not only was IR heating reckoned to be more cost-effective and cleaner energy than alternatives in gas or oil, the highly targeted nature of the IR heat source and its transmission meant that a high degree of predictability could now be built into the Firebird production process.

IR heating manufacturer and specialist Ceramicx was accordingly called to the table to assist in the design and build and supply of a new IR-based heating line for Firebird. The timing of this project also coincided with Firebird's decision to use water-based paints in its production process. The new IR heat process was therefore helpful in eliminating Firebird's use of solvent-based paints; reducing VOC emissions and also reducing the carbon-footprint of the boilers generally.

After some initial assessment at the Firebird factory Ceramicx was commissioned to design and build:

- Firebird paint spray booth with IR heaters, extraction and control
- Firebird Infrared curing oven

Equipping the spray booth with IR pre heating was an important first step in helping the general paint adhesion and in preparing the products for the IR oven proper.

"The IR heat process helped eliminate the use of solvent-based paints and reduce VOC emissions"

The new spray booth is a small steel-clad room; fabricated and fitted with IR heaters modified from the Ceramicx industrial range. The booth has one air inlet and one outlet fan, lighting and a single control panel on the outside.

Curing oven

Firebird's spray booth uses a paint-spraying robot and has a conveyor passing through it, carrying the unpainted boilers from the production area and then on into the curing oven.

The robot paints the boilers as they index through the booth. After the spray booth the boilers enter the curing oven where they are moved into position according to the production programmes. The IR curing oven is heated to some 60°C and the dwell time in the oven is some ten minutes before visual inspection and end-of-line palletisation.

Firebird's infrared curing oven heats and cures the painted surface of the boiler unit as it passes through on the conveyor. It does this using a combination of infrared and convection heating.

Ceramicx designed the Firebird oven to heat the target product primarily by infrared heat transmission, using radiant heaters mounted on the sides, top and lower area of the oven.

The main infrared heating system is divided into 2 control zones: side heaters and top heaters. The bottom heaters are switched manually on and off if or when required. The infrared heating process is also assisted by a ceiling mounted extract air fan which helps reduce the humidity level inside the oven by removing warm, 'damp' air through the top of the oven.

For Ceramicx the Firebird project represents yet another successful instance of what it calls 'applications engineering'; delivering bespoke and designed turnkey IR heating solutions for all kinds of manufacturers and industrial users. Ceramicx manufactures all the IR components and hardware itself and is thus able to guarantee smooth project management and competitive pricing.

Ceramicx sees the cost-effective potential of IR heating as largely untapped throughout the world: Not only are there multiple opportunities for IR heating lines in most manufacturing sectors, Ceramicx also believes that IR heat technology is also set to make great strides in the food, consumer, medical and healthcare sectors.

Meantime Firebird production continues on its upward curve. IR heat solutions have helped the company with its automation and in increasing the throughput of its boilers through the system at a constant rate.

By Joao Goncalves, Mecalbi

WIN WIN - NEW PRODUCT DEVELOPMENT WITH MECALBI

At Mecalbi since our foundation in 2006 we have two principal areas of activity; the first concerns our state of the art shrinking systems, i.e. products used in the shrinking process of thermoplastics by applying heat. These are mainly used for the worldwide automotive industry.

Our second area of expertise is in the design and development of custom projects for clients in the area. Mechatronics is today defined as 'the combination of Mechanical engineering, Electronic engineering, Computer engineering, Software engineering, Control engineering, and Systems Design engineering in order to design and manufacture useful products. Mechatronics is a multidisciplinary field of engineering, that is to say it rejects splitting engineering into separate disciplines.'(Wikipedia, December 2012)

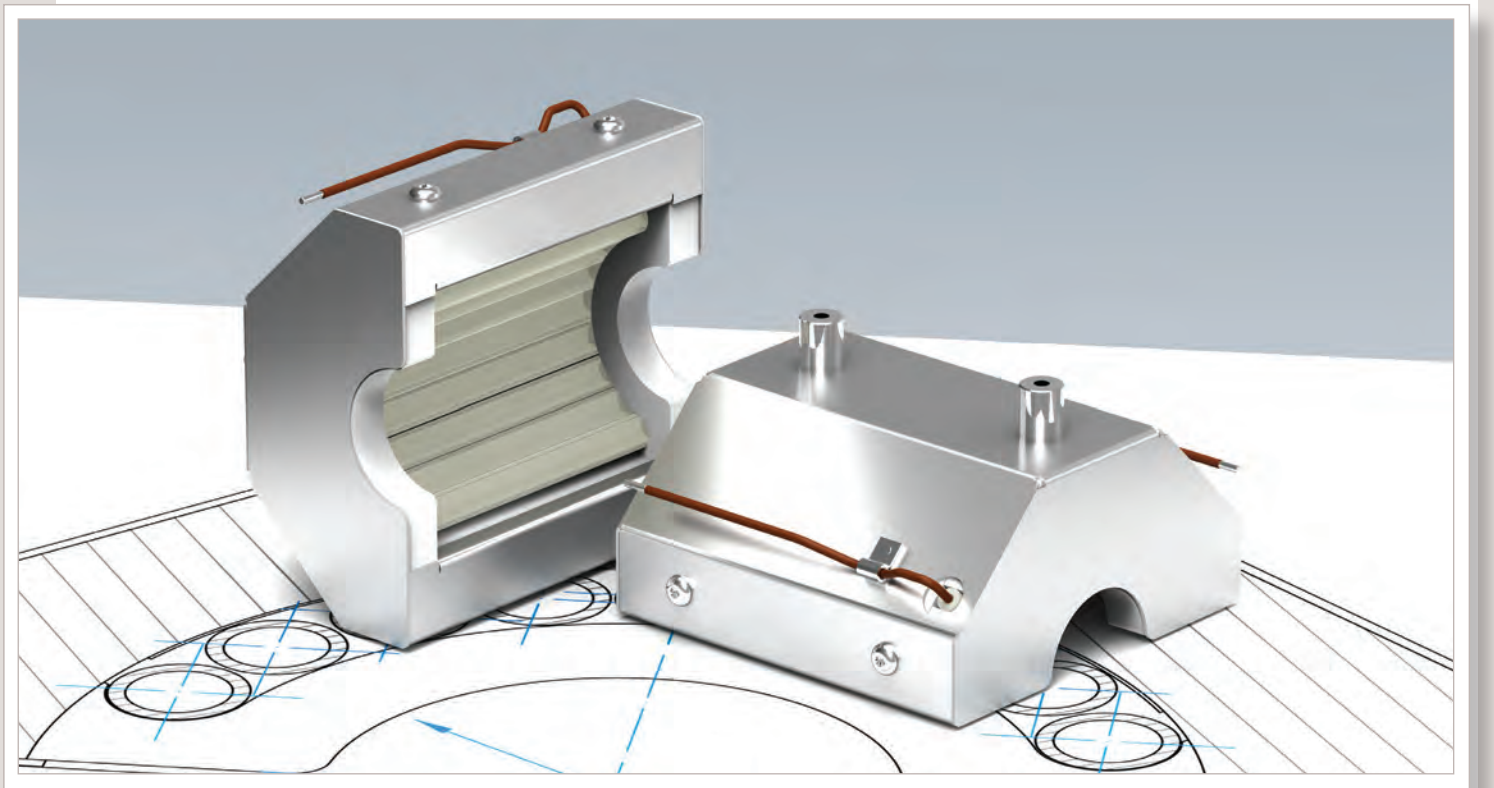
The design and development of these custom projects in the Mechatronic's area begin from the idea/concept, to the final product, based on specifications and discussions provided by partners and customers.

Meantime, the Mecalbi STCS (Shrinking Tube Control Systems) line is the principal area for business and is the place where we worked on our heat technology with Ceramicx.

Mecalbi offers a complete range of high quality products for industries that require these types of STCS systems. The main target market for these systems is the worldwide automotive industry. This fact results directly from the more than 20 years' experience of its founder in the automotive industry.

In Mecalbi's STCS area it is possible to choose from standard products to custom/application specific products; from mid process temperature to extreme process temperature; from standard heat shrinking tubes to waterproof applications; from semi manual process to complete automatic systems; etc.

Mecalbi products in this area are designed to comply with the latest security and safety international norms and are equipped with cutting edge technological features. We provide the most advanced systems on the market in terms



of technology; providing immediate benefit; ready to use equipment and delivering great added value for our customers.

The STCS product range itself divides into 2 sub-sections: machines based on hot air blowers and machines based on infrared resistors. The IR heating range has the advantage of being more energy efficient. It also delivers higher temperatures but with the disadvantage of having a higher pre-heating time in terms of achieving the desired process temperature.

For this reason, and also considering the high production rates of the automotive harness industry, these machines need to rely on infrared ovens with high degrees of robustness and reliability.

These types of solutions are not easy to find.

"An "off the shelf" solution is not possible since the technology is very specific and requires a high degree of expertise from the IR-based manufacturers.

For this reason, Mecalbi joined Ceramicx in a partnership with the objective of finding a suitable solution for its infrared machines."

