SIMPLY SENSATIONAL!
HIGH-GLOSS FINISH FOR THE **JEWELLERY INDUSTRY**

OTEC
PRECISION FINISHING SOLUTIONS

Made
in
Germany

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flawless | gentle | high-gloss | lustrous

For more than 25 years, OTEC has been a world leader in the supply of machines and processes for applying a surface finish to jewellery. More than 5,000 customers rely on OTEC technology to produce a high-gloss finish on intricate pieces. Extensive experience of the industry and the ongoing development of our processes form the basis for sparkling success and high-quality results.

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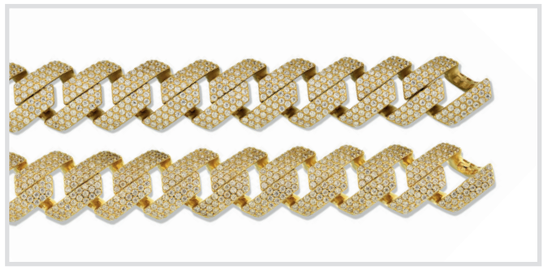
EXPERTISE IN HIGH-GLOSS JEWELLERY – SURFACE FINISHING IN THE BEST HANDS

The watch and jewellery industry sets the highest standards for surface finish and gloss. OTEC is a reliable global partner in the production of perfect surfaces and develops and manufactures machines for the high-end finishing of jewellery that set new standards in the industry.

With many years of expertise in finishing intricate components, OTEC supplies innovative machines made in Germany to almost all well-known jewellery manufacturers throughout the world. The careful coordination of the processes and the machines enables OTEC systems to reliably produce a finish of the same quality as hand polishing on materials such as stainless steel, platinum, gold, silver, brass and ceramics.

OTEC supplies more than just machines. Reproducible results that are a product of the technology, the abrasives, the carefully coordinated parameters and, most importantly, many years of process expertise. High-gloss finishes, cost-effective solutions and reliable processes based on advanced technology – OTEC is the expert partner you need for your surface finishing.

OTEC precision finishing solutions for the jewellery industry
Jewellery expertise for high-gloss pieces



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THE FINISHING TOUCH FOR EVERY PIECE OF JEWELLERY – **OTEC'S RANGE OF PROCESSES**

SUSTAINABLE PRODUCTION

A lustrous finish that meets every need

OTEC machines open up a world of processing possibilities. Regardless of the material, surfaces can be processed individually, particularly with regard to the subsequent uses and the requirements for the workpiece.

Deburring, smoothing, rounding and polishing are all possible to achieve precisely the results that are needed, using a sophisticated combination of abrasives and machines.

OTEC's range includes the perfect process for every item of jewellery.

Jewellery expertise to meet the highest standards

Flawless: Time-consuming manual processes, such as polishing hollow chains, can be automated by up to 90 percent with the same high-quality results.

Gentle: High-gloss surfaces can easily be produced, even in combination with sensitive materials such as pearls, precious stones or enamel, without any risk of damage to the components.

Intricate: The newly developed Electro Finishing Process creates a high-gloss surface in previously inaccessible corners. The process of polishingcomplex, detailed pieces can be completed gently and cost-effectively.

Lustrous: The unique OTEC machines allow many components to be processed extremely cost-effectively with the same high-quality results as manual polishing.

Disc Finishing Process

In the OTEC Disc Finishing Unit, the workpieces are placed in a container with grinding or polishing granulate, which is rotated by the disc in the base of the container. The relative movements of the workpieces and the abrasive produce perfect, consistent surfaces. The process is up to 20 times more effective than traditional vibrators and the machines are available in several different sizes.

A wide variety of parts can be processed extremely cost-effectively.

Range of pieces

- Functional parts of mechanical watches
- Items of jewellery weighing less than 10 g
- Precious stones
- Fasteners and belt buckles
- Bracelets and watch cases
- Rings

Electro Finishing Process

In this electrochemical (anodic) material removal process, the workpiece is immersed in a special Electro Finishing Process medium. The process is primarily used to smooth and polish surfaces gently even in the smallest of corners. It makes an ideal complement to the Mass Finishing Process for the highest quality results. It gives workpieces a smooth metallic surface without affecting the microstructure, while permanently enhancing the shine.

Thorough but gentle processing of intricate jewellery.

