Founded in 1996, OTEC has quickly established itself in the market with new machine concepts, innovations and advancements. For each market sector served, OTEC offers precisely matched and customized machine designs which are both efficient and precise in their handling and processing, far exceeding traditional methods of finishing. With its global network of highly trained representatives and certification to DIN 9001, OTEC guarantees the highest level of communication and process quality at all times.

Perfect surfaces. Worldwide.

ECO Series | EF Series

▸ OTEC-SERIES: CF
For mid-sized and large-scale jewellery production

▸ OTEC-SERIES: DF
For heavy and/or wide rings/arm bands

OTEC Präzisionsfinish GmbH | Dieselstraße 8-12 | 75334 Straubenhardt-Feldrennach | Germany
Telephone +49 7082 4911-20 | Fax +49 7082 4911-29 | E-mail: info@otec.de | www.otec-online.com

ECO

OTEC

Extremely fast, extremely efficient. Centrifugal disc finishing machines from OTEC.

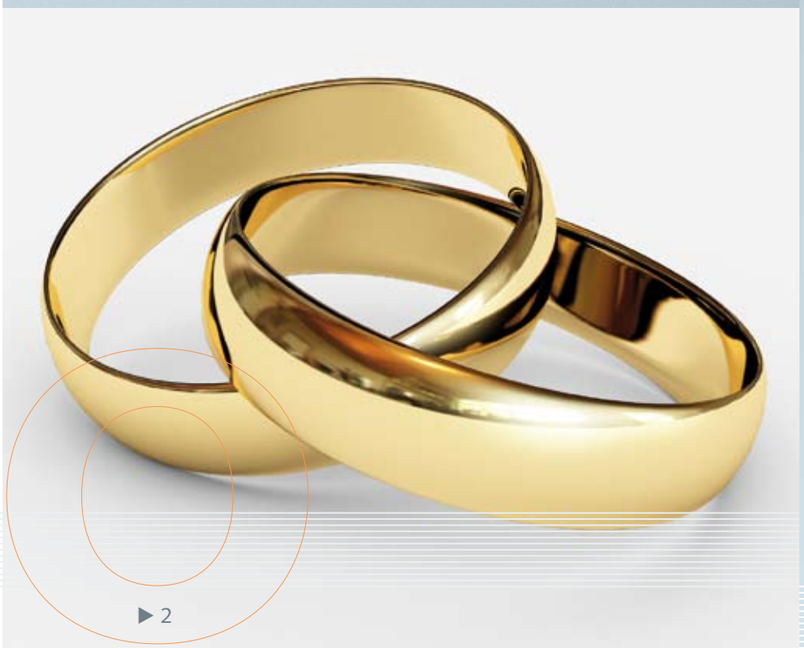
THE PROCESS

The centrifugal disc finishing process is a mass finishing process specially developed for the surface treatment of work pieces. The pieces to be finished are placed in a container in a solution of water and soap (compound) together with abrasives and usually an auxiliary agent. A rotating motion of the process container causes a relative motion between work piece and abrasive which creates a material abrasion and thus a surface finishing on the work piece.

This toroidal motion creates a very aggressive processing results which is up to 20 times more effective than conventional methods such as polishing drums. In the wet finishing process a water/compound mixture constantly flows in and out, carrying away the particles of dirt giving the work pieces a clean, corrosion-free surface finish.

The main areas of application are:

- Abrasion of casting skins
- Abrasion of emery traces
- Refining of the surfaces to a hand polished quality



Areas of application

Magnetic polishing

Magnetic polishing is the ideal preliminary step before wet processing.
The surfaces are mechanically processed by means of tiny, rounded steel pins without causing material abrasion (important for valuable materials such as gold). The advantage of magnetic polishing is that even highly complex and delicate geometries can be processed perfectly and in the tiniest corners. With this process the surfaces achieve a beautiful shine.