Our partnership involved the development of 2 new kinds of solutions: quartz-based resistors for the STCS-CS 19 and STCS-RT machines, with the objective of providing a more robust form of heating. The previous equipment set-up had been easily damaged by the cable's terminals. Mecalbi also needed a small infrared oven for the STCS-IR500 and STCS-RCM machines, with the objective of providing high stability and energy efficiency.

Both solutions required strict specifications in terms of power, temperature, dimensions, stability and reliability.

After a visit to Ceramicx by Mecalbi, Ceramicx delivered its IR heating solutions to Mecalbi in Portugal. We can say that it exceeded our expectations, and went straight to the heart of the matter in what was needed by our machinery.

In December, Mecalbi used the new infrared oven in its STCS-RCM machine for the validation of the machine in one of its major customers. This trial was received very enthusiastically and passed all the validation tests with success.

We can honestly say, after this first partnership, that Mecalbi's machines have been given added-value by the Ceramicx IR heating know-how and that we expect to reap rewards with direct consequences in our image and future sales.

We expect to continue and reinforce this partnership with Ceramicx, providing together new and innovative solutions to the automotive industry.

Mecalbi – Actividades de Engenharia, Unipessoal Lda, was founded in 2006. Mecalbi is located in Castelo Branco, in the interior North/Center part of Portugal.

The automotive industry is key to Mecalbi's success. The company founder has more than 20 years' experience in this part of the industry. Key Mecalbi clients include Yazaki, Delphi, Lear, Sumitomo, Leoni and many others.

The company itself is constituted by a group of highly skilled, motivated and flexible collaborators committed to provide a service of excellence to its partners and clients.

Mecalbi's experience is associated to a high sense of responsibility and professionalism, where the new technologies play an important role. Its main purpose is always to provide high quality, technological evolved solutions, that will bring added value and benefits to its clients and partners, considering the demanding lead times required by today's industries.

Mecalbi currently has four IR-based heat shrinking machines for heat shrinking tubes; STCS-IR500; STCS-RCM; STCS-CS19 and STCS-RT. The STCS-RCM model is a comparatively new product which includes an automatic sleeve centering system. The centering feature allows the automatic centering of the sleeve in the middle of the copper area (the welded zone) in order to avoid the incorrect positioning of sleeves.

RTCS-RCM

Mecalbi's STCS-RT shrinking system has temperature and time control and is based on IR heat technology for workbench applications that can execute several shrinking operations at the same time.

The STCS-RT system has two independent workstations (with independent shrinking parameters) and a moveable oven. Each workstation is provided with support for tooling fixtures that can be used on a variety of small components such as ring terminals and small connectors and the two workstation approach enables continuous non-stop production. Elsewhere, Mecalbi is specialized in the development of mechatronics solutions and systems. It has proven skills in the fields of Mechanical and Electronic/Electrical Engineering and Information Technologies.

As part of its support and service the company provides subcontracting of 2D and 3D mechanical drawing and the service can also include construction of 3D parametric models of parts and assemblies and graphic simulation of sets and equipment.

Mecalbi also designs and makes Printed Circuit Boards to a small to medium scale. The company service consists of:

Design of the electrical/electronic circuit, based on client specifications

Drawing and production of the PCB

Component assembly and circuit electrical test

All of Mecalbi's PCBs are CE and ROHS compliant.

A PERFECT FIT BOSSING PRODUCT REDESIGN

Hubert Wittke

World Class production at Ceramicx means Continuous Improvement (CI) in all areas, including product design and product redesign.

Through flexing this design engineering muscle, Ceramicx is now creating and (re) engineering IR ceramic elements to any size and specification of the customer's choosing. However, some designs are considerably more IR effective than others.

HeatWorks talks to one of the key players involved; Hubert Wittke, about designing the perfect IR ceramic element.

Hubert is one of Mark Southern's University of Limerick team that is currently midway through an Enterprise Ireland Innovation Partnership project with Ceramicx.

First tell us a little about Hubert Wittke - interests; career; and what interests you in your manufacturing work

My abiding passion is engineering. I have had a deep interest in it since my teenage years and have pursued this interest through 1st degrees at University and in postgraduate studies.

I graduated from the University of Technology in Poznan (Poland) gaining the title of Master Engineer in Mechanics. I then completed a postgraduate course 'Master in Computer Aided Mechanical and Manufacturing Engineering' at Dublin City University. Currently I am working as research student at the University of Limerick and engaged full time with the Engineering Department on joint work with Ceramicx Ireland.

My particular areas of interest in engineering are Computer Aided engineering (CAD/CAM/CNC) and manufacturing technology as well as conducting the research for innovative solutions for industry.

And what looks good on screen also needs to work in practice right?!

Right. For me the most exciting part of engineering work is observing how the designed product - which initially exists as a computer programme only - is finally manufactured for the customer, and then goes on to fulfill its niche and function and appreciation in the marketplace.

Can you give us a flavour of your current project work?

Our UL team is half way through our two year project with Ceramicx. Within this time I have observed that Ceramicx shows outstanding drive towards continuous improvement of its products and a search for innovative industrial solutions. My skillset is a part of that overall drive.

My specific focus lately, for example, has been concentrated on how to create a central pillar redesign for ceramic-based elements that gives an optimum fitting and connective performance.

Is the pillar/boss a critical part of the whole ceramic piece?

Yes. There were also a few specific reasons why redesign work on the bosses/fittings/redesign got started:

The manufacturing technology of Ceramicx heating elements has been continuously improved over the past 18 months. This has opened up a need to:

Review and - where necessary – change the design of certain products.

Go further - ie, tailor and update the design of certain products in order to match expectations of customers; their preferences for size and specification of ceramic elements.

The redesign of the bosses was also the result of the preferences and feedback received from customers. Ceramicx always pays close attention to the voices of its clients and business partners in that regard.

Q2. What sort of field work and empirical measurement work did you do – prior to getting down to design criteria?

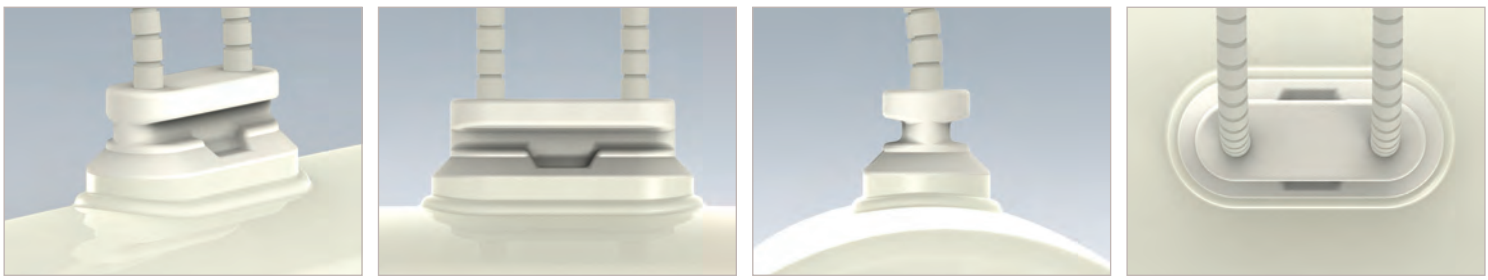
This is an interesting one. Ceramic formulations - as well as other materials – have their own specific characteristics. Natural materials present difficulties and competitive opportunities in ensuring consistency from batch to batch to batch. The production process for the ceramic elements is also characterized by many variables which have direct influence on the product's quality and its measurements. All this means that during the design process one needs to consider many factors; such as ceramic shrinkage (experienced by ceramic material after it is casted) and many other production and process aspects as the manufactured element goes down the line en route to packing and shipping.

So you had to look at all these matters and materials-based issues first?

