

Case Study

MesMesh

Reducing waste and improving utilisation rates of steel injection moulding machinery

Surface damage to steel surfaces in industrial machinery was causing too much waste and too much down time for European OEM producers. MesMesh is reversing the trend through non-invasive, real time monitoring.

Objectives

The aim of the project is the development of a pre-commercial prototype mould with built in continuous structural health monitoring. If the steel surface gets damaged or is worn down through use, the ceramic grid will crack or become thinner and have increased resistance. Using a number of transducers the surface damage can be quantified and allow for preventive maintenance.

The technology could potentially also be used for real time health measurements on dies for extrusion, in the automotive industry the technology can be applied to drive-shafts, gears, break pads and a number of other areas where steel surfaces are subjected to continuous friction.

Partners

- F.A. Muggler Service A/S
- Vilniaus Universitetas
- University of Bath
- UAB Modernios E-Technologijos
- Matrican, S.A.
- Baltijos Polistirenas UAB
- Pera Technology Limited

Funding

Seventh Framework Programme (FP7)



Not knowing where and when damage is occurring the steel surfaces of machinery has long been a problem for industry. Being unable to measure damage caused in real time makes it difficult to determine when to change a part, or even when stop the machinery to perform essential maintenance.

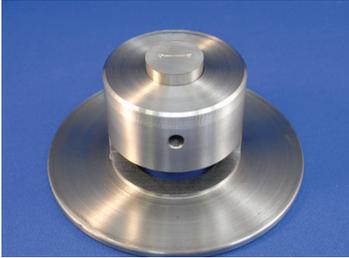
Increased quality requirements

For large scale producers, the consequences are damaging. Increased quality requirements are resulting in 0.5% of all shipments are being returned due to quality issues. Maintaining the desired quality is not the only result of the inability to monitor stress wear and tear. There's also the time expensive machinery is out of operation. >>

Applying science in a
commercial world

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“The MesMesh project met its objectives and developed extremely interesting and novel pre commercial prototype technologies.”

Paul Holdsworth
Project Manager, MesMesh

Downtime hitting 20%

Across Europe, injection moulding machines are running at a utilisation rate of only 60.2%, with downtime hitting 20%. With global competition ever more intense, it is essential that industry maintains the quality of its output whilst improving equipment utilisation rates. Which is where MesMesh comes in.

Real time structural health monitoring

MesMesh offers a real time, in situ structural health monitoring system for steel surfaces that are subject to continuous and potentially constantly damaging friction. Armed with €2.6m funding secured by Pera Technology through the EU FP7 programme, MesMesh has developed a system that allows end users to monitor the structural health of a mould and determine when a mould is worn out or damaged.

Minimising downtime and waste

As a consequence, MesMesh ensures that the end user can replace the mould before the equipment fails or produces products which would fail quality assurance processes. The advantages are clear: downtime and waste are minimised, scrap volumes are reduced the life of essential equipment is prolonged.

Cost-effective and easy

Due to the nature of the proposed technology, an innovative ultra-thin conductive ceramic mesh, MesMesh is capable of performing non-destructive, non-invasive, real time evaluation in a cost effective and easy way.



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