

High Precision Technology



PEMTec
HIGH PRECISION TECHNOLOGY

Precision makes the difference

Economical serial production

Complex geometries can be produced precisely and formally with almost all metals. Superalloys and PM steels are machined by multiple electrodes in shorter process times, regardless of their hardness and toughness. The PECM process is well suited for small and large series from prototype to mass production.

Stressless material processing

Completely contactless and without thermal or mechanical influences, workpieces can be produced with maximum stability and without micro-cracks. The manufactured metal parts are absolutely burr-free. Roughing, finishing and polishing are done in a single operation.

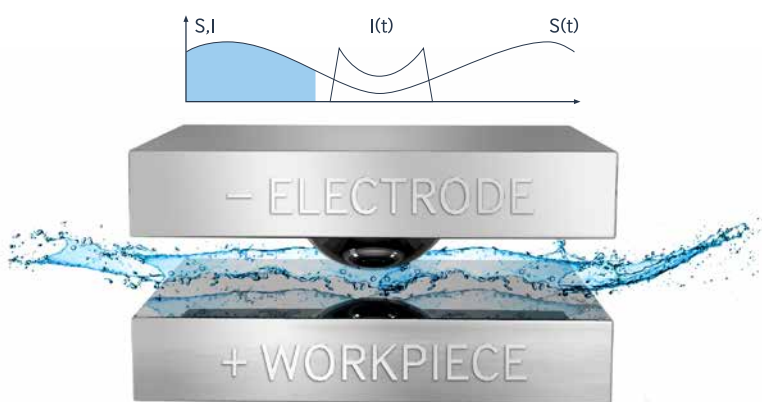
Innovative and high production opportunities

Produce without process-related tool wear, with an image accuracy and repeatability in the lower micrometer range and a surface quality of up to $0.03\text{ }\mu\text{m}$.



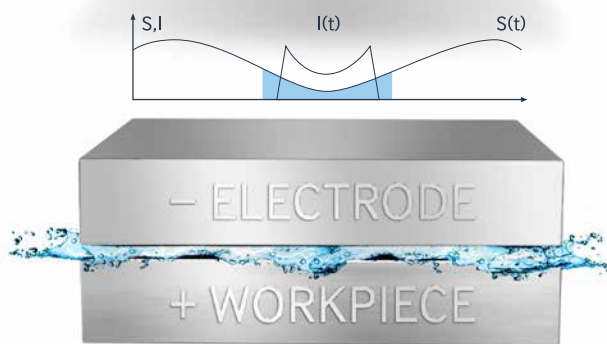
How the PECM process works

Contactless and precisely metal parts are machined using the PECM process. Between a negatively polarised tool-electrode (cathode) and a positively polarised workpiece (anode) flows an electrically conductive electrolyte: salt water. It dissolves the ionized material anodically in the machining gap between electrode and workpiece. The electrode's shape is projected inversely onto the metal. The precise pulse current synchronized with the oscillating tool electrode and the very small working gap are the basis for the precision of this technology. The PECM process is the further development of electrochemical lowering.



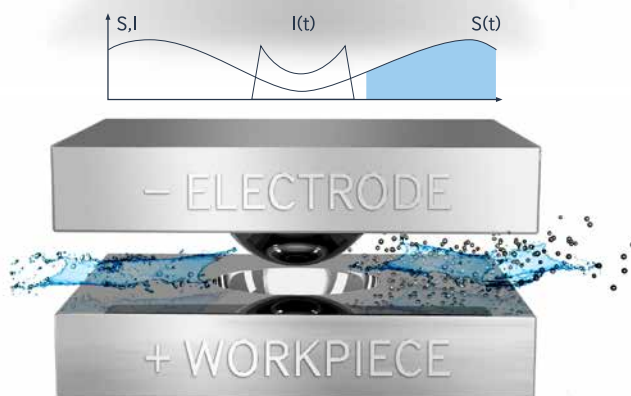
STEP 1

Open the working gap, the fresh electrolyte is injected.



STEP 2

Close the working gap. The tool electrode (cathode) and workpiece (anode) approach up to a few micrometers. A controlled current pulse is triggered. In this moment the material is removed by anodising the surface.



STEP 3

Open working gap. The electrolyte with the removal material is flushed out of the working gap.



Car industry

With the precise electrochemical metal machining of PEMTec, serial and the economical production of high-end products are realised today and have been established at various premium manufacturers.