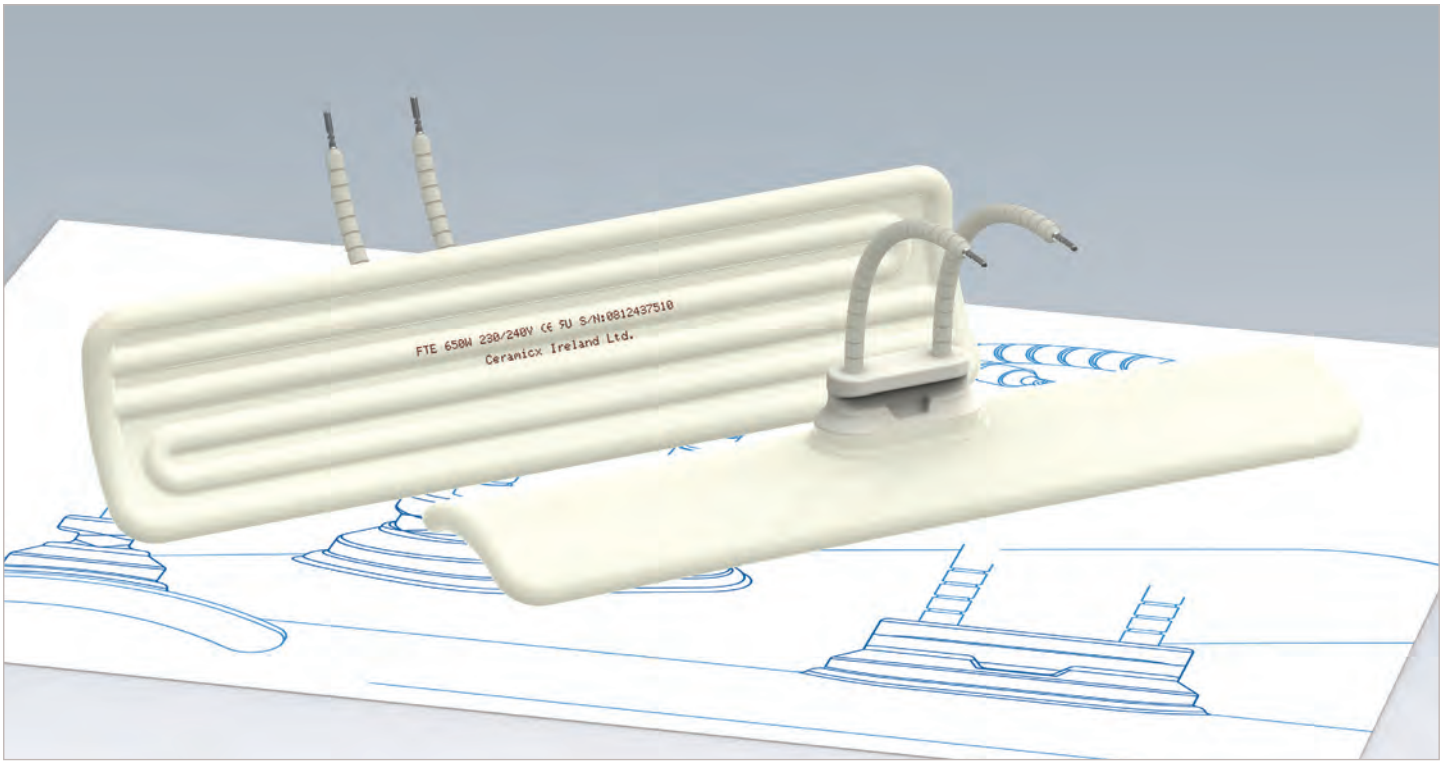
Correct. In fact the start-point of our pillar redesign process was verification - on a very large scale - of the actual quality-of-fitting for a number of currently manufactured ceramic heating elements. This research included samples from the Ceramicx range and an extensive range from other suppliers.

The pillars from several production series (and for each product) were carefully checked first. As the result, the average measurements for those pillars were noted. Later on, these measurements served as our reference point in the redesign process for certain Ceramicx moulds.

It's worth bearing in mind that the geometries of the end-product and so called green product (ie the product directly taken form the casting mould) are significantly different due to ceramic shrinkage effects experienced by green product, as well as other ceramic production specific aspects.



pillar / boss



In usage the boss/pillar construction is critical to the clipping or the fitting of the whole element, isn't it?

Yes. During our initial research and our geometry checks (of currently manufactured pillars), we put a lot of attention onto the part of the pillar's geometry that was directly responsible for the ceramic heaters' clipping quality to the reflectors.

However, many other factors are involved in the fitting of the element. For example, the geometry of the wave spring and the U-clip plays a key part, as well as the thickness of the reflector and size of the slot hole in the reflector, on which the pillar is inserted. All of these factors were part of our preliminary project research.

In addition we also made sure to investigate the knock-through effect of such a redesign. To take one example – will implementation of the new design cause any need for changes in the production/control equipment? Of course any design change may result in such a need, but the whole thing is about early identification of such needs, and in this case we have ensure that there are no unexpected knock-on costs.

One of the outcomes of this work is a redesigned boss that will be integrated into most ceramic elements at Ceramicx.

The newest pillar design incorporates the fruit of all ideas from the Ceramicx design team and, in my view, has produced a 'state of the art' design for the ceramic pillar. Some small compromises have been necessary but we now have something that is a true innovation for the market.

The new pillar designs are now in a pilot phase of production?

Yes. The most important aspect of design-proving process has been to ensure tight control over each parameter and each production step along the way. We need to be 100% sure that the test product achieved was manufactured at a specific temperature, was dried for proper amount of time, and many other factors.

To help control the process, test series of products are manufactured in small batches within several days. The results achieved from such tests give us a good approximation of the outcome that we may expect in high volume production of new pillars in the near future. We need to be sure that we provide customers with failsafe production and protocol.

Any interim findings that you can share?

OK, for one thing the new design has proven itself to be extremely effective in pre-empting any possible cracking or 'crowling' of the ceramic materials. It all adds to the excellent aesthetics of the new pillar. And - from a typical engineer's point of view - how a product looks is generally more important than one thinks! Based on the feedback with regard to the new pillar's design forwarded already to us by Ceramicx business partners, we believe that the aesthetic criteria have been surpassed.

You have also looked intensively at how the new elements will be used in practice?

Yes, of course. The materials in the elements in the ceramic heater-reflector assembly expand once the heater is connected to the power. In this way, one needs to make sure that the new pillar ensures not only a high quality of clipping to the reflector, but that it also enables easy disassembly of the heater, even if the heater is not fully cooled down.

Also, in order to improve the heating element fitting quality, one can change the geometry of the pillar and/or the geometry of the clipping parts. We have decided to implement changes to both the pillar geometry and to that of clipping parts as this solution improved the quality and durability of the pillar and the clipping parts. In final effect, the quality of the whole ceramic heater-reflector assembly has been significantly improved. The overall dimensions are unchanged. The new Ceramicx pillar is designed as usual for standard reflector thickness (0.75 mm) and for a standard slot hole size (15mm x 42mm).

The entire pillar geometry is now also much more rounded. Ceramic material can be very sensitive around sharp corners, and so our redesign has taken good care to avoid these.

How will the new boss design make life easier for the customer?

Firstly the customers should find new Ceramicx pillars much easier for fitting to the reflectors. The new lip around the base of the pillar will ensure better centering and fitting of the heater unit.

Secondly, thanks to our Ceramicx-introduced geometrical modifications, Ceramicx pillars will be significantly more durable.

Thirdly, the improved geometry of the wave spring should also increase the life time of the heater.

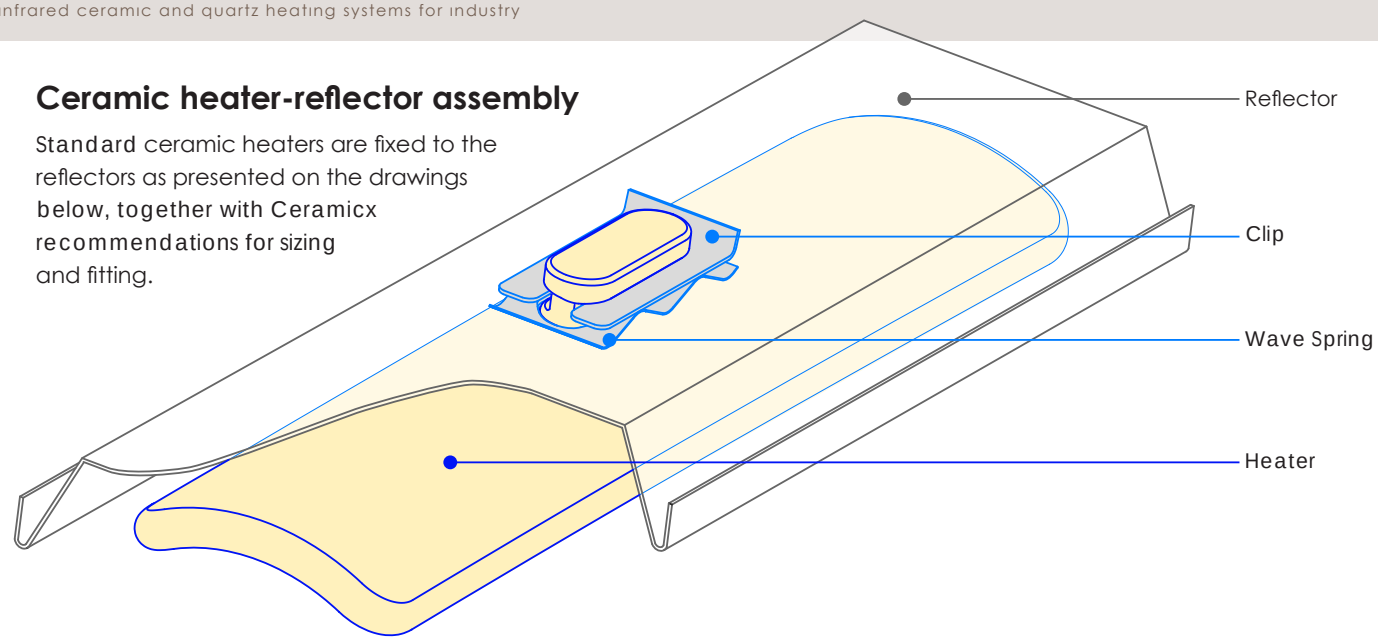
And when will the new Ceramicx designs be available for purchase?