The machines

For small and mid-sized batches,
Ideal for jewellers, goldsmiths and smaller production.
ECO-Maxi magnetic: highly cost-effective. Page 6

For large batches,
Industrial usage for mid-sized and larger jewellery manufacturers.
MAG 30: short processing times, higher output. Page 10

Wet grinding

This involves an abrasive process, in which the work pieces are finished by means of special plastic abrasives. The work pieces are moved around in a toroidal flow through the process container. Because of the different masses between the work pieces and the plastic abrasives, the material is removed and flushed out by means of the water/compound mixture. This replaces the burdensome and time consuming hand polishing and achieves very fine surfaces in as little as 3-4 hours. The patented OTEC technology represents high efficiency and unsurpassed results. Even the smallest parts can be easily processed.

The machines

For very small batches, prototype area.
Ideal for goldsmiths and very small production.
ECO-mini wet: fast cleaning and grinding of jewellery. Page 5

For goldsmiths and smaller batches.
ECO-Maxi wet: highly cost-effective. Page 6

For industrial usage for jewellery manufacturers.
EF 9/18/32: the newest patented technology in the gap area.
For maximum added value. Page 8

Areas of application

Dry polishing

The dry polishing machines from OTEC achieve finishes as if polished by “hand”. The finest polishing granulate ensures minimal material removal in the micro-region and a brilliant shine - without damaging the set stones in the process.

The machines

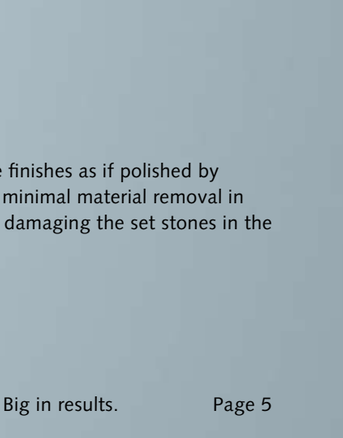
For very small batches and prototype area,
Jewellers, goldsmiths, private households
ECO-mini dry: Low cost with a small footprint. Big in results. Page 5

For small series,
Ideal for small jewellery manufacturers, goldsmith workshops.
ECO-Maxi dry: highly cost-effective Page 6

CERTIFIED ACC. TO DIN 9001

This ensures optimized workflow throughout the entire production process and guarantees maximum efficiency and the highest quality assurance from engineering to production.

As a result, OTEC maintains its leadership position in the world marketplace in its efforts to create perfect surfaces.



ECO-mini „dry“ and „wet“

A bestseller where efficiency is concerned

The ECO mini series has succeeded in incorporating the technology of large industrially used disc finishing machines into a tiny machine.

The world's best-selling finishing unit!

Type	Container volume l	Machine dimension (W x D x H) mm	Weight kg	Power consumption kVA/V	Frequency Hz
ECO-mini wet	3	220 x 220 x 365	6,6	0,8/230	50/60
ECO-mini dry	3	220 x 230 x 340	3,7	0,5/230	50/60

TECHNICAL DATA

The ECO-mini is available in two designs, “wet” and “dry”. The dry polishing machine in the mini format is predominantly used for polishing tarnished or worn jewellery or is used for the individual processing of heavy workpieces with delicate forms. The ECO-mini „wet“ is predominantly used for very small batches or prototypes for the stripping of casting skins or emery traces. This makes the final polishing greatly simplified and much quicker. Thanks to the usage of plastic abrasives no orange peel appears on the jewellery pieces.

Features of the ECO-mini:
It is the smallest and most efficient „finishing centre“ on the market. The machine is easy to operate using a timer and works quietly without producing dust.

Areas of use:
- Very small batches or prototypes
- For jewellers, jewellery retailers
- For the processing of heavier, more complex work pieces

Basic equipment of the ECO-mini wet:
- Dosing pump and waste water tank
- 2.6 kg high-grade plastic abrasives
- 1 l universal compound for all metals

Basic equipment of the ECO-mini dry:
- 1 kg high quality, high-grade impregnated walnut shell granulate Type H 1/100 (coarse)
- 1 kg high quality, high-grade impregnated walnut shell granulate Type H 1/500 (fine)
- 1 tube polishing paste type P 6 (110 grams)

Optional special equipment for ECO mini dry:
- Ring holder for heavy pieces of jewellery (over 7 grams)
- Processing media set for the dry processing

The ECO-Maxi System

The universal solution - for wet processing, dry and magnetic polishing.