Range of pieces

- Complex, intricate items of jewellery
- Jewellery set with stones
- Cast or 3D-printed jewellery
- Chatons

COMPLETE SOLUTIONS
FROM OTEC
INTERACTION BETWEEN CRUCIAL COMPONENTS

OTEC is a problem-solver and a specialist in high-gloss surfaces for high-quality products with more than 25 years of expertise. Using processes such as mass finishing, often uniquely combined with the Electro Finishing Process, OTEC supplies individual solutions consisting of all the possible combinations of different technologies to meet the most varied requirements. In addition, OTEC's customers are partners and receive an all-inclusive service. From process development through to ongoing machine use, OTEC supports its customers with every aspect of their work. It puts its corporate philosophy into practice.

Complete solutions

Interaction between components

For OTEC, a complete solution consists of carefully coordinated components that interact reliably to produce consistently perfect results:

- The ideal machine or machine combination
- The ideal process developed together with the customer
- Coordinated abrasives and process media

Only when all the relevant components are combined to produce a coherent whole can the overall system operate sustainably and cost-effectively. OTEC has many years of experience of achieving this.

The perfect combination – two methods, one brand

Combining successful solutions takes this one step further

The ideal individual process for each application produces an excellent outcome, but only by combining innovative solutions can the results be taken to a new level. For example, the combination of mass finishing and the Electro Finishing Technology produces an outstanding gloss finish. Our specialists are constantly developing new and improved processes for the benefit of our customers.

Partnership and reliability

Characteristic of everything made in Germany. Offering reliable machines, made entirely in Germany, accompanied by a customer relationship based on an active partnership with our sales and after-sales departments, OTEC puts the emphasis on long-term relationships with its customers.

We develop the right processes for our customers' requirements by working closely with them on an equal footing. And not only before we sell them a machine, but also throughout its service life. OTEC is always there to help with its global network of partners and 24/7 customer service, which means that we can be on your premises within 24 hours, wherever you are. You can rely on us!

Technology leadership and sustainability

By collaborating with universities, research organisations and other institutes, OTEC is continuously pushing the boundaries of what is possible, developing innovations and maximising the quality and cost-effectiveness of its processes.

OTEC machines are versatile and long-lasting, which allows for an end-to-end approach to doing business. OTEC's process water treatment systems complement its machines and add the finishing touch to its state-of-the-art portfolio. The OTEC philosophy is "always stay one step ahead" and this lays the foundations for a sustainable future.

THE OTEC
MASS FINISHING PROCESS
HIGH-SPEED AND HIGH-QUALITY

Mass finishing is used for processing the surface of all kinds of workpieces. In a bulk goods process, the workpieces are placed in a container with grinding or polishing bodies and an additive. The rotation of the disc in the base of the container causes a relative movement between the workpieces and the abrasive that produces a perfect, consistently smooth surface.

disc finishing

Disc Finishing Units – maximum flexibility

Because of its underlying technological design, Disc Finishing Technology can be used to process a very wide variety of jewellery components. Both dry and wet processes are available. Depending on the material and the required processing result, different procedures, process parameters and process media are used – for everything from deburring through to high-gloss polishing.

The tried-and-tested OTEC procedure even allows workpieces with a thickness of less than 0.4 mm to be finished, because of the specially developed zero gap system.

OTEC Disc Finishing – fast, reliable, reproducible results

Highlights of the Disc Finishing Process

- Reproducible processes
- Workpieces can be smoothed and polished in one machine
- Extensive selection of machine variants to meet a wide variety of requirements from simple table-top units for small jewellery makers through to multiple systems for large manufacturers
- Automatic supply of water and compound (depending on the model)
- The process for bulk goods is a cost-effective solution for large batches of workpieces
- The ideal preparation for Electro Finishing to ensure perfect results
- A tipping mechanism makes the containers easy to empty (depending on the model)
- Program memory available (depending on the model)

Different gap systems

The zero gap system. For Wet Finishing of very thin workpieces, the gap between the revolving disc and the stationary container can be reduced to zero. The CF-Standard range of machines, which is used for this type of processing, is modular and can be equipped with up to six containers.
Benefit: The zero gap system prevents workpieces from becoming stuck in the gap and allows ultra-fine grinding bodies to be used.

Ceramic gap system. In this case, the gap is formed by two SiC ceramic rings and can be set to precisely 0.05 mm.
Benefit: Finer polishing granulate can be used to produce even better results.

