

OBJECTIVES

The InterQ European project seeks to develop a digital platform for the generation and integrated management of data with the aim of ensuring the quality of products and processes under a zero-defect manufacturing paradigm.

Within the project InterQ, CEDRAT TECHNOLOGIES (CTEC) working with Ideko and Danobat, will take the lead in designing, manufacturing, and testing both a single point, and rotational spindle grinding wheel dressing tools.

WHY INTERQ?

Friction within machine tools, predominantly between the guideways and slides, has a significant cost both environmentally and financially. The result is a decrease in performance and repeatability and an increase in energy consumption and waste.

One option to reduce friction lies in texturing. A traditional technique, it is the process currently in use for machine tool guideways, however, it is highly costly in which the final finish of the workpiece is not controllable and relies on the experience of the skilled worker.

Therefore, the main challenge is to develop an industry-implemented technique capable of producing textures in a repetitive and economically viable way.

TECHNICAL PRINCIPLE

The objective for CTEC is to look at automating the manual process of flaking by imparting a textured surface onto grinding wheels via a dressing tool, where the displacement of the dressing tool is precisely controlled within microns. The textured grinding wheel is then used to transfer the textured profile onto the workpiece, such as machine tool guideways and to do it in a repetitive and precise manner.

Due to the complexity involved in precisely moving the dressing tool across strokes of up to $60\mu\text{m}$ and speeds of 1kHz two tools will be developed.

During the first year a single point dressing tool with a single degree of freedom will be designed, manufactured, and tested. During years two and three an existing rotational dressing tool from Danobat will be modified with, one, two or possibly three degree(s) of freedom depending on the test results of the single point tool, manufactured, and tested.

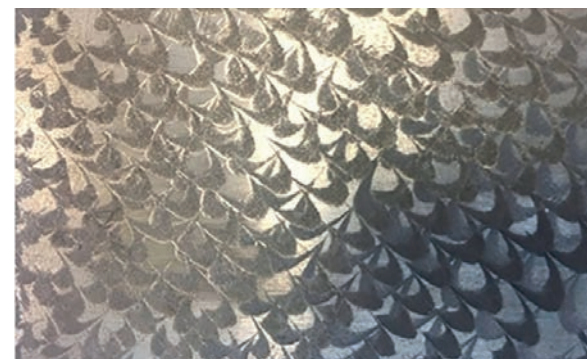
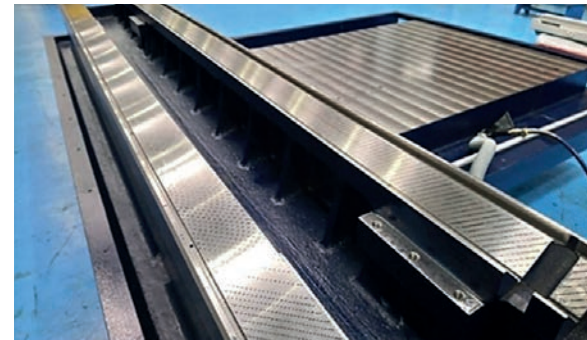


Fig. 1: Textured machine guideway. Right: Detail of hand textured surface. (Images courteous of Ideko S. Coop).