With the ECO-Maxi system you have the choice to either have a so called “base unit” which incorporates all three processing procedures, or a machine for just one of the three processes. The ECO-Maxi „magnetic“, the ECO-Maxi „wet“ and the ECO-Maxi „dry“. The modular machine concept of the ECO-Maxi is therefore perfect for smaller batch production. Due to the advanced technology, the machines are characterised by high economic efficiency with which you can save approx. 60 % of your production costs.

Tree processes with just one machine: The ECO-Maxi “basic”

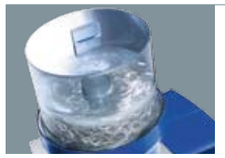
The ECO-Maxi basis is the drive unit without process containers. It is designed in such a way that all three processes are optimally supported. Depending on the chosen process container you can either run the magnetic polishing process, the wet grinding process or the dry polishing process – all with the same drive unit.

Basic equipment:
- LC display with display of speed and process duration
- Speed control
- Bayonet fitting of the process containers
- Automatic container detection

The drive unit can be equipped with:
1. Drive Ø 225 mm for magnetic polishing process (weight: 5 kg)
2. 6 l process container for wet processing incl. dosing pump and waste water tank (5,5 kg)
3. 6 l process container for dry processing (weight: 2.5 kg)

▶ 6

The ECO-Maxi series as single processing machines



ECO-Maxi „magnetic“ (magnetic polishing)

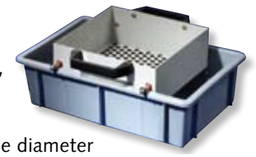
This machine type is limited to the “magnetic polishing” process. It is the preliminary step before the wet processing and replaces the conventional electrolytic polish bath.
In as little as 15 - 30 minutes you achieve:
- The complete removal of oxidation and imbedded mass residuals
- Shine also in delicate areas which are difficult to access

Basic equipment (not expandable)
- Timer, speed control via frequency converter, up to 1900 rpm, automatic change to the direction of rotation, 6 l process container, 200 g stainless steel pins M 4/7, 1 l compound SC 4

ECO-Maxi „wet“ (wet grinding)

In this process, results are achieved in 3-4 hours which might require several days using traditional technologies. Due to the usage of special „soft“ abrasives the work piece surfaces are not hardened, which reliably prevents the formation of “orange peel” on the surface. The results are:
- Complete removal of emery traces and casting skin
- Clean and light work piece surfaces

Basic equipment (not expandable)
- Timer, speed control via frequency inverter, bayonet fitting of the process container, 6 l process container for wet processing incl. dosing pump and waste water tank



Optional:
- Media set for wet processing: wet processing, manual screen for „wet“, 14 mm hole diameter

ECO-Maxi „dry“ (dry polishing)

In this process, polishing granulates made of walnut shells provide for the finest of surfaces. Material removal in the micro-region is the result. Set diamonds, cubic zirconia or pearls will not be damaged. The processing time for the pre-polishing is about 2-3 hours and for the final polishing about 30 minutes with the following result:
- Very smooth surfaces
- Brilliant shine, comparable to hand polishing

Basic equipment (not expandable)
- Timer, speed control via frequency inverter, bayonet fitting of the process container, 6 l process container for dry processing

Optional:
- Media set for dry processing: dry processing, manual screen for „dry“, 4 mm hole diameter, ring holder for heavy pieces of jewellery (over 7 grams)

ECO-Maxi	„basic“ (drive unit)	„dry“	„wet“	„magnetic“
Mach. dimension (WxDxH mm)	360 x 350 x 310	360 x 350 x 490	360 x 350 x 490	360 x 350 x 530
Process container volume (l; mm)	see equipment for the drive unit	6	6	Ø 225 mm
Weight (kg)	16	17	20	20
Power consumption (kVA/V)	0,8/230	0,8/230	0,8/230	0,8/230
Frequency (Hz)	50/60	50/60	50/60	50/60
Recommended workpiece quantity* (g)	–	200	300	300
Recommendet fill quantity Media	–	Granulate quantity: 2,2 kg Walnut shell	Granulate quantity: 3 kg plastic abrasives or stainless steel polishing media or 4 kg porcelain polishing media	Granulate quantity: 200 g steel pins

**Depending on design, the specific and the total weight of the individual work pieces, the fill quantity for the work pieces can deviate from the recommended quantity.*

▶ 7

Easy Finish Series

The new development with the best price to performance ratio in this category.

