Leonhardt®
We define precision.

№ 1 | 2017 |

DIALOGUE

Insights and perspectives

Leonhardt is an engraving company that collaborates with its partners to develop and produce highly filigree injection moulds for plastic and ceramics. A new focus area is the EDM-machinable ceramic “Dimacer”.

Anyone looking to be successful in Germany can't simply do what everyone else is doing – a unique selling point is needed. This is the firm belief of Dr. Wolfgang Leonhardt, proprietor of the engraving company Leonhardt. He is the model of a top manager oriented towards innovation: in collaboration with ceramics researchers at the University of Stuttgart he works on new materials and gets together with customers to develop innovative production techniques.

At the mention of an engraving company, most people will tend to think of trophies, signs and tin plates. But Leonhardt has nothing to do with any of this: the company is a technology service provider for industrial clients, supporting them from the planning phase through to volume production. In order to be able to meet the wide-ranging needs of these customers in an individualised and innovative way, Wolfgang Leonhardt – who originally trained as mechanical engineer – is in constant contact with his customers and develops creative solutions for them. These are then put into practice by a highly qualified team: more than half of the workforce hold a master craftsman’s diploma.

Staying power

When Wolfgang Leonhardt takes it upon himself to solve one of his customer’s problems, he can be very persistent: sometimes it takes several years before new technological methods or production techniques and materials are ready to be launched on the market. This staying power certainly pays off: "I’ve been running the company for 25 years now – and we’ve never had to work reduced hours in all that time. This is partly due to the fact that customers appreciate us and actively approach us if they have a tricky problem to solve,” says Leonhardt.

Unique innovations

Examples of Leonhardt innovations include novel approaches to injection moulding of silicon fibre optics used in the production of automobile headlamps, and new systems for injection moulding in the cosmetics industry, one of the company's more recently added areas of business. But Wolfgang Leonhardt's most promising innovation is a conductive ceramic which he developed in collaboration with the University of Stuttgart. This EDM-machinable oxide ceramic can be used where completely wear-resistant materials are required. This is an innovation that has enabled engraving specialist Leonhardt and its sibling company Leroxid to establish another unique selling point.

A real problem solver - much appreciated and much in demand!

Graveurbetrieb Leonhardt

Mozartstrasse 26

73269 Hochdorf

Telephone +49 (0)7153 - 9594-0

www.leonhardt-gravuren.de

24 employees (Germany)

Metal processing

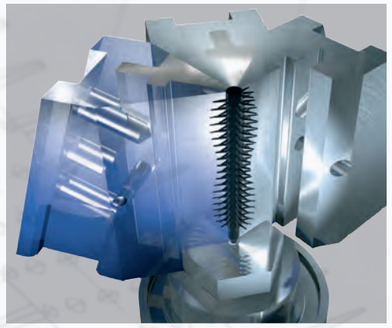
“We’re a technology service provider and a problem solver – from the planning phase through to volume production.”
Dr. Wolfgang Leonhardt, Managing Director

Product and process support.
From the initial idea through to your new product.

Leonhardt®
We define precision.

We support you right from the planning phase. Experienced designers develop a precise CAD model of the component with the help of high-performance software, also using point clouds and design models. A custom-fit tool is then designed and built on this basis, taking into account the specific material parameters of the material in question. Last but not least – parallel to prototyping – information is compiled on the optimum processing strategy to be applied in volume production.
We are also more than happy to produce your components.

From planning ...



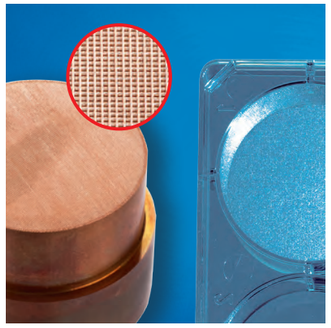
through to the tool ...

and the finished product.

The result of consistent project implementation in this way is a high degree of dimensional accuracy, ensuring your products offer lasting, reliable functionality.