Ceramic-polyurethane gap system. The OTEC standard. The all-round system for Wet Finishing.
Benefit: Prevents the disc from becoming jammed or blocked, which ensures the reliability of the process and keeps maintenance to a minimum. This system is ideal for workpieces with a thickness of 0.7 mm or more.

From left to right: Eco-Maxi | CF-T | CF-Element | CF-Standard

The right solution for every collection: the CF-Series from OTEC consists of stand-alone machines and complete production lines that are ideal for the complex processing of jewellery pieces in batches of all sizes. Create your perfect solution with the help of the experts from the OTEC Finishing Center. Identifying the ideal combination of abrasive and machine for every individual customer is part of OTEC's all-inclusive service.

cf-series

OTEC Eco-Maxi

Table-top model offering maximum flexibility with fast and easy container changes

The modular concept of the Eco-Maxi is ideal for smaller-scale production. Because of their advanced technology, these machines are highly cost-effective, reducing conventional production costs by up to 60 percent. The Eco-Maxi basic is available with three different containers – wet, dry and magnetic – depending on the type of processing results required.

Technology

- Wet, dry and magnetic processing
- Manual mixing of the process water
- Equipment:
  - Bayonet lock for easy container changes
  - Automatic container detection
  - Frequency inverters for controlling the speed of the machine
  - LCD display showing speed and process time

Video of the Eco-Maxi

OTEC CF-T

Table-top model for Dry or Wet Finishing

Space-saving basic table-top model with up to two containers

Technology

- Wet and Dry Finishing
- Manual mixing of the process water
- Equipment:
  - Schneider touch panel for intuitive parameter entry
  - Process container with a hot-cast PU lining
  - Frame made of aluminium profiles
  - Display: Processing time, elapsed time and speed
  - Wet, dry and zero gap containers available
  - Manual input of the process parameters (no program selection)

OTEC CF-Element

Stand-alone machine for Wet or Dry Finishing

Affordable entry-level model for simple processes

Technology

- Wet, dry and zero gap containers available
- Equipment:
  - Schneider touch panel for intuitive parameter entry
  - One process container with a hot-cast PU lining
  - High-quality steel frame
  - Manual sieve unit with perforated metal sieve
  - Dosing unit
  - Dosing pump

OTEC MAG 30

Magnetic polisher for gold and silver jewellery

This process is used after casting to produce a better surface finish

Technology

- Robust design
- Rounded containers for improved flow
- Frequency inverters to ensure that the machine is operating at the ideal speed
- Display of the speed
- Display of the set and elapsed processing time
- Use of rounded steel needles for a high-gloss finish or for removing scale

Video of the MAG 30

cf-series

OTEC CF-Standard

Modular Disc Finishing Machine with one to three process containers

Fast, high-quality surface processing of a diverse variety of workpieces

The modular Disc Finishing Machines come as standard with between one and three process containers. All the controls are user friendly and easy to understand. This tried-and-tested technology is based on many years of experience and ongoing development. It is also very popular with OTEC customers.

Highlights

- Different gap systems provide great flexibility
- Highly cost-effective with perfect deburring, smoothing, grinding and polishing results from just one machine
- Excellent price-performance ratio with short processing times
- High-quality processing and materials for absolute reliability, trouble-free operation and a long service life
- Manual sieve unit with exchangeable sieve inserts or automatic separator as an optional extra (Unisepa)

Technology

- Wet and Dry Finishing
- Equipment:
  - Process container with a hot-cast PU lining
  - Painted steel frame for one to three process containers
  - Siemens touch panel for entering/monitoring all the key process parameters
  - Frequency inverters for controlling the speed of the machine
  - Automatic water and compound dosing for reliable, reproducible processes
  - Water cooling available for dry containers
- Up to 5,000 different programs can be stored
- Hand-held scanner available for program selection
- Remote control, remote maintenance and OPC UA interface options

Easy-to-empty container

Reliable separation of workpieces

Video of the CF-Series

CF-Standard with one container

separation

The subsequent separation of the workpieces from the grinding or polishing bodies is a very important feature of the mass finishing process. The expertise of the manufacturer and the machines used are often a decisive factor in the reliability of the process. The difference in size between the grinding bodies and the workpieces will determine the choice of procedure.

OTEC FS-Series

Reliable separation in minutes

The flow separation function of the FS-Series is the ideal solution for separating workpieces and abrasives quickly and easily, particularly in the case of plastic grinding chips. This dispenses with the need for a laborious and time-consuming manual separation process. Because of the difference in the density of the workpieces and the abrasive, they can be separated fully automatically by a flow of water in only a few minutes.