The EF series includes several key innovations specially customized for industrial processing of large batches. Thus an improved efficiency is achieved with a noticably better handling capability. The EF series machines are all free standing units for wet processing. Thanks to the technical advancement of the components and a high performance capability, the EF series exhibits a price-performance ratio which was not previously achieved.

Thanks to the patented quick adjustment the container gap can be easily and quickly adjusted. From 3 mm to 0.4 mm, depending on customer requirements.

TECHNICAL DATA

The details of the EF series

The EF series contains a patented gap adjustment system. Using this technology, gap adjustments can be easily and quickly accomplished. Thus very thin jewellery pieces with a thickness of only 0.5 mm can be processed without becoming caught in the gap. That guarantees the highest process safety and processing quality.

Area of Use

- For larger batches
- For industrial usage for jewellery manufacturers

Type	Container volume l	Container diameter mm	Machine dimension (W x D x H) mm	Weight kg	Power con-sumption kVA/V	Frequency Hz
EF 9	9	257	550 x 750 x 1.520	102	0,9/230	50 – 60
EF 18	18	333	620 x 780 x 1.520	115	0,9/230	50 – 60
EF 32	32	400	770 x 820 x 1.520	145	0,9/230	50 – 60

Easy Finish Series (EF 9; EF 18; EF 32)

The EF series machines are high-performance and easy to operate.
Newly designed containers and discs resulted in a particularly flow-friendly construction which optimizes media motion and prevents turbulence as well as creating a particularly fine grinding and polishing effect. Thus perfect, clean surfaces result without emery traces or casting skin residuals. The processing time for grinding is approx. 2-3 hours, for polishing approx. 1.5 hours. With the result:

- Very smooth surfaces
- Brilliant shine, comparable to hand polishing

Basic equipment EF "wet"

- LC display with display of speed and process parameter
- Speed control via frequency inverter
- Manual screen for „wet“, 14 mm hole diameter

Optional special equipment

- Drawer system for storage of processing media
  - Integrated into the machine frame
  - For two media containers
- Cascade container
  - Fill volume 120 l
  - For waste water
  - Including sludge drip basket and filter sack for filtering of accumulating dirt

Visibly better!

Form your own impression of the performance capability of our EF series machines. Simply send us a sample part that we can process in our laboratory. We will send you a comprehensive report, customized to your applicaton, complete with details on the grinding and polishing media used and process paramter settings, available in 12 different languages. Naturally at no cost or obligation and absolutely confidential.

Request proof of the better technology.

MAG 30

High gloss throughout to the smallest corner

The MAG 30 is a magnetic polisher and is used in the jewellery industry particularly for processing gold and silver jewellery. Furthermore this process also enables complex (convex/concave) forms to achieve optimal shine. With the magnetic process it is possible to achieve high gloss without material abrasion.

TECHNICAL DATA

Basic equipment:
- Stabile design
- Round, flow-optimized container design
- Speed setting using the frequency converter for the adjustment of the optimal speed range
- Speed display
- Display of the set and already completed processing time
- Usage of rounded steel pins for a brilliant shine

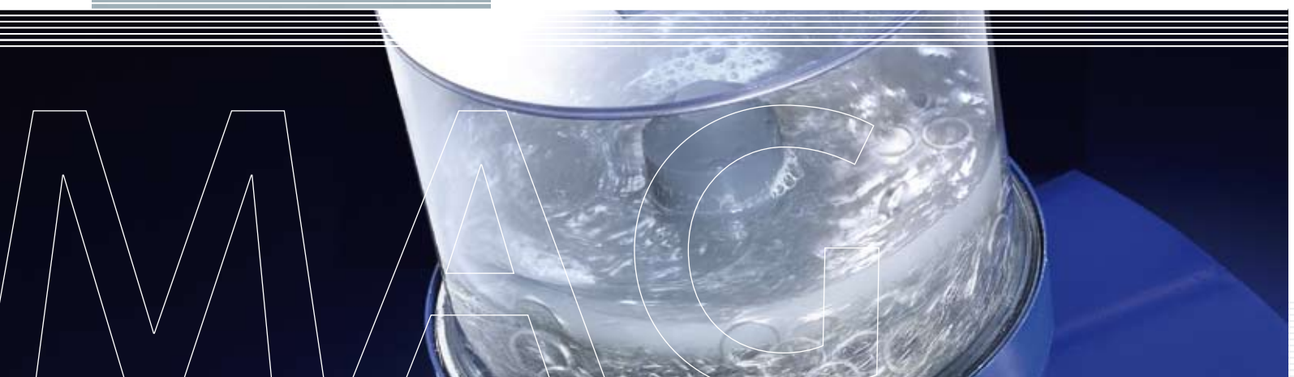
Technical data:
- Container diameter: 315 mm
- Capacity for workpieces: approx. 500 g
- Fill quantity steel pins: 400 g
- Connection power: 1.5 kW
- Power consumption 230 V/16 A

