# WHERE WE LIVE, QUALITY HAS A LONG TRADITION

Founded in 1996, OTEC has quickly established itself as the market's technology leader by developing new machine concepts, inventions and improvements. OTEC supplies machines which are carefully tailored to the needs of specific industries and which are truly impressive in terms of cost-effectiveness, handling and precision and which are far superior to conventional systems. Around 120 members of staff are employed at the company's headquarters in Southern Germany. A global sales network ensures excellent worldwide support, and world beating finishing are always guaranteed.



CF Series

For bulk processing precision engineered workpieces.



EPAG Flex

For smoothing and polishing gold and silver workpieces.

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02/20

# ECO SERIES | EF SERIES

## JEWELLER | JEWELLERY INDUSTRY





PERFECT SURFACES WORLDWIDE

# EXTREMELY FAST, EXTREMELY EFFICIENT

**Centrifugal disc finishing machines from OTEC. 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

**ECO-Maxi magnetic: highly cost-effective**

- For small and mid-sized batches
- Ideal for jewellers, goldsmiths and smaller production

**MAG 30: short processing times, higher output**

- For large batches
- Industrial usage for mid-sized and larger jewellery manufacturers







## 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

**ECO-mini wet: fast cleaning and grinding of jewellery**

- For very small batches, prototype area
- Ideal for goldsmiths and very small production

**ECO-Maxi wet: highly cost-effective**

- For goldsmiths and smaller batches

**EF 18/32: the newest patented technology in the gap area**

- For industrial usage for jewellery manufacturers
- For maximum added value






## 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

**ECO-mini dry: low cost with a small footprint and big in results**
- For very small batches and prototype area
- Jewellers, goldsmiths, private households

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

## 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.



CERTIFICATE

The Certification Body of TÜV SÜD Management Service GmbH certifies that

OTEC Präzisionsfinish GmbH
Heinrich-Hertz-Str 24
75334 Straubenhardt
Germany

has established and applies a Quality Management System for

Development, production and sales of mass finishing machines and process development for finishing processes and sales of media finishing.

An audit was performed, Report No. 70742345.
Proof has been furnished that the requirements according to

ISO 9001:2015

are fulfilled.

The certificate is valid from 2018-02-02 until 2021-02-01.
Certificate Registration No.: 12 100 34967 TMS.

Product Compliance Management
Munich, 2018-01-22

ZERTIFIKAT ◆ CERTIFICATE ◆ 证书 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT



# ECO-MINI “DRY” AND “WET”

**With the series ECO-mini, it has been possible to successfully integrate the technology of large, industrially used disc finishing machines into a tiny machine. The patented technology now enables the use of the finest granules with the result of a sensational shine. As if polished by hand.**




| Type | Container volume | Machine dimension (W x D x H) | Weight | Power consumption | Frequency |
|---|---|---|---|---|---|
| | l | mm | kg | kVA/V | 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 |

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.**

The ECO-Maxi „basic“ is available either with three containers „wet“, „dry“ and „magnetic“ or only with the container for magnetic polishing, depending on the desired processing objective. 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 basic 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

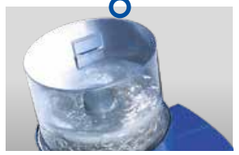
- LC display with display of speed and process duration
- Speed control
- Bayonet fitting for the process containers
- Automatic container detection

### 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)



## The ECO-Maxi series as single processing machines



### ECO-Maxi “magnetic” (magnetic polishing)

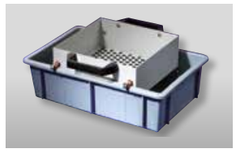
This machine type is limited to the “magnetic polishing” process. It is the preliminary step before the wet processing and replaces the conventional electrolytic polish bath. In as little as 15–30 minutes you achieve:

- 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.

# 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.**





## Easy Finish Series (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

## Touch Panel

- Speed, chosen process time and expired process time are displayed on the new touch panel
- Parameters will be fed into the machine via touch panel only
- Advantage: Parameter adjustable for slowly end & interval function

## Basic equipment EF “wet”

- 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



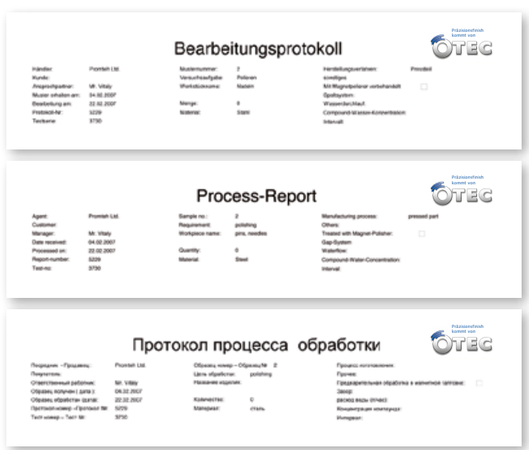
## The details of the EF series

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 | Container diameter | Machine dimension (W x D x H) | Weight | Power consumption | Frequency |
|---|---|---|---|---|---|---|
| | l | mm | mm | kg | kVA/V | Hz |
| 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 |




## 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 Finishing Center. We will send you a comprehensive report, customized to your application, 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.

# 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. KM 10, PM 10
These are particularly suited for fine, smooth surfaces. There are two shapes: K= 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: KM 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.