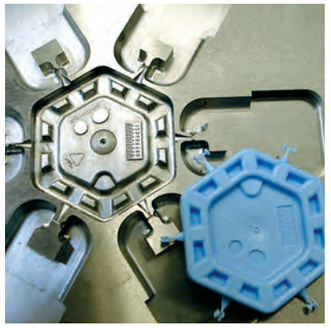
Certification according to DIN ISO 9001 and EN 9100

www.leonhardt-gravuren.de



Filigree structures

High-precision filigree structures are our company's trademark, both on components and in injection moulds. We are able to achieve tolerances of two micrometres using state-of-the-art technology. With our highly qualified staff we guarantee consistent quality at all times.



Complex geometries

Whether micro-components or macro-components, single or multi-component injection moulding, MIM or CIM process, fibreglass reinforced materials or embossing dies – we develop highly sophisticated geometries of the very highest precision.

Total reflection

Our standard for shaping work is a surface roughness of less than 0.5 micrometres. EDM polishing allows this figure to be reduced to 0.07 micrometres, which ensures process reliability in the production of optical lenses and reflectors.
When making moulds for products in the field of medical technology, we apply manual techniques to achieve high gloss even in barely accessible places (R_a = 0.05 micrometres).

Rapid Prototyping

Micromilling. Micro EDM

EDM polishing. Manual polishing

DIMACER®– outstanding strength and fracture toughness. The EDM-machinable high-performance ceramic.

Leroxid®
Erodierbare Keramik

A Leonhardt e.K. brand

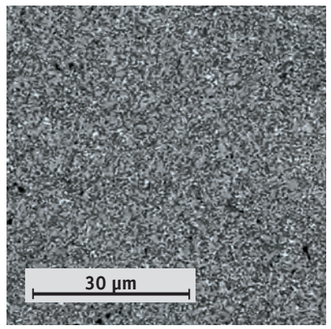
Leroxid® develops and produces high-precision products for you made of the conductive and wear-resistant high-performance ceramic DIMACER®. The new material is able to durably withstand abrasive substances and will enable you to produce components made of fibreglass reinforced plastics, metals and ceramics more economically in future. Leonhardt was awarded the EuroMold Award in gold for its DIMACER® mould inserts for processing abrasive materials.

Material

The conductive component is added to the ceramic in the form of nanoparticles. This means that only a relatively small amount is required, and this can also be distributed very evenly. In this way, the extreme hardness and mechanical strength of the ceramic is preserved. DIMACER® withstands powerful abrasive and frictional forces over long periods of time and can even be polished to a high gloss.

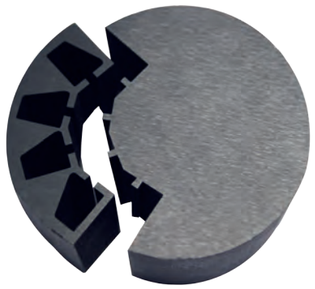
EuroMold Award in gold

Sprue comparison

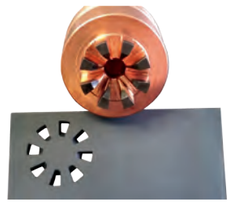


Ceramic structure

Mould insert



DIMACER®moulded part



Electrode with ceramic mould

Cost efficiency

Die-sink and wire-cut EDM processing is easy to carry out on DIMACER®; in the case of die-sink EDM it is even possible to use the same number of electrodes as for tool steel. When injection moulding abrasive materials, DIMACER® mould inserts extend the service life of the tools many times over and enables shorter cycle times. What is more, DIMACER® is made of raw materials that are in plentiful supply, easily degradable and therefore low-cost.

Use

Nowadays this globally unique material is used to make not just mould inserts but also extrusion jets, high-precision miniature parts and micro-components for watch and device manufactures and also components for the aerospace industry. The latest DIMACER® products are small cogs used in pumps for aggressive media – components that last the entire product lifetime.

Micro-components for watches

Future

DIMACER® is capable of more than just replacing other EDM-machinable materials. It is not magnetic, and investigations are currently being carried out to find out whether this conductive ceramic can be applied specifically to create anti-magnetic spheres capable of protecting man and technology from harmful magnetic fields. In future, DIMACER® will also be used to accelerate processes, perform functions more reliably and reduce costs – in the production and operation of motor vehicles, for example.

www.leroxid.de

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5-axis HSC simultaneous milling
4-axis CNC engraving
4-axis CNC EDM
High-gloss polishing
3D laser machining
5-axis ultrasonic machining
Reverse engineering
Rapid Prototyping
Micromachining
Innovative ceramic components
Toolmaking and mould construction