All being well, the new elements may be ordered from March 2013.

Thank you very much for your time, Hubert!

Ceramic heater-reflector assembly

Standard ceramic heaters are fixed to the reflectors as presented on the drawings below, together with Ceramicx recommendations for sizing and fitting.



Ceramicx's IR ceramic heating elements are designed for the reflectors of the standard thickness of 0.75mm.

If, however, a user of Ceramicx's heaters decides to use a reflector of a different thickness then it is highly recommended to implement a proper assembly configuration that matches the actual reflector thickness.

Ceramicx has produced some recommended configurations for ceramic heater-reflector assembly, These are presented in the tables below.

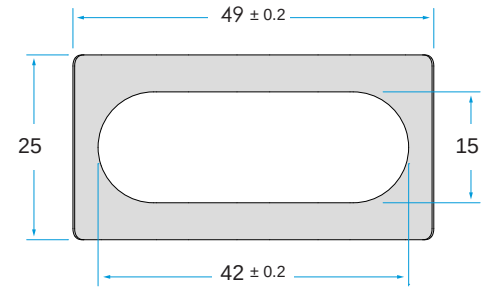
Users should also ensure that the heating element fixing parts measurements, i.e. the clip and the wave spring, are in accordance with those that are recommended by Ceramicx – please refer to the drawings presented below.

If in doubt please consult directly with Ceramicx. www.ceramicx.com

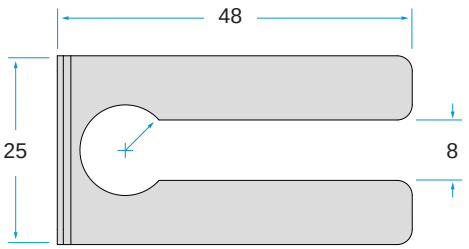
Tables below present recommended configurations for the ceramic heater-reflector assembly

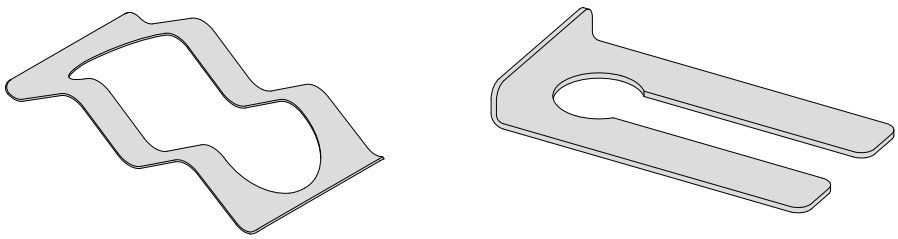
Sizes of standard clip and wave spring recommended and used by ceramicx

Wave Spring



Clip





Usage of the reflector, the clip or the wave spring other than those recommended by Ceramicx may result in improper heater-reflector assembly.

FTE
Full trough element

reflector thickness [mm]	slot hole size [mm]	number of clips	number of wave springs
0.75	42 x 15	1	1
0.90	42 x 15	1	1

SFEH
Square flat element hollow

reflector thickness [mm]	slot hole size [mm]	number of clips	number of wave springs
0.75	42 x 15	1	1
0.90	42 x 15	1	1

FFEH
Full flat element hollow

reflector thickness [mm]	slot hole size [mm]	number of clips	number of wave springs
0.75	42 x 15	1	1
0.90	42 x 15	1	1

HFEH
Half flat element hollow

reflector thickness [mm]	slot hole size [mm]	number of clips	number of wave springs
0.75	42 x 15	1	1
0.90	42 x 15	1	1

CERAMICX AND CONFLUENCE

Recent issues of HeatWorks magazine have featured the work of Dr Tony Robinson's Engineering Department at Trinity College Dublin. Leading-edge IR heating research at Trinity is being jointly prepared with Ceramicx in order to launch at the K 2013 Plastics Exhibition in Düsseldorf, October 16-23

Dr Tony Robinson

Meantime Ceramicx and Tony Robinson have news of a parallel, track consultancy – which should be of interest to all kinds of applications engineering and to HeatWorks readers.

Cáthál Wilson and Tony Robinson were featured in conversation before the Ceramicx Christmas party, on the 15th December 2012

Hi Tony – welcome once more to HeatWorks magazine!

Thank you – much appreciated!

Tell us a little about your new commercial development.

I and some Canadian colleagues have recently started a thermal research and consulting company. The business is based in Ireland and, for practical purposes, our current geographical remit is the European manufacturing sector.

The business is about all kinds of heating – including IR heating?

It is. The company is called Confluent-Research Ltd. The company is actually aptly named because our fundamental aim is to seamlessly merge our expertise in thermal science and engineering with the particular expertise of the industry partner. The net result is that problems are solved as smoothly and cost effectively as possible.

Your upbringing and background is Canadian but you see a great potential in Ireland and in having an Irish base?

Indeed. The idea of starting the company in Ireland largely stems from the fact that there are very few individuals in Ireland with specific expertise and training in thermal sciences; those being a combination of heat transfer, thermodynamics and fluids mechanics. The field is very open here with great possibilities for development and making gains.

And am I right in thinking that your academic career has followed the same integrative path?

Yes. When I joined Trinity College Dublin as an academic in 2004 we rebranded the research group as the Fluids and Heat Transfer Research Group. Since that time I have been inundated with more and more requests to perform consulting type research, largely on heat transfer related problems. These requests have come from all corners and have ranged from high potential start-up SMEs to large multinationals with manufacturing presence in Ireland or the UK.

By this time last year I was performing so much industrial related research consulting that myself and Dr. Roger Kempers, who directs the Canadian arm of the company, decided that it would make more sense to form a company in Ireland.

At Ceramicx we know that all kinds of manufacturing problems can be triggered by heat and thermal problems. Is Confluent-Research Ltd on that interface?

What we now understand is that some sectors of industry have critical thermal problems but lack the experience, expertise and resources to solve them. This being the case, a disproportionate amount of time, resources and money could be spent to try and solve the problem, often unsuccessfully.

In other words you could spend a lot of time and manpower trying to solve thermal problems on your own from ground zero – and still not be close to solving issues.

TR Exactly – and we see a lot of this at first hand: One recent example involved a company developing a novel electronics device. Their particular niche in the already crowded market was such that they could make the device smaller than their competition. This is what gave them their edge. However, this meant that their competitors were continually catching up and closing the gap - which forced them to make an already tight fit even tighter.

I imagine that thermal technology became an issue for all these players?

Heat, which was already a problem, now became this company's only problem. They spent the equivalent of one person year and a ton of money on software and prototyping to try and get around their heat problem. In the end they didn't quite make it - and then approached me. Their main problem was that they diverted staff without thermal engineering backgrounds onto the problem. This is a double edged sword since that company staff becomes unproductive on two fronts

They're hamstrung on their original jobs and ill-equipped to do the thermal work?

Correct. Our team solved their problem in two weeks and at a fraction of the already invested cost. It is primarily for situations like these that Confluent-Research was conceived and the team put together. In a nutshell our mission is to provide professional thermal engineering research and consulting services and to do the job quickly and cost effectively so that our clients can do what they do best.

"heat transfer a "Dark Art""

How is it that this area of work can so easily flummox even the most established manufacturers?

Solving heat transfer problems required very specific knowledge and expertise. I remember when I was in graduate school and the postdoctoral fellow who I shared an office with always called heat transfer a "Dark Art". I was never really sure what he meant until I started working closer to industry. Heat transfer is one of those phenomenons which, unless you have been at it for a while, is hard for most people to wrap their heads around. To become an expert requires a lot of education and training which has to be backed up with tons of experience.

Hence the opportunities offered by the new company?

Yes it is what the Confluent Research team has; education, training and experience. The Confluent Research team is made up of internationally recognized academics and industry researchers. Every consultant at Confluent Research Ltd. holds a Masters or Ph.D. degree in Mechanical Engineering in the field of Thermal Science.

Not all manufacturing problems need a doctorate though?

That's true. We can sometimes solve thermal problems on sight, which our customers love since the time and money saved is enormous. These pointed injections of knowledge are of great value to industrialists because they do not have to invest time and money in hiring or training an expert and keeping them on staff "just in case" they have a thermal problem.

I suppose the old saying that 'common sense ain't that common' applies just as much in thermal manufacturing as anywhere else?

TR We had a particular example of a refrigerator manufacturer whose new fridge design was not performing as expected. More importantly, it was performing notably worse than the competition. We had a quick look at the evaporator design and immediately saw that the way the air inlet channel was designed was forcing all of the air flow over the centre of the heat exchanger and basically reducing its effective size. We suggested putting in some small inserts to divert the flow over the whole evaporator and then watched the Company CEO as his face went white. It turns out that there used to be inserts in the older fridge designs but no one knew what they were for!

They do now I would guess!

The accounting department had suggested getting rid of them in the new design to cut costs. Needless to say the inserts went back in; the company's product made it to market and the accounting team were banned from making engineering decisions from then on!

