PRESS RELEASE

TOP QUALITY SURFACES IN THE AEROSPACE INDUSTRY

EXTREME CONDITIONS CALL FOR PERFECT RESULTS

OTEC machine technology opens up new possibilities for the finishing of components in the aerospace industry and provides an automated process for high quality surfaces. These are absolutely crucial in this industry in particular. Components used in the aerospace industry must be made to withstand extreme environmental conditions. In modern gas and aircraft turbines, for example, combustion temperatures of well over 1,000°C are common. This places very stringent requirements on the surfaces and materials used, as well as on the manufacturing and finishing processes. In the highly sensitive field of aerospace, safety and reliability are of the utmost importance in all processing stages. Because of the stringent demands placed on quality, complex components are often finished manually. The disadvantages of this are not only the high costs but above all, the fluctuations in the results of the finishing processes. OTEC machines give reproducible results with the highest surface quality in the shortest possible processing times, revolutionizing the surface finishing of components for the aerospace industry. For the first time ever, perfect machine finishing of surfaces is a reality – with high-precision results and a more consistent quality than can be achieved by hand.

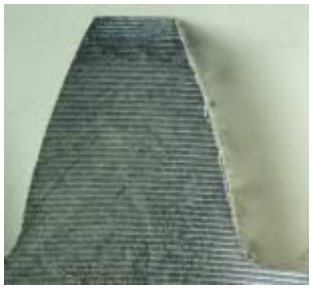
OTEC's stream finishing machine can deburr, round and smooth turbine blades in a single processing stage. After they have been manufactured, turbine blades exhibit considerable initial surface roughness and excessively sharp edges and must therefore subjected to high-precision surface finishing before they can be used in an aircraft or for generating electricity. This entails both smoothing the surface and rounding the edges. In OTEC machines, the surface is homogeneously smoothed, generally to Ra < 0.4

SF 4 Standard stream finishing machine

µm and often to less than Ra 0.25 µm. Here, it is especially important to ensure that the shape of the blade is not damaged. Furthermore, the edges can be rounded to a predefined dimension without excessively rounding the corners of the blades. The process times are between 2 and 30 minutes. Several workpieces can be clamped in the machine at the same time, which ensures a very high throughput. The workpieces are lowered into a rotating container filled with a grinding or polishing medium. The actual working motion is generated by the flow of abrasive medium surrounding the workpiece, which also rotates independently.

Turbine blade after OTEC finishing

In terms of processing speed and precision, OTEC machines also represent a major advance in the finishing of gear wheels. With gear wheels, the objective it is often to smooth the tooth flanks or round the tooth tip. Finished gear wheels have considerably lower friction values. Gear wheels finished in OTEC machines have a lower Rpk value and therefore lower friction, which in turn increases energy efficiency. A further benefit is that oil change intervals are much longer because there is less abrasion of the metal.



Tooth flank before finishing

Tooth flank after finishing

The tremendous finishing forces, extremely short processing times and absolutely reliable processes make stream finishing machines from OTEC perfect for use in the aerospace industry. This machine type is also suitable for selectively smoothing the surfaces of blisks.

The company

OTEC is a medium-sized manufacturer of drag finishing, disc finishing and stream finishing machines. Founded by Helmut Gegenheimer in 1996, the company has steadily established itself on the market by developing innovative new machine concepts and numerous patented processes.

Press contact

OTEC Präzisionsfinish GmbH
Heinrich-Hertz-Straße 24
75334 Straubenhardt-Conweiler
Tel. + 49 (0) 70 82 - 49 11 20
Fax + 49 (0) 70 82 - 49 11 29
info@otec.de
www.otec.de/en