Highlights

- Separation of the parts in the basket and the abrasive container
- Quick and easy adjustment of the water flow rate, depending on the mixture
- The automated process lasts just a few minutes which makes this system cost-effective

OTEC
ELECTRO FINISHING TECHNOLOGY
THE GENTLE HIGH-GLOSS SOLUTION FOR INTRICATE PARTS

In the Electro Finishing Process, the workpieces come into contact with an electric current and are moved through the process medium, which results in an even flow. User friendly liquid electrolytes containing less than 5 percent acid are used in the process. With more than 25 years' experience of creating perfect surfaces, we have machines that can put a finish on materials including stainless steel, brass, steel, silver, yellow, red and white gold and palladium.

electro finishing

Intricate jewellery, workpieces with complex shapes and items of jewellery set with stones can be gently smoothed and polished using the Electro Finishing Process, including on internal surfaces that are hard to access. The processed parts retain their original shape. Totally reliable processes, processing even in the smallest corners and very short process times produce high-quality results at a relatively low cost. Manual tasks are kept to a minimum.

High-gloss surfaces for workpieces with an intricate structure or a complex shape

Electro Finishing (EF) is a high-precision process for surface finishing of metal workpieces using an external source of electric current. In this electrochemical (anodic) material removal process, the workpiece is immersed in a special process medium. Electro Finishing is primarily used for smoothing and polishing surfaces. It gives workpieces a smooth metallic surface without affecting the microstructure, while permanently enhancing the shine.

OTEC Electro Finishing – reliable, precise and efficient

Different sizes for a variety of applications

OTEC supplies a wide range of machines for the jewellery industry. Components of different sizes and in different quantities can be processed to a high standard of quality easily, cost-effectively and quickly. The need for manual tasks, such as hand polishing, is reduced by up to 90 percent.

Everything from rings, pendants, bracelets, bangles and necklaces up to impressive chokers in varying quantities are fixed to suitable holders and processed in the appropriate machines. The materials that can be processed include stainless steel, brass, steel, silver, yellow, red and white gold and palladium.

Highlights of the Electro Finishing Process

- Workpieces retain their intricate structure, but are smoothed and polished gently
- Internal areas that are difficult to access are processed effectively
- The polished setting makes diamonds sparkle
- No damage is caused to precious stones (diamonds, zirconias, other gems) and the settings are perfectly polished without being rounded
- Easy programming and reproducible processes
- No use of cyanide
- User friendly container changes
- Easy recovery of precious metals which are deposited on the cathodes

From left to right: EF-Smart S | EF-Compact | EF-Flex

OTEC EF-Smart S

A compact Electro Finishing Machine with an ergonomic operating system

Gentle smoothing and polishing of intricate jewellery, workpieces with complex designs and items of jewellery set with stones. This table-top machine is easy to use and has a round container that is filled from above and can be changed quickly and easily if necessary. It can be switched from processing gold to processing silver in only a few minutes. The EF-Smart S is the ideal solution where space is limited. It has a touch display that makes programming the process parameters easy

Application areas

Rings and pendants made from yellow, red and white gold, palladium, silver and brass.

Technology

- Machine dimensions: 450 x 610 x 605 mm
- Polishing cast and 3D-printed jewellery
- Process container lid with four mounts for up to six workpieces (up to 24 workpieces can be processed simultaneously)
- Multi-step processes with parameters including direction of rotation, voltage, processing time and speed can be easily programmed
- Fast and easy container changes make it possible to switch from processing gold to processing silver in only a few minutes
- Intuitive touch panel control and “recipe” database with workpiece-specific standard programs
- USB port for easy software updates
- Remote control, remote maintenance and OPC UA interface options

Video of the EF-Smart S in use

The pieces of jewellery are suspended from the holders

The lid is then attached to the container

ef-series

OTEC EF-Flex

Modular Electro Finishing Machine with easy container changes

High-performance, rollable machine with a capacity of up to 80 workpieces per process container and up to three process containers. The components can easily be attached to the removable holders, which are then suspended in the machine. The holders can be changed without difficulty from above. In addition, the ergonomic design of the drawers makes the machine very convenient to use.

