

Press release

How to reach peak tool performance in milling applications

Smart services for CNC machining processes: Kistler partners with Productive Machines

Winterthur, February 2023

Thanks to a collaboration between Productive Machines (UK) and the Kistler Group, customers in the machining segment can now benefit from a full range of performance optimization services. Dynamic stiffness analysis together with force and vibration mapping are the keys to efficiently enhancing CNC machining processes and boosting productivity, in an approach based on simulations, measurements, and data analysis.

Production equipment such as machinery and robots must be maintained in good operating condition to ensure that manufacturing processes are productive, cost-efficient and highly sustainable. In the specific context of modern CNC machining, it is essential to apply, trace and adjust the right electrical and mechanical settings throughout a machine's lifetime.

Maximizing tool and machine performance

Kistler is now announcing a partnership with Productive Machines Ltd (UK) covering extended services to optimize machining processes, with a particular focus on milling applications. Productive Machines was founded by Dr. Erdem Ozturk, who also led the machining dynamics team at The University of Sheffield Advanced Manufacturing Research Centre (AMRC). The company supports manufacturers with dynamic analyses of CNC machining tools, as well as providing both physical and digital services to optimize NC programs.

The collaboration between Kistler and Productive Machines offers customers a range of value-added services in machine tool analysis: methods such as dynamic stiffness mapping, cutting force simulations and feed rate scheduling will help to minimize milling force spikes and maximize tool life and performance. Chatter vibrations can also be minimized by a prediction per stability map and an according adaptation of spindle speed. Another focus of the partnership is holistic optimization of CAM files as an aid to improving productivity and quality.

Best-ever insights into the machining process

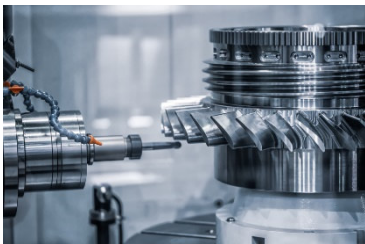
The physical stage of the service is performed with an impulse hammer – a device containing a piezoelectric force sensor that dynamically excites the structure under test. Resulting vibrations are

measured with IEPE accelerometers from Kistler, and a modal analysis then determines the dynamic behavior of the structure (a milling machine, for example).

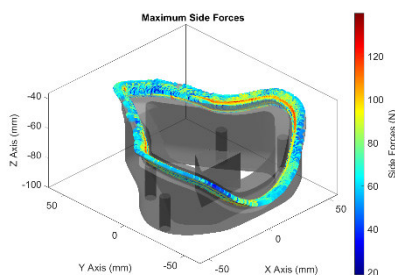
The partners are also offering DIGI-FORCE – a new digital service to determine key parameters of a machine setup based on machine data. Various levels of the DIGI-FORCE service are available, and it can be combined with physical measurements to obtain a complete account of machine and tool capability and performance. The DIGI-FORCE OPT service adds the FRF file data from the machine measurement to the optimized CNC program – so chatter vibrations, tool wear and machine breakdowns can be significantly decreased or even eliminated altogether.

Researchers and production engineers who opt for these services benefit from simulated force levels as the basis for optimizing their CNC machining programs – leading not only to enhanced productivity but also reduced effort for R&D and process analysis.

Image material (please name the Kistler Group as picture source)



A new partnership between Productive Machines (UK) and the Kistler Group offers customers a varied range of performance optimization services for CNC machining applications – both physical and digital.



An example of the new services for milling applications offered by Kistler and Productive Machines: maximum side forces presented as a heat map, with clearly visible quality issues.

Media contact

Kristina Palfy
Marketing Campaign Manager
Tel.: +42 12322 72655
Email: kristina.palfy@kistler.com

About the Kistler Group

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. Cutting-edge technologies provide the basis for Kistler's modular solutions. Customers in industry and scientific research benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure sustainable competitive edge. Unique sensor technology from this owner-managed Swiss corporation helps to shape future innovations not only in automotive development and industrial automation but also in many newly emerging sectors. Drawing on our extensive application expertise, and always with an absolute commitment to quality, Kistler plays a key part in the ongoing development of the latest megatrends. The focus is on issues such as electrified drive technology, autonomous

driving, emission reduction and Industry 4.0. Some 2,000 employees at more than 60 facilities across the globe are dedicated to the development of new solutions, and they offer application-specific services at the local level. Ever since it was founded in 1959, the Kistler Group has grown hand-in-hand with its customers and in 2021, it posted sales of mCHF 411. About 7% of this figure is reinvested in research and technology – with the aim of delivering better results for every customer.