Could you tell us a little more about those instances where the hard thermal science earns its money

Sometimes you have to roll up your sleeves and do it the hard way: By this I mean that the problem can be so confounding that we have to rely on one or more of analytic modelling, experimental measurements and computational techniques. These are all aspects of thermal science that our team excels at and we have many publications on applied mathematics, experimental and computational techniques in academic journals. One example that comes to mind is a heat exchanger manufacturer that makes a heater with a peculiar geometry. The original prototypes were under performing and they needed to know why and asked us if we would do some Computational Fluid Dynamics (CFD) simulations for them. After some discussion we convinced them that the CFD approach, which we are more than capable of doing, was not the right direction and would take a lot of time, cost a lot of money and produce results which may or may not be accurate, which is risky. Instead we suggested a hybrid experimental and numerical approach where we built an experiment whereby we could measure relevant information which was subsequently used as input data into a numerical simulation of the conductive heat transfer within the heater system. This not only allowed us to

hone in on design and/or manufacturing flaws quickly and accurately, but also provided a straight forward design tool where geometric aspects could be changed in the simulation environment instead of retooling to make loads of different prototypes and hoping for the best.

> **".... product developers and manufacturers either love heat or hate it."**

How much appetite do you find for heat work in industry generally?

You know - we have learned that product developers and manufacturers either love heat or hate it. Some companies we have been involved with, such as yourselves love it and heat is their business. For others, like the electronics industry, heat is terribly unwanted.

In the context of those companies where heat is their business, Confluent Research will get involved when they want to, say, improve the performance of existing heat work products in order that the client can get an edge over the competition. This is not a trivial pursuit since many existing products are ones that work and have an entire manufacturing infrastructure around them so the company can produce the product at a price that they can continue to drive sales and keep the lights on.

How do you keep the wheels turning and improve something that ain't broke?

Often the first step is providing a detailed thermal analysis in order to gain deeper knowledge of their product's thermal behaviour. From here we work together with the client company in an iterative fashion whereby we offer suggestions and predictions for design improvements and the company feeds back with regard to manufacturing possibilities.

I guess you have to do enough – but still keep out of the way?

Yes. The hope is to use this design iteration technique to refine the design and lead to product improvement without negative cost implications. The same can be said for new heat work product innovations that the company may be considering in order to expand their product line. In fact I have done many ground-up thermal product designs for SMEs, ranging from bespoke thermoelectric systems to informing the design of energy efficient cast iron fire backs.

And what about where you're working against the grain?

For those who hate heat, such as the electronics industry, the problem is a bit different. Here the package designers usually do their best and then run into heat problems once they build the prototype. Then we come in and fix the problem. I strongly suggest that if you are an electronics package designer, unless you have a track record for thermal management - call us early in your design cycle. To give them their due - this is what the big multinationals do and we have done everything from beginning of life tests to accelerated stress tests for long term reliability for them.

What hopes have you got for the future new business?

The edge that Confluent Research has is that we are literally the top echelon of thermal scientists in the world – and this is really well balanced out by decades of combined industrial experience. We understand the core science; we understand how products are developed, we understand manufacturing, we understand marketing and we understand that industry wants their problem solved quickly and without breaking the bank.

For enquires please contact

cathal.wilson@ceramicx.com or
info@confluent-research.com

The projects covered by Ceramicx extensive experience will be dealt with by Ceramicx directly. However, the partnership with Tony and his team at Confluent Research allows Ceramicx to put down a marker stating that there is absolutely no project that cannot be tackled, solved and built to solve your Infrared Project/Process requirements.

For more information please see;

www.ceramicx.com or
www.confluent-research.com

Gráinne Wilson, Rachael and Tony Robinson and Frank Wilson at the Ceramicx Christmas Party.

THE FUTURE BURNS BRIGHTLY!

Two days last November 2012 saw a wide range of business and industry experts and advisors descend on Ceramicx Ireland as part of the company's biannual summit; analysing and defining its business, and planning for its future.

'Call it a consultation, a road map, a sanity check or all three,' says company founder Frank Wilson, 'Ceramicx was very fortunate to be able to call on a great variety of inputs in order to test out, define and refine our future plans. We had a very fruitful time and confirmed several parts of our strategy.'

presented to the meeting has conducted the last 3 sets of benchmarks for the company and the engagement with these benchmarks and the issues that were raised have led to World Class Manufacturing being achieved this year. However, Ceramicx noted there is still a great deal more work to enhance various systems in the plant making all staff more productive and sustainable in the future.

> "Call it a consultation, a road map, a sanity check or all three"

Wilson says that 'I have referred before to the Irish custom of Metheail; where neighbour helps neighbour in a common working cause. Here, the meeting was more concerned with sharing a variety of business perspectives and selecting the best for the Ceramicx future.

The strategy meeting took stock of Ceramicx progress from 2009 where the company undertook new directions associated with marketing and sales introducing branding of the products, a new website and company quarterly magazine HeatWorks.

The distributor and sales network focusing primarily on China, Turkey and the USA. These undertakings led to a rapid increase in the expansion and growth of Ceramicx Ireland again which achieved 30% growth in 2011/2012 and 16% in 2010/2011. Growth in excess of 20% is expected for 2012/13.

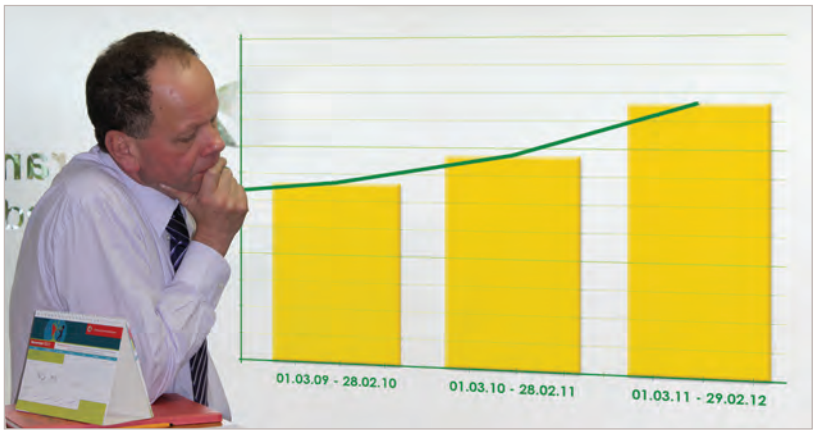
The benchmarking of the ceramic element production through the innovation partnership process is now providing the ground work for this increase in output. Ceramicx holds an ambition to increase these sales dramatically during the course of the forward five year plan. A range of financial targets was discussed with the business advisers.

The meetings heard directly from Enterprise Ireland on how Ceramicx has now attained world class distinction in its field of heating production.

Ceramicx has participated in the benchmarking program offered by Enterprise Ireland on a regular basis over the last ten years. Mr. Michael Nolan who

The meeting heard of the continuing policy of Ceramicx to employ a policy of backward integration whereby the business makes in-house nearly all the components associated with Infrared manufacturing. This involves the constant development of technologies and capabilities within the company. This also allows Ceramicx to control innovation costs. The company is thus enabled to continue its mission to becoming a niche, high-end technology company. The company is constantly developing new projects and components as part of its application engineering developments for customers. Ceramicx is also launching 3 new stand-alone industrial heating units this year.

Backward integration also facilitates the competitiveness of the company and an ability to deliver bespoke products to its customers. The capital-intensive nature of growing a company in this manner has meant sure and steady growth of Ceramicx over time. The company has chosen to advance the technologies and individual product lines of the company as a group. This provides for a company whose current sustainability and capacity to grow is now based on a very sound footing.



The company's policy of backward integration will be coupled with Research & Development and a Sales & Marketing strategy focused on accelerating the sales of high-end products.

Ceramicx will also engage in the construction of completed process machines for leading international OEM companies in a variety of sectors such as automotive; telectronics; oil and gas and other industries. The design, advancement and manufacture of these technologies will be supported by the creation of new facilities that will be based on-site and also related to collaboration with key centres of learning, in Europe and the US.

The November strategy meeting also heard much of the successful Innovation Partnerships carried out by Ceramicx with the funding help of Enterprise Ireland.

The first of these involved the University of Limerick and Ceramicx in 2008. It commenced in April 2009 and was funded by Enterprise Ireland and Ceramicx to run for 2 years. This innovation partnership reached a successfully conclusion in April 2011.

The result is a semi-automated ceramic product validation system with closed- loop process-control. The system is now both helping to guarantee the product quality – and assigning and recording performance characteristics and storing data for each part as it is produced. This data is facilitating where process improvement will make the most difference.

Ceramicx and the University of Limerick have been aided by Enterprise Ireland as part of the Innovation partnership programme and the work has provided 'win-win' outcomes for both organisations. The University has been enabled to take its research and project expertise into the manufacturing and commercial marketplace. Ceramicx has been able to leverage the University's in-house competencies to research, identify and measure current process variations.

The new innovation partnership for which funding was agreed in July 2011 got underway fully with all people recruited in January of this year. Ceramicx took the meeting opportunity to thank all the people who were instrumental in securing the programme. A progress report on IP II will be carried in the next issue of HeatWorks magazine.