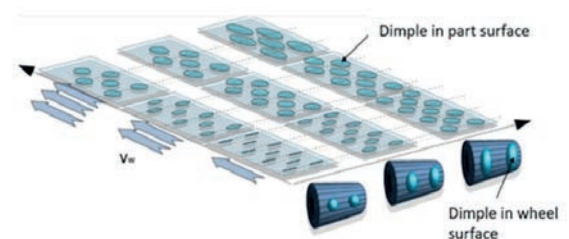
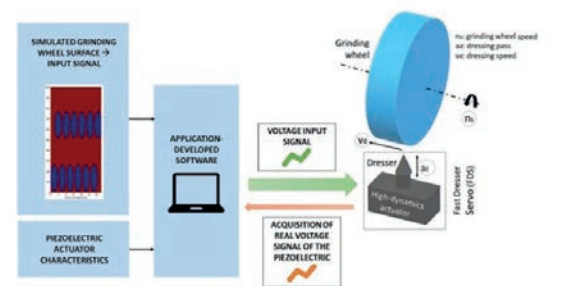
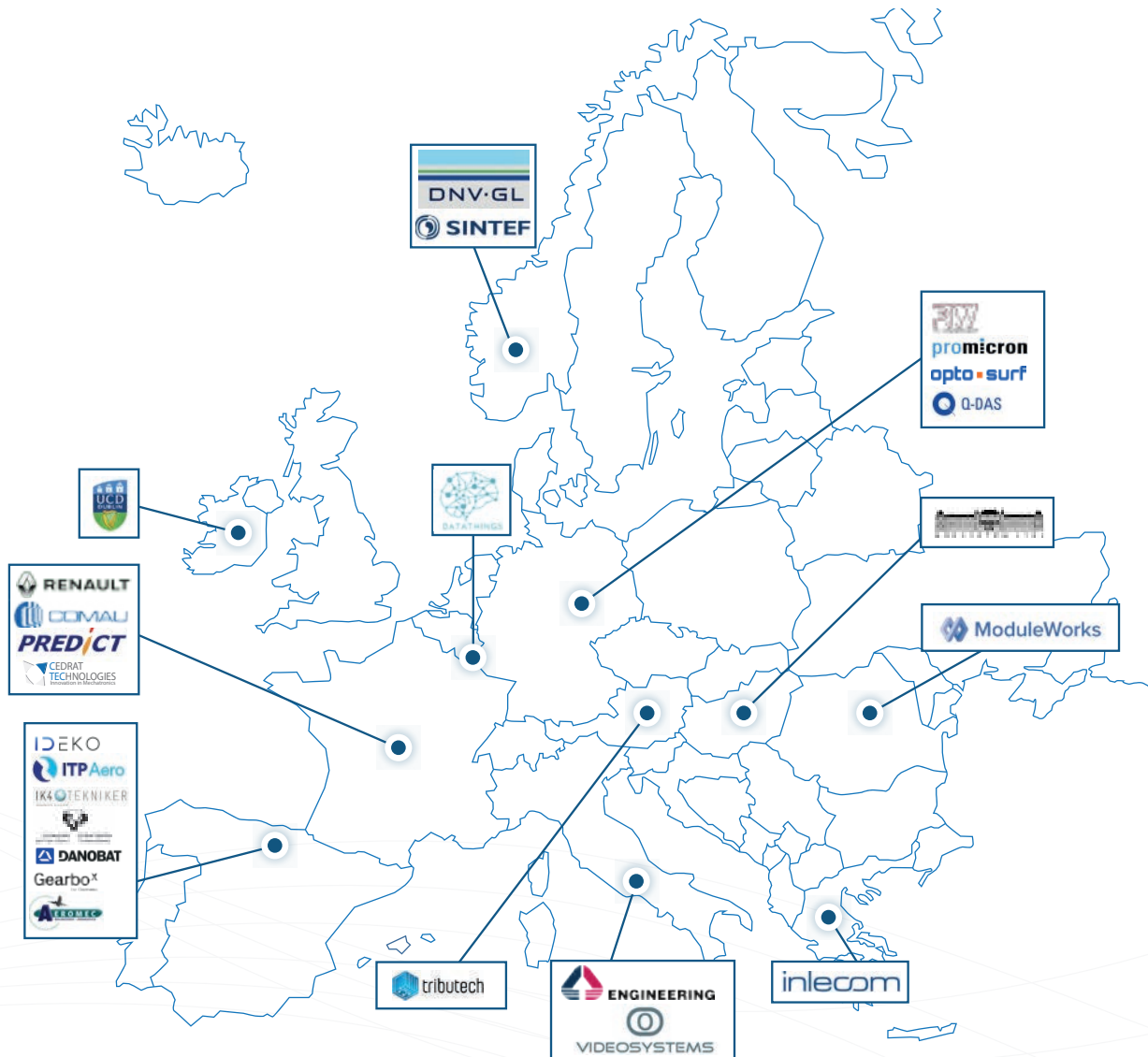


Fig. 2: Up: Full automated texturing system. Bottom: Textured grinding wheel and corresponding textured surface. (Images courteous of Ideko S. Coop)

PARTNERS

InterQ consortium was formed to put together a group of 25 organizations that complement each other in terms of background knowledge, technical competence, capability of new knowledge creation, business and market experience and expertise in end-user domain.

The consortium consists of academic organizations, technology suppliers from promising start-ups and from large companies, end-users with their respective industrial partners of the supply chain.



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