Application areas

Bracelets, bangles, pendants, rings, necklaces and accessories in yellow, red and white gold, silver, brass and stainless steel

Technology

- Dimensions: 790 – 1,750 (depending on the number of containers) x 900 x 955 mm
- Holders for up to 80 workpieces
- Flexible design allows up to three process containers to be added as required
- Multi-step processes with parameters including direction of rotation, voltage, processing time and speed can be easily programmed
- Fast, easy holder changes within only a few minutes
- Intuitive touch panel control and “recipe” database with workpiece-specific standard programs
- USB port for easy software updates
- Remote control, remote maintenance and OPC UA interface options
- Easy changes of process media using drawers and removable containers
- Integrated cleaning containers and rinsing tanks

Video showing the EF-Flex

OTEC EF-Compact

Table-top machine for necklaces

Easy-to-use, functional table-top machine for larger complex workpieces, such as necklaces and bangles. The user friendly removable holders make the machine simple and fast to use. The recommended installation height is 450 mm.

Application areas

Bracelets, bangles, pendants, rings and necklaces made of yellow, red and white gold

Technology

- Dimensions: 730 x 750 x 515 mm
- Holders for up to 24 workpieces
- Special holders for necklaces
- Multi-step processes with parameters including direction of rotation, voltage, processing time and speed can be easily programmed
- Fast, easy holder changes within only a few minutes
- Intuitive touch panel control and “recipe” database with workpiece-specific standard programs
- USB port for easy software updates
- Remote control, remote maintenance and OPC UA interface options

Video showing the EF-Compact

THE OTEC INNOVATION CENTER – JOINT DEVELOPMENT OF SUCCESSFUL SOLUTIONS

finishing center

OTEC – Precision Finishing Solutions

The Finishing Center lies at the heart of the development of machines and processes at OTEC. It focuses on the ideal interaction between the machine, the process parameters and the process media. Always with the aim of achieving the perfect surface to meet every individual requirement, while keeping costs to a minimum.

Standing still means moving backwards. OTEC solutions are developed jointly with customers by processing samples of every individual workpiece. The Finishing Center has 23 machines and a team of experienced specialists. It forms the perfect basis for developing Precision Finishing Solutions by taking a professional and targeted approach.

Many different Mass Finishing and Electro Finishing Processes are available in the centre, which has a floor area of more than 500 square metres. Ultra-modern measuring systems allow highly accurate measurements of the roughness, edge rounding and shape to be made. After the ideal process has been identified, a log of all the parameters is produced. This data makes it possible to determine the details of the surface and other tribological properties. These provide important information for the ongoing investigations and allow the perfect process to be created.

It is a special moment when the perfect Precision Finishing Solution emerges from the many processing options and components involved. This is the solution that will give the workpiece a high-quality finish for a relatively low cost.

As an alternative to sample processing, advice can be given on the basis of good photographs of the workpiece. **Why not contact us? We enjoy new challenges!**

OTEC Finishing Center

The entire palette of high-quality OTEC services:

Expertise in jewellery

Jewellery specialist since 1996. OTEC's origins lie in machines for the surface finishing of jewellery. Many years of experience in developing machines and processes to meet the special requirements of this industry form the basis for high-end results.

High-quality machines

Reliability and efficiency made in Germany. The tried-and-tested, reliable OTEC technology is used in many industries. The OTEC solutions are based on a concept tailored to individual customers' applications. More than 25 years' experience of developing machines have laid the foundations for OTEC's success.

OTEC complete solutions

Everything from a single source. OTEC supplies end-to-end concepts to meet every requirement that include high-quality machines, the ideal processes and process media, sustainable process water treatment solutions and an all-inclusive customer service package. OTEC's customer relationships are based on partnership and an active approach.

Process simulation

Lead times reduced by up to 90 percent. Digital process simulations and analyses give a faster and more comprehensive understanding of processes, save on material and energy costs and reduce process configuration time by up to 90 percent. This is a key factor in machine development.

Innovation specialist

OTEC is a problem-solver. By collaborating with universities, research organisations and other institutes, OTEC is continuously pushing the boundaries of what is possible, developing innovations and maximising the quality and cost-effectiveness of its processes. The OTEC philosophy is "always stay one step ahead".

Sustainability

Resource-efficient processes in robust machines. OTEC machines are versatile and long-lasting. The processes are continuously optimised and coordinated with one another. This allows for an end-to-end approach to doing business. OTEC surface finishing gives jewellery a longer life and increases its value.