In 2010, Ceramicx undertook an Innovation Voucher with Dr. Anthony Robinson's team in Trinity College Dublin. This work centred on the study of "Human Thermoregulatory Response to Infrared Radiant Heating". This project was completed with great success in March 2012.

The information gathered will be now of great value to Ceramicx in the further advancement of the company's Comfort heating market. These initial works with Dr. Robinson brought about a number of discussions in relation to the challenges that Ceramicx is facing in the general lack of infrared science and engineering in relation to new projects and helping the customer identify and satisfy needs. The lack of this general know-how and lack of test systems became very evident this year in some of the blue chip industrial projects that Ceramicx conducted for major OEMs in Automotive and Domestic goods – in Europe and the USA.

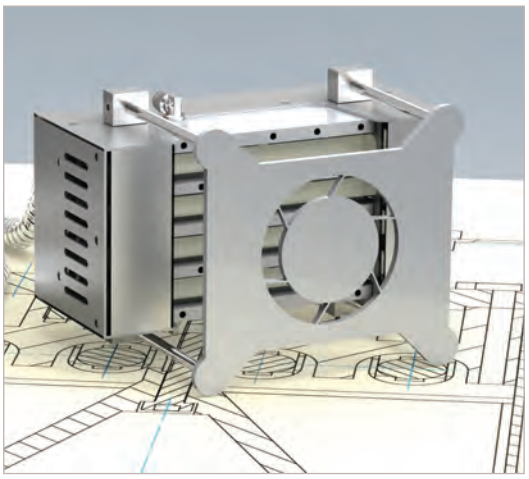
The initial proof of concept and the availability of such Infrared measurement machinery would have accelerated the feasibility and quotation stages of these projects. This realization led to a sit-down meeting where the tool discussed in this document was outlined to solve a number of the problems and issues being faced. As a consequence Innovation Partnership 3 got underway last year, between Ceramicx and the Trinity College team.

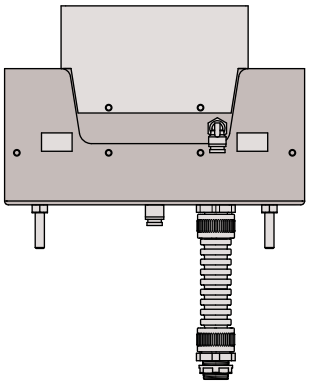
Radiation heat transfer is a complex thermal energy phenomenon whereby heat energy is exchanged between sources and sinks by electromagnetic radiation. IP 3 will seek to demystify many of the 'black arts' of the process; make the IR science clear and thus open up many new IR heating applications for industry and consumers alike. The equipment will be launched and demonstrated at the K Show in Düsseldorf this year and Dr Tony Robinson will be on board to demonstrate and discuss it.

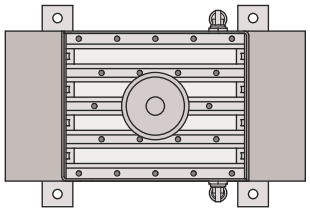
APPLICATIONS ENGINEERING

Whether you require a customised solution or materials testing, a new infrared heating or drying system or an upgrade to your existing process.

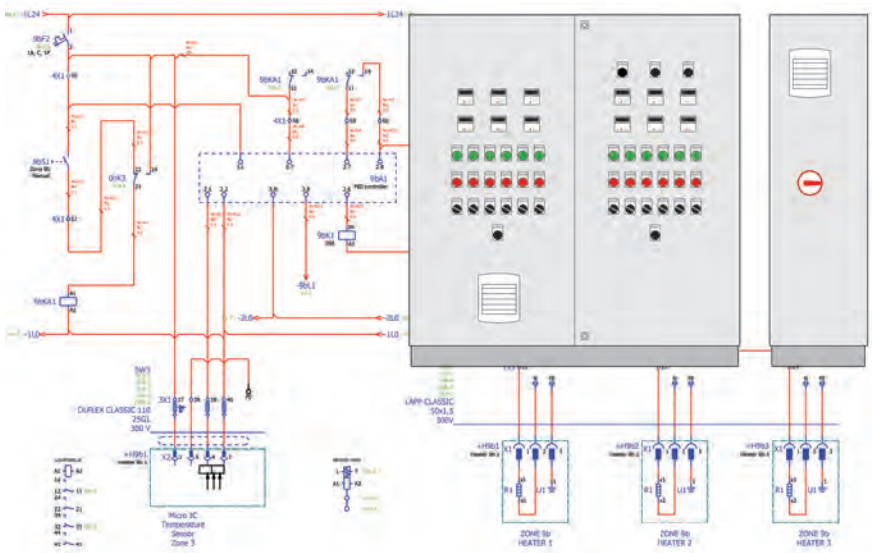
Ceramicx can design and build the heating solution for your business. From a single zone 5kW test oven to a 500 zone,1MW high volume computer controlled oven.

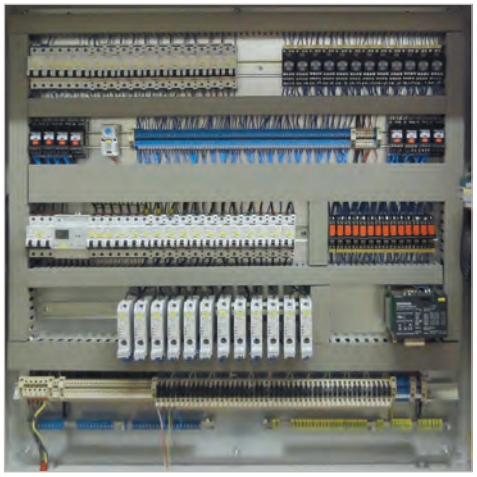




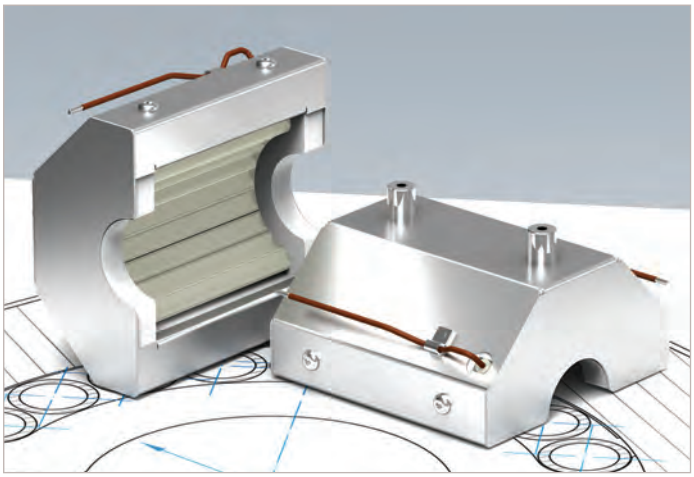


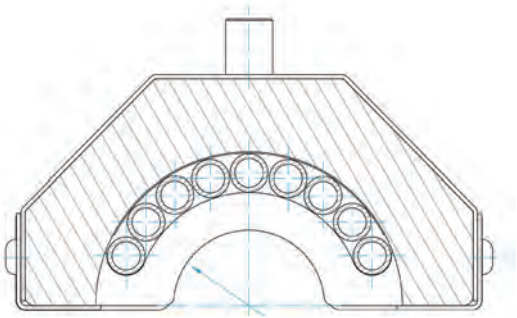
2.6kW high density water and air cooled medium wave heater





12 zone closed loop control system

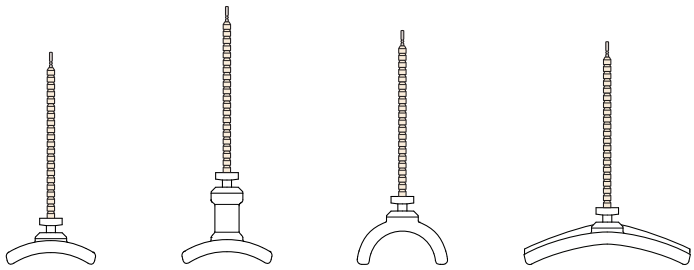




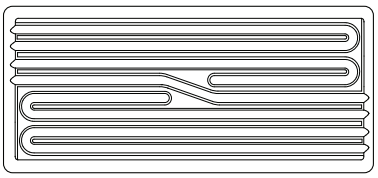
250W curved quartz heater

CERAMICX STANDARD PRODUCT RANGE

CERAMIC TROUGH ELEMENTS



FTE Full Trough Element
245 x 60 mm
150W 250W 300W 400W 500W 600W 750W 1000W



LFTE Large Full Trough Element
245 x 110 mm
1000W 1500W

HTE Half Trough Element
122 x 60 mm
125W 150W 200W 250W 325W 500W

LN - Long Neck

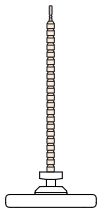
QTE Quarter Trough Element
60 x 60 mm
125W 250W

FTE-LN Full Trough Element -Long Neck
122 x 60 mm
250W 400W 500W 650W

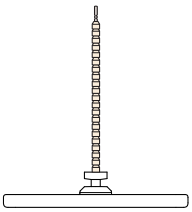
QCE Quarter Curved Element
60 x 55 mm
150W 250W

