



## MOBILITY & PRODUCTION

Fields of Expertise TU Graz

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Source: Lunghammer – TU Graz

**V**arious research initiatives and projects of the Field of Expertise cover the technology change in Mobility and Production. This is also reflected in the courses offered at Graz University of Technology. A representative example is the re-design of the specific master's degree programme in Engine and Propulsion Systems at the Faculty of Mechanical Engineering and Economic Sciences, which now covers all drive technologies based on battery-

electric and hybrid systems, hydrogen and internal combustion engines.

A research activity that also addresses the topic of mobility on a broad basis is the Sustainable Passenger and Freight Mobility initiative. Launched in January 2020 at the Faculty of Mechanical Engineering and Economic Sciences, it thematically bundles nine PhDs with the aim of developing new technologies and processes to increase efficiency and reduce greenhouse gas emissions in the transport sector.

The research activities concerning production can be exemplified by the following article by Rudolf Pichler. Another encouraging example establishing the production focus is the funding commitment for the Qualification Network tendered by the FFG, which was awarded to the Institute of Production Engineering as

consortium leader. 125 trainees from 22 companies (11 of which are SMEs) will be trained over two years by TU Graz, FH CAMPUS 02 and Joanneum Research Robotics on the core topics of Smart Factory and Cyber Security. The training will be carried out together with LLL (Life Long Learning).

One upcoming event is a highlight for all Fields of Expertise: researchers from all five Fields of Expertise will show how they help to shape our future at the new annual science day of TU Graz TU Graz – Science for Future on 29 September 2021.

Another event was a highlight specifically for our FoE: the virtual opening of the smartfactory@tugraz in April with over 230 invited guests. Industry and research partners are invited to participate in a wide range of projects related to digitalization in production. ●

### Rudolf Pichler

## High Frequency Data Capturing for Process Innovation at Machine Tools

The systematic capture of data is the jump off base for developing knowledge about any process. Doing investigations during fast running processes, for instance during the chipping process of a tool machine, there is a need to acquire data at a very high rate. Special hardware and software are required in order to make this special kind of data capture work. Such a set up – in this case within or just before the breakage of a drill – and the outcomes are shown in the following.

### INITIAL SITUATION

Understanding a process has always been based on having knowledge about its corresponding process data. In the same way it is agreed that working with a maximum of data provides an even higher significance

regarding deduced statements in the investigated processes. This approach leads to the apparent fact that the evidence or the draw of data is a trivial and routine operation because data simply is available or easy to get. But looking at investigations which take place during fast running pro-



**Rudolf Pichler is working at the Institute of Production Engineering and leads the smartfactory@tugraz. He is lecturer and researcher for automation and digitalisation in manufacturing environments and increasingly works on topics concerning data and data management in production systems. This all in collaboration with neighbour institutes and industry partners.**

Source: Michael Heiss