



MouldTex

3D mould surface texturing

3D

TEXTURED

SEALS:

LESS

FRICTION,

BETTER

PERFORMANCE

www.mouldtex-project.eu

MOULDTEX SERVICES

New application case

Application Case already in database



Prototype Phase

Production Phase

Texture definition

Mould Design

Prototype Seal

Mould and
Texture design

Seal Production

Feasibility study

Textured Tool

Seals

Based on type of seal (reciprocating, rotational), lubricant compatibility, operating conditions such as system pressures, temperatures and sliding speed, the feasibility Study will result in a maximum achievable friction reduction compared to standard seals. We will take into account productibility considerations of the mould and its texture as well as the expected moulding/demoulding performance.



Dr. Matthias Wangenheim - LUH
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Dr. Belén Hernández - ITAINNOVA
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We offer mould design, mould manufacturing and mould surface laser engraving. The functional texture engraved in the mould will modify the coefficient of friction of the seal. The single-cavity or multi-cavity moulds with or without inserts will be adapted to any type of press. Multi deck moulds as well as the degree of automated demoulding will be developed together with the customer.



Anthony Dossi - Orp Stampi Srl
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Silvia Lodetti - ML Engraving Srl
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We offer rubber seal production from small batches up to mass production items for all kinds of market sectors. Our material range covers all types of rubbers from NBR to high performance FKM and Silicon grades. Production QMS follows ISO 9001:2015 and ISO 13485:2016 for medical grades. Our specialization is in customized and precision rubber sealing solutions.



Yuval Erez - SKM
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FRICTION OPTIMIZATION FOR DYNAMIC SEALS

MouldTex provides innovative solutions in order to produce dynamic seals with reduced friction to extend their durability and efficiency.

The novelty of our process lies in working on the moulds, by engraving a tailored texture that ensures the requested amount of friction.

Our services include feasibility studies and a complete supply chain that can cover the moulds manufacturing and seals mass-production.

Market applications:

automotive, aerospace, oil&gas, food processing, energy, steel industry...



2 to 4%

of an industrialized country's GDP is lost due to friction and wear

Mouldtex will tackle this problem

Advantages of MouldTex



Extended life cycles :

2 to 4% of an industrialized country's GDP is lost due to friction and wear.

MouldTex can reach 30% of friction reduction and save up to 50% of seals wear.



Energy saving :

Up to 40% of fuel energy can be lost in mechanical friction in piston assemblies.

MouldTex lifecycle analysis for U-Cup Seals show a minimum of 3.75% energy savings in a typical factory automatization environment.

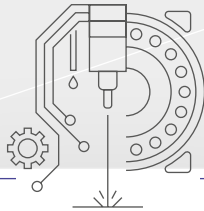


Investment reduction :

Value chain maintenance costs for engines represent at least 50% of direct sales costs.

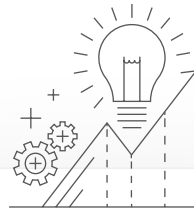
MouldTex seals can save 33% of the investment in maintenance and downtimes.

TECHNOLOGY AND SOLUTION



The MouldTex Technology

- ✓ **Advanced modelling software** for the identification of surface texture patterns that lead to significant friction reduction for target rubber and plastic seals
- ✓ **Software for the design of mould tools** that enable the reliable transfer of texture patterns onto the seal surface
- ✓ **Novel automated laser system** for the application of hierarchical laser induced micro- texture patterns to the mould tool surface
- ✓ **Best practice** for moulding and de-moulding using surface textured moulds
- ✓ **Inline optical inspection** for surface texture pattern quality control



Performance and benefits of our solution

- ✓ **Universality of the approach** : any use case can benefit from our technology, without changing the seal material
- ✓ **Sustainability** : with the MouldTex technology, we can lower the environmental impact by up to 50% compared to conventional seals
- ✓ **Limited industrial investment** : our technology can be applied on existing moulds and does not require change in the production line
- ✓ **Total friction control** : the MouldTex technology is able to reduce friction up to 50% in U-Cup pneumatic seals and between 40% to 80% in rotational U-Ring (depending on seal material)
- ✓ **Friction augmentation** : trials conducted for a specific application show a 15% of friction augmentation on dynamic seals. This technology can be applied to static applications

MOULDTEX CONSORTIUM

INDUSTRY

ML Engraving

Italy

Specialists in laser texturing on moulds, ML Engraving brings its know-how in laser engraving applications for functional surfaces.

OR.P. Stampi

Italy

Specialists in mould production, OR.P. is focused on designing and manufacturing of moulds for dynamic seals for a variety of markets.

SKM Aeronautics

Israel

Specialists in producing polymeric seals, SKM Aeronautics is in charge of the production of sealing solutions on a large scale.

Optimal Optik

Hungary

Specialists in the design and development of optical instruments, Optimal Optiks brings its expertise for our inline inspection tool.

Polymeris

France

Specialists in project accompaniment and industrial networking, Plastipolis boosts our project through various dissemination channels

ACADEMY

Instituto Tecnológico de Aragón

Spain

Specialists in characterization of demoulding processes and modelling of seal behavior, ITAINNOVA developed our Holistic Design Software.

Foundation for Research and Technology-Hellas

Greece

Specialists in the study of laser interactions with materials, FORTH brings its expertise on the development of novel ultrafast laser system.

Leibniz University Hannover

Germany

Specialists in dynamics and rubber tribology models through experimentation, LUH provides the behaviour models for the Holistic Design Software.

Funditec

Spain

Specialists in materials science, Funditec's contribution to the project is the definition of the sol-gel formulation for the demoulding process.





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PARTNERS



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