FTEL-LN Full Trough Element Long - Long Neck
285 x 60 mm
1000W

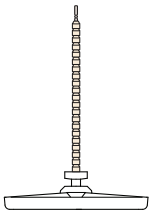
CERAMIC FLAT ELEMENTS



Flat



Square Flat

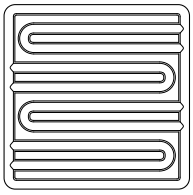


Large Flat

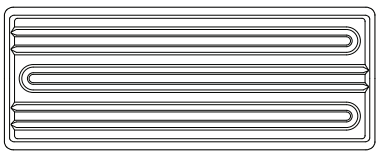
FFE Full Flat Element
245 x 60 mm
150W 250W 300W 400W 500W 600W 750W 1000W

HFE Half Trough Element
122 x 60 mm
125W 150W 200W 250W 325W 500W

QFE Quarter Flat Element
60 x 60 mm
125W 250W

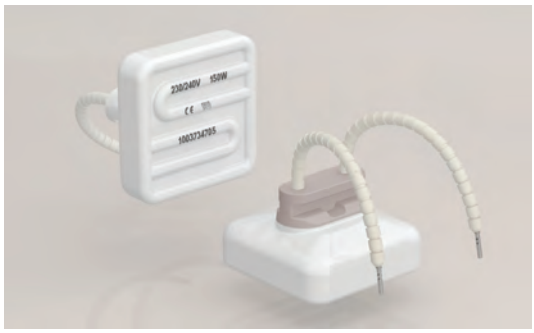


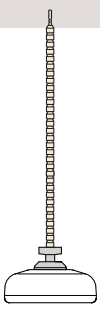
SFSE Square Flat Solid Element
122 x 122 mm
150W 250W 300W 350W 400W 500W 650W 750W



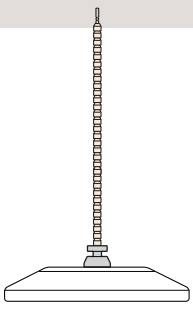
LFFE Large Full Flat Element
245 x 95 mm
150W 350W 750W 1400W

CERAMIC HOLLOW ELEMENTS





Hollow

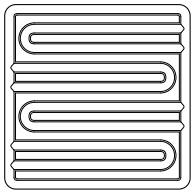


Square Hollow

FFEH Full Flat Element Hollow
245 x 60 mm
250W 300W 400W 500W 600W 800W

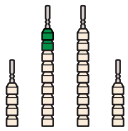
HFEH Half Flat Element Hollow
122 x 60 mm
125W 200W 250W 300W 400W

QFEH Quarter Flat Element Hollow
60 x 60 mm
125W 200W

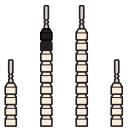


SFEH Square Flat Element Hollow
122 x 122 mm
250W 300W 400W 500W 600W 800W

THERMOCOUPLES



Type K
+ Nickel Chromium
- Nickel Aluminium



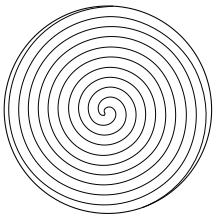
Type J
+ Iron
- Copper Nickel

EDISON SCREW ELEMENTS

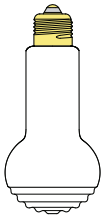
ESEB

ESES

ESER

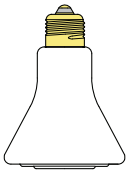


ESEXL



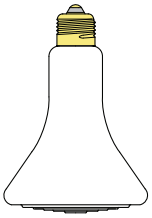
ESEB
Edison Screw Element Ball
Ø65 x 140 mm

60W 100W



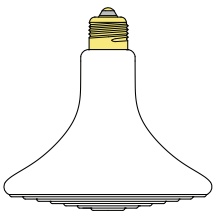
ESES
Edison Screw Element Small
Ø80 x 110 mm

60W 100W



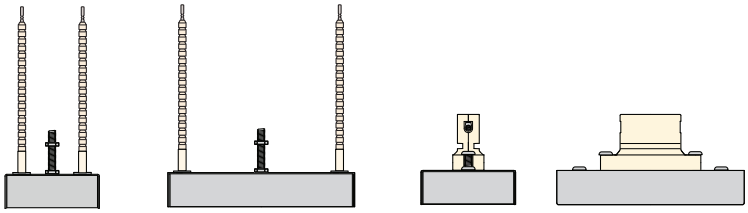
ESER
Edison Screw Element Regular
Ø95 x 140 mm

60W 100W

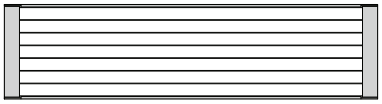


ESEXL
Edison Screw Element
Extra Large
Ø140 x 137 mm
400W

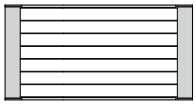
QUARTZ ELEMENTS



Quartz Square Quartz Pillared Quartz

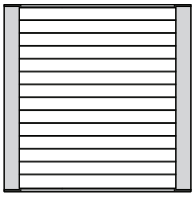


FQE Full Quartz Element
247 x 62.5 x 22 mm
150W 250W 400W 500W 650W 750W 1000W

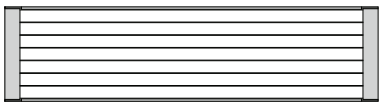


HQE Half Quartz Element
124 x 62.5 x 22 mm
150W 250W 400W 500W

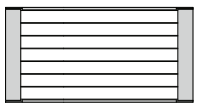
QQE Quarter Quartz Element
62.5 x 62.3 x 22 mm
150W 250W



SQE Square Quartz Element
124 x 124 x 22 mm
150W 250W 400W 500W 650W 750W 1000W

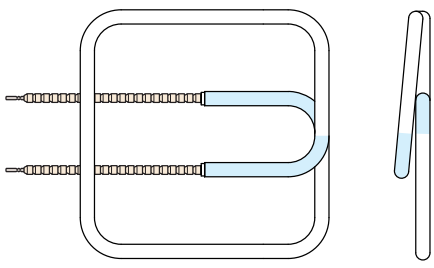


PFQE Pillared Full Quartz Element
247 x 62.5 x 22 mm
150W 250W 400W 500W 650W 750W 1000W



PHQE Pillared Half Quartz Element
124 x 62.5 x 22 mm
150W 250W 400W 500W

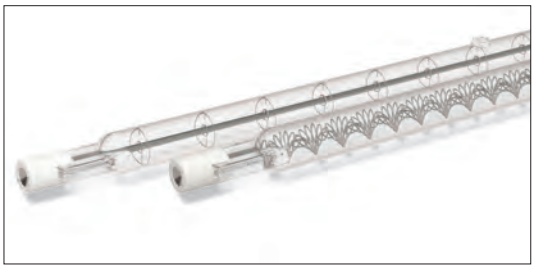
QUARTZ ELEMENTS

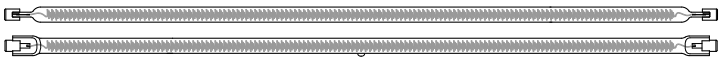


STQH Single Tube Quartz Heaters

STQH100	100 x 100 mm	Wattage Range 150 - 400 Watts
STQH112	112 x 112 mm	Wattage Range 150 - 400 Watts
STQH140	140 x 140 mm	Wattage Range 150 - 650 Watts
STQH150	150 x 150 mm	Wattage Range 150 - 650 Watts

QUARTZ TUNGSTEN HALOGEN





Quartz Tungsten

Quartz Halogen

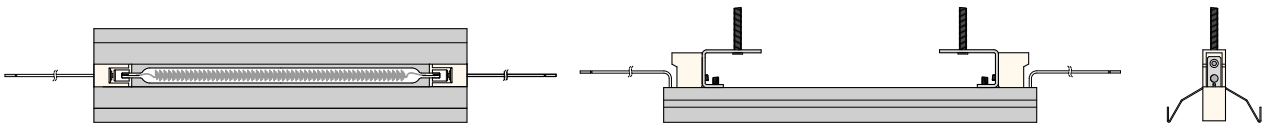
Quartz Tungsten

QTS Quartz Tungsten short	Ø10 x 224 mm	750W
QTM Quartz Tungsten Medium	Ø10 x 277 mm	1000W
QTL Quartz Tungsten Long	Ø10 x 473 mm	1500W 1750W 2000W

Quartz Halogen

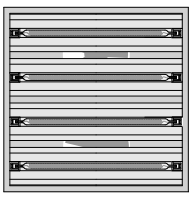
QHS Quartz Halogen short	Ø10 x 224 mm	750W
QHM Quartz Halogen Medium	Ø10 x 277 mm	1000W
QHL Quartz Halogen Long	Ø10 x 473 mm	2000W

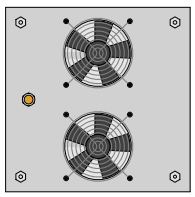
Quartz Tungsten / Halogen Reflectors



QTSR Quartz Tungsten Short Reflector	250 x 62 mm
QTMR Quartz Tungsten Medium Reflector	300 x 62 mm
QTLR Quartz Tungsten Long Reflector	497 x 62 mm