Areas of use:
- Industrial jewellery production

The process:
Magnetized steel pins, for example in size 0.4 x 7 mm, are placed in a container together with the work pieces, usually unpolished cast blanks. Water and a tenside solution, the compound, are added. A circular disc is under the container, equipped with permanent magnets. When the circular disc is set in motion, the steel pins move in the process container and collide with the work pieces and compress and smooth the surfaces.

The key feature of this process is that very delicate and intricate areas are also nicely shined.

After around 20-30 minutes the work pieces are completely shiny. Since this process is a purely mechanical process, practically no gold or silver is removed, a clear advantage as opposed to the electrochemical process.



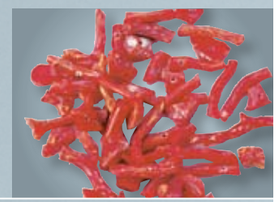
TYPICAL APPLICATIONS

Example 1

Fragmented, very thin-walled precision parts
Machine: ECO-Maxi, Easy Finish
Patented gap adjustment system prevents the jamming of very thin workpieces

Example 2

Large pieces of jewellery with set-in stones
Machine: ECO-mini, ECO-Maxi
By using a ring holder, larger rings with stones can also be polished to a high gloss without damages.



Example 3

Natural stones (coral, amber, etc.)
Machine: ECO-Maxi, Easy Finish
Through the use of special processing media and speed-optimized processing cycles delicate and breakable work pieces gently achieve a high gloss finish.

Media

The processing media play an essential role in the surface quaility that can be achieved. The following examples show different processing steps and the processing media which are used.

Walnut shell granulate, e.g. H 1/100, H 1/500
Impregnated walnut shell granulate is used for dry polishing. H 1/100 for pre-polishing, H/500 for fine polishing, here a high gloss is achieved which is comparable to hand polishing. Processing time approx. 2 hours in the centrifugal disc finishing process. Maximum weight of the pieces of jewellery: approx. 7-8 g By using ring holders (or drag finishing machines series DF) dents or scratches during polishing are prevented.

Porcelain polishing media, e.g. ZSP
This is best suited for wet polishing of zinc cast and heavy silver parts. Using small porcelain pins a high gloss surface is achieved in the wet process in approx.1.5 hours. The part on part contact of the pieces of jewellery is reduced, making this suitable heavy jewellery pieces. Example for the processing of costume jewellery, gems, pearls, amber, or brooches with porcelain media: ZSP 3/5

Plastic abrasives, e.g. KR 10, PR 10
These are particularly suited for fine, smooth surfaces. There are two shapes: C= cone shape; P= pyramid shape. Cone shape achieves very fine surfaces and is used for jewellery with stones. Pyramid shape is especially suited for the processing of corners and edges. Example of the processing of jewellery with zirconia: KR 10

Compound, e.g. SC 4, SC 5
Grinding compounds are used for the wet process and keep the workpieces clean during processing. They absorb the stripped grinding debris and ensure the continuation of the grinding effect of the abrasive. Compound examples: For wet polishing: SC 4

Polishing and grinding pastes, e.g. SP, P
Grinding or polishing pastes are only used for the dry processing. For every 5kg of granulate after 4-5 hours of processing one teaspoon of paste must be added before processing. Examples of paste applications:
SP26: for fine grinding with walnut shell granulate
P1: universally suited, particularly appropriate for silver
P2: special for gold alloys.

You can find additional processing media in our media brochure.