FIELDS OF APPLICATION

- > Racks
- > Valve plates
- > Levers (turbocharger component)
- > Valves (injection systems)
- > Crankshafts
- > Camshafts
- > Connecting rods



Medical technology

Absolutely burr-free workpieces and smooth surfaces of highest quality are indispensable for medical technology. In the manufacture of tablets and implants for the human body many materials commonly used in medical technology are brought into shape by using a PEMTec machine.

FIELDS OF APPLICATION

- > Surgical instruments
- > Body implants
- > Tableting tools
- > Heart valves
- > Bone screws
- > Nitinol parts (shape memory alloys)
- > Stents
- > Prothesis components

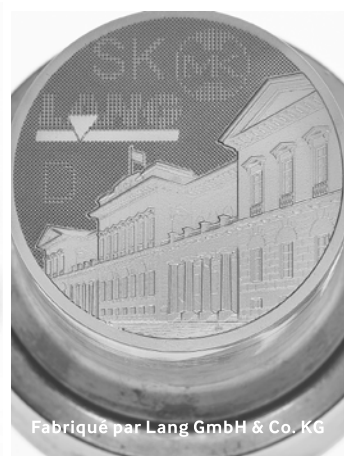
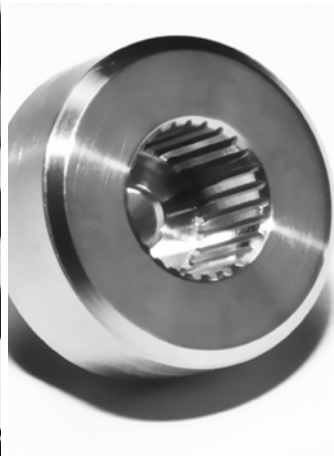
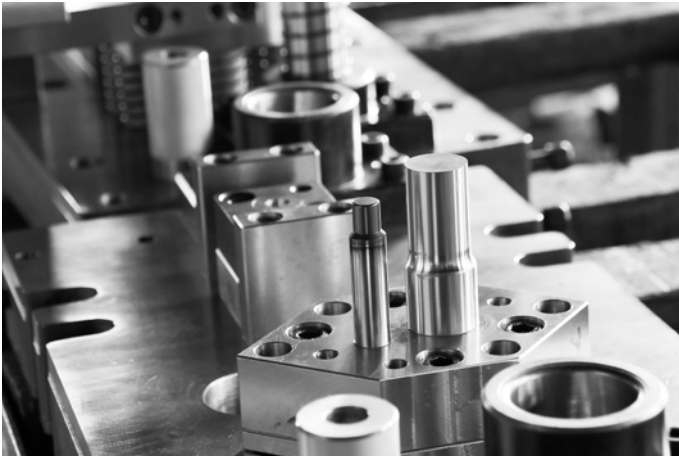


Aerospace industry

PEMTec machines manufacture components for the aerospace industry, where excellent surface quality and maximum stability are essential. Without microcracking complex geometries are introduced into high-temperature resistant superalloys.

FIELDS OF APPLICATION

- > Blisks
- > Disks
- > Blades
- > Turbine wheels



Toolmaking and mintage technology

With PECM technology, you can produce durable and innovative tool concepts. Pemmed tools are punching, embossing and rolling reliably, efficiently and in series production. The quality and imaging accuracy of the technology also meet the high demands of minting technology. Absolutely smooth surfaces are essential, sharp contours are possible. PECM bridges the gap between design, production and economy.

FIELDS OF APPLICATION

- > Punching dies
- > Embossing dies
- > Cutting dies
- > Coining stamps
- > Roller burnishing tools
- > Forming tools
- > Production of matrices

PECM, only with PEMTec

After years of intense development work, PEMTec is one of the technology leaders for precise electrochemical metal machining.

PEMTec is engaged around the world as an engineering company that has advanced the PECM technology into a unique and series proven industry standard: the “pemming”.

Today pemmed parts already fly into space and return safely. Precisely in accordance with the specifications of many industrial sectors, PEMTec's PECM technology is continuously discovering new areas of applications.

More and more high-precision workpieces are produced with PEMTec machines in the metalworking industry worldwide. Whether automotive or medical technology – the machines developed by PEMTec offer unique possibilities for a new economic efficiency in the production of precision parts.

From standard machines to customized applications to fully automated series production: with PEMTec's high-tech solutions, precision becomes the new success factor for your company.

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