FASTIR



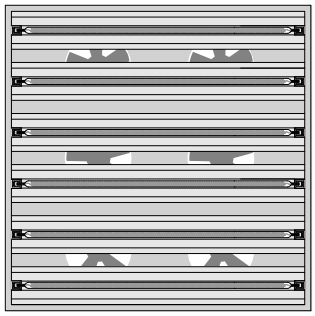


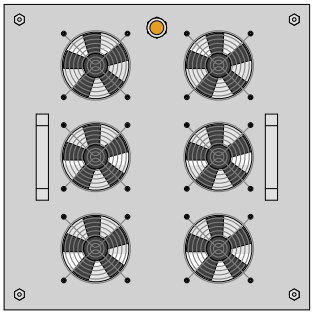
FastIR 305 305 x 305 x 150 mm

Suitable for 1000W Quartz Tungsten/Halogen Heaters QTM/ QHM (tubes supplied separately)

4 Tube - 4kW

5 Tube - 5kW



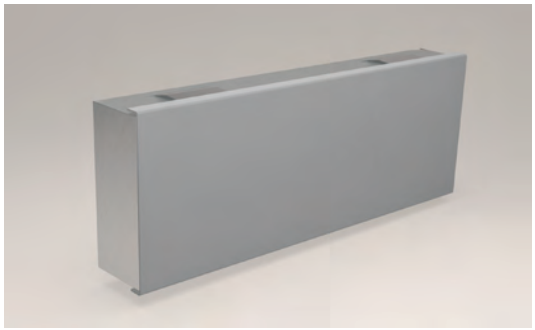


FastIR 500 500 x 500 x 150 mm
Suitable for 2000W Quartz Tungsten/ Halogen Heaters QTL/QHL
(tubes supplied separately)

6 Tube - 12kW

7 Tube - 14kW

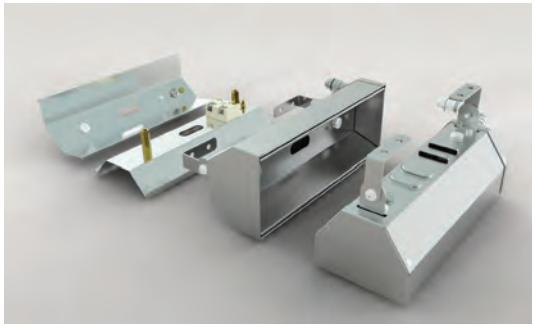
CUSTOM PANEL HEATERS

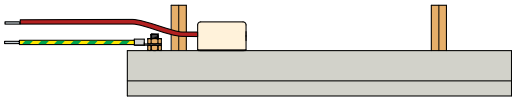


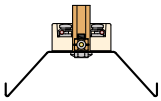
Custom Panel Heaters

Available with anodised aluminium or ceramic glass face.
Range of Wattages and supply Voltages
Multi- zone options with removable miniature thermocouple plug

REFLECTORS / PROJECTORS

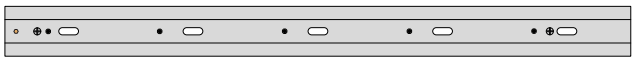




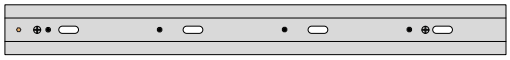


RAS Reflector Aluminised Steel supplied without heaters

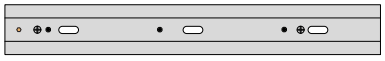
PAS Projector Aluminised Steel supplied without heaters



RAS 5 100 x 60 x 1,254 mm



RAS 4 100 x 60 x 1,004 mm



RAS 3 100 x 60 x 754 mm

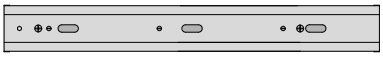
RAS 2 100 x 60 x 505 mm

RAS 1 100 x 60 x 254 mm

RAS 0.5 100 x 60 x 160 mm

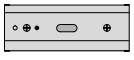
PAS 5 94 x 76 x 1,258 mm

PAS 4 94 x 76 x 1,008 mm



PAS 3 94 x 76 x 758 mm

PAS 2 94 x 76 x 508 mm



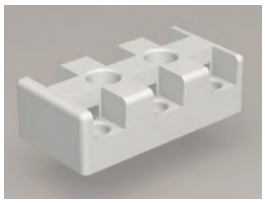
PAS 1 94 x 76 x 258 mm

ACCESSORIES

2P Ceramic Terminal End Block
with stainless steel fittings
40 x 32 x 20 mm

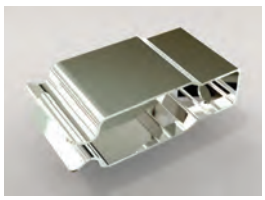
3P Ceramic Terminal End Block
with stainless steel fittings
62 x 32 x 20 mm

2P Ceramic Terminal End Block
No fittings
40 x 32 x 20 mm

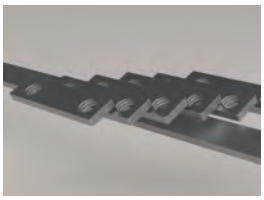


3P Ceramic Terminal End Block
No fittings
62 x 32 x 20 mm

R7s Ceramic Holder
For standard QT/QH heater range



Flat Ceramic Base Holder For Halogen/ Tungsten heaters fitted with a flat ceramic base



Stainless Steel Buzz Bars
8 x 2 x 1000 mm

STQH Holder
For all types of STQH type heaters

Mounting Bracket
73 x 57 x 25 mm

Steel Wave Spring and Clip Set

Ceramic Beads
Strung

Ceramic Beads
Loose

E27 Edison Screw Bulb Holder with Base
Ø76 x 60 mm

Glass Bulb

E27 Edison Screw Bulb Holder
Ø53 x 74 mm

Reflector for Ceramic Bulbs
Ø220 x 110 mm

ceramicx/news....

Welcome
Richard Page Electrical engineer

On finishing his degrees in electrical engineering and electrical power systems (honours) from CIT, Richard moved to The Netherlands where he worked with Shell BV, Mitsubishi, and Randridge Int. He moved back to West Cork and has recently joined the Ceramicx Team, where his primary tasks will include; The design of electrical control systems, testing and verification of completed electrical circuits and systems, documenting and implementing quality procedures for specific IR products.

Ceramicx would like to announce a substantial investment in new equipment, the purchase of a New Dorst 15 Ton press machine and a Dorst 30 Ton press machine for their specialist Ceramic steatite parts. Marcin Milczarczyk and Sean Murphy will travel to Germany for 3 days training at the end of the month. These machines and the additional capacity and capability that they lend Ceramicx will be discussed in the next issue.

The Innovation Partnerships with the University of Limerick and Trinity College Dublin continue at pace and a number of key deliverables are expected this year. One of these deliverables is discussed in this issue and other deliverables will be discussed as the year progresses the lead up to the K-Show 2013.

University of Limerick – Ollscoil Luimnigh | Trinity College Dublin – Coláiste na Tríonóide | The University of Dublin

Please see our website **www.kshow2013.com** from February on for updates on what Ceramicx and Freek will be presenting at the K-Show this year. You will also be able to make appointments at the stand.

SER Rezistans

Ceramicx was present at 2 shows in Istanbul in the Autumn, Cáthál travelled to Eurasia Packaging in September while Frank travelled to Plasteurasiain November. There was great interest at both shows in discussing new Infrared advancements and the parts and service that Ceramicx are delivering to the Turkish market through our good partners SerRezistans.

ENTERPRISE IRELAND

We would like to thank Mr. Paul McCloskey, Enterprise Ireland our former D.A. for all the hard work and welcome Dr. Kevin Donnelly who now takes over where Paul left off.

Exhibitions

Plastimagen,
Mexico City, Mexico.
12 -15 March 2013

Chinaplas,
Pazhou, Guangzhou, P.R. China.
20 - 23 May 2013
with G.S.A.E.

K-Show 2013,
Düsseldorf, Germany.
16 - 23 October 2013
with Friedr Freek

Fakuma,
Friedrichschafen, Germany.
14 -18 October 2014
with Friedr Freek

NPE,
Orlando, Florida, USA.
23 - 27 March 2015
with Weco International

We at Ceramicx would like congratulate Pádraig and Emer Courtney on the recent arrival of their son **Olan**, we would also like to congratulate Mike and Mary Sheehan on the arrival of their daughter **Abby** and Agese Pakalne and Dave on the arrival of their daughter **Catherina**

THE STAFF OF CERAMICX ENJOYED AN EXCELLENT CHRISTMAS PARTY ON THE NIGHT OF 14TH DECEMBER. CÁTHÁL EVEN MANAGED TO WIN A DANCING COMPETITION ON THE NIGHT SHOWING THERE IS NOWHERE WE CAN'T ACHIEVE.

Talk to us today about your infrared heating needs.

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Gráinne Wilson
Director
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Cáthál Wilson
Projects Manager
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ceramicx Infrared ceramic and quartz heating systems for industry

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