

Press Release- Case Study –30th July 2008

Concept Laser helps Rowenta let off steam

As a world famous manufacturer, Rowenta continues to develop electrical household appliances to exacting technical standards. The disciplines of research and innovation are a priority for the company, which is always looking for solutions that will offer consumers even more comfortable and energy-efficient products.

With a business relationship spanning almost 40 years, Rowenta look to Hofmann Group AG for the know-how and innovation in mould tool design and manufacture, which will assist them in achieving their goals, therefore securing Rowenta's lead in the marketplace.

New laser technology permits innovation

In 2004 **Concept Laser GmbH**, the youngest member of the Hofmann Innovation Group AG, presented LaserCUSING[®] at Euromold. With this world first, they were able to overcome the weak spots in conventional laser sintering technology, thanks to completely new methods of process and control. The use of a different type of laser, together with specially developed and patented exposure strategies and – for the first time in laser sintering – single-component metallic powder led to the anticipated success. LaserCUSING[®] enables the production of components with full density and minimal deformation, with material properties which are identical to those of the original material. This new method of component generation therefore represents a link between rapid tooling and traditional tool-making.

The term "CUSING" is made up from the words concept and fusing, describing both the process and result exactly - the complete fusion of metallic powder. LaserCUSING[®] is based on the fusion of single-component metallic powders using a laser. The process allows components to be built up layer by layer from almost any metallic material (stainless steel, hot-work steel, etc) with each layer having a typical thickness of between 20 and 50 µm. Internal stress and deformation problems are overcome using this process, and consistent and repeatable, density achieved on every part. The specially developed and patented exposure strategy also allows the low-deformation generation of solid and large-volume components. The single-component metallic powders used today for this method are matched to the high strength requirements of the parts which have to meet the exacting demands of tool-making. LaserCUSING[®] has now become an indispensable and integral part of the manufacture of cooled tool cores for Hofmann Innovation Group AG.

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Generating cores with optimised cooling saves time and money

The successful result of the co-operation between Rowenta and Hofmann Innovation Group AG is the Rowenta DX 9100 which is at the forefront of steam iron technology. The mode of operation of the DX9100 is based on "Intra Steam", a new method which enables ironing with pulsed steam. The steam penetrates and moisturises the textile fibres evenly thanks to short, intermittent pulses. The concept for this product and subsequent tool manufacture proved to be ideal candidates for production using Concept Laser's LaserCUSING[®] generative technology.



(Rowenta DX9100 Series Product)

In this example, LaserCUSING[®] demonstrates the ability to generate highly complicated 3D-forms and provide the mould insert with highly effective cooling ducts. In other words, cooling ducts which could only be generated to a certain extent or at great cost, using conventional machining methods, can now be created to follow the contour of the tool insert using the LaserCUSING[®] process. One benefit of optimally cooled tool inserts is much shorter cycle times. The density of mould inserts produced by this method means that porosity, through which cooling water can escape, is a thing of the past. The deformation characteristics on the injection moulded parts are also minimised by the optimised tool cooling, and reworking of the tool contours can also be greatly reduced. Significant time savings and therefore cost reductions are among the clear advantages of the LaserCUSING[®] process.

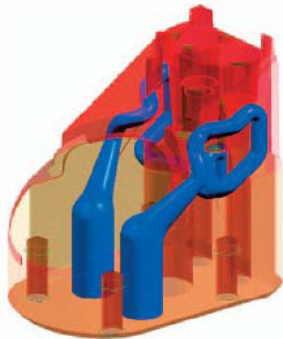
For Rowenta this method of mould tool insert production has some sound calculated and qualitative advantages:-

- Contour-optimised cooling increased the productivity of the tool with the mould tool cycle time reduced by up to 30 percent.
- Drastic reduction of deformation in the injection moulded part through optimum cooling provided better product quality
- Semi-finished form contour of the tool insert from the LaserCUSING[®] process reduced the tool insert finishing time
- Short production time for the mould tool inserts using LaserCUSING[®]

This method of mould tool insert production allows not only much more freedom, one big advantage is that customer can dictate where they want the cooling ducts.

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(Conformal Cooling Ducts in Core)



(Internal Geometry of the Core Side)

Prototype to production with LaserCUSING®

The Rowenta experience is just one of the many successful applications of LaserCUSING® technology. The process can be used to product parts, not only in traditional materials, but also in highly reactive materials such as aluminium and titanium.

LaserCUSING® can be used to manufacture prototype mould tool parts in aluminium or production mould tool inserts in a range of hot work steels. The capabilities of the process are not limited the production of tool inserts. LaserCUSING® can also be used to manufacture high quality production components for use in aerospace, medical and motorsport applications.

ES Technology is responsible for the marketing, sales, servicing and support of the full range of Concept Laser products throughout the United Kingdom and the Republic of Ireland.

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