

FOCUS ON APPLICATIONS

DIE BLANKS AND HUBS

COIN PRODUCTION TOOLS: REPEATABLE PRECISION GRINDING AND POLISHING

Minted collector coins are sought-after the world over. Coins are made from a metal strip in a multi-stage process. Repeated annealing and rolling gives the metal the required thickness and sheen. The next step is to punch the discs (coin blanks). Each blank is individually weighed before all the blanks are annealed and washed in a ball-bearing bath. In the final stage they are struck with the design to produce the finished coin.



OPTIMISING THE MANUFACTURING PROCESS WITH MECHANICAL FINISHING

OTEC Präzisionsfinish drag finishing machines provide repeatable precision surface processing at two quality-related points in the process of turning metal into money. In specific terms: mechanical, repeatable surface smoothing and polishing of the die blank, and of the hub produced from it after laser engraving.

THE HUMAN FACTOR AFFECTS QUALITY

Hubs are made using an upstroke hubbing press fitted with production dies, also known as die blanks. The more evenly smooth and polished the surface of the die blank, the higher its quality, which is why grinding and polishing it pays off. This is often done manually in a hugely time-consuming process using turntables and diamond paste. Each tool has to be individually finished. Further downstream in the coining process the resulting manufactured hub is laser-engraved with the coin design. To maximise the life of these engraved hubs and produce flawless coins, they are usually manually polished – once again a time-intensive process. Both of these finishing tasks, i.e. smoothing and polishing the die blank and the hub, have a major downside: manual finishing is not guaranteed to meet the demanding geometric and surface

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requirements consistently. The quality of the finish is quite literally in the hands of the worker and can vary accordingly.

DIE BLANKS:

REPEATABLE PRECISION DRAG FINISHING IS THE CORNERSTONE OF QUALITY COINS



The DF-3 HD drag finishing machine for wet and dry processing can smooth 12 dies at once in a wet process, then dry and polish them.

Christoph Stirl from OTEC Präzisionsfinish explains: “The two-stage surface finishing process is absolutely stable and repeatable because the process parameters are always precisely defined. The geometry of the die blanks stays within the permitted tolerance ranges. Our customer in Asia tells us that the whole process, which reduces roughness from Ra 0.3 to 0.02, takes around an hour, but that the process time always depends on the initial quality of the tools.

The surface processing reduces the friction coefficient, which in turn reduces wear on the tool surface, extending service life and producing smoother workpieces. Ultimately, to make optimum-quality hubs you need optimum-quality tools.”

Die blanks with a mirror finish after surface processing in the OTEC DF-3 HD drag finishing machine: roughness reduced from RA 0.3 to 0.02.

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COIN HUBS:

BOOST TOOL EFFICIENCY AND MINTING QUALITY WITH DRAG FINISH



Coin hubs: example before (left) and after (right) processing with OTEC Dragfinish

The advantages of using OTEC drag finishing to mechanically process engraved hubs are obvious: every hub is exactly the same quality, and lasts longer. Evenly smoothed surfaces reduce friction and therefore wear. The end result is flawlessly minted coins. Our customer always uses a DF drag finishing machine to polish the hub before the minting process, too, because manually polishing each individual workpiece is time-consuming, costly and unreliable.

DRAG FINISHING MACHINES: QUICK OVERVIEW



In drag finishing, the workpieces to be processed are secured in special holders. These are dragged through a container of grinding or polishing granulate at high speed. The quick motion generates a high pressure between the workpiece and the abrasive. This quickly leads to an optimum processing result in the form of precise smoothing or a mirror finish in hand-polished quality. The machine can store up to 200 recipes which can be backed up on an external storage device and started at the press of a button.

[More information >>](#)



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[LESS TALK: MORE TESTING: YOUR WORKPIECE – YOUR CUSTOM PROCESS!](#)

We do not just say our technology is better: we prove it. We'll happily put the performance of OTEC Präzisionsfinish and the DF Series to the test. We provide comprehensive advice and a fully customised processing plan for your application, including a list of the right grinding and polishing media. We also offer bespoke sample processing including a full process parameter record.

[Our process experts will find the right machinery and process solution for your requirements >>](#)



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[ABOUT OTEC PRÄZISIONSFINISH](#)

OTEC GmbH Präzisionsfinish provides precision technology for achieving perfect surfaces. OTEC machines are used for smoothing, precision edge-rounding, polishing and deburring a wide variety of workpieces, with the aim of improving surface quality. OTEC has a global presence supported by international business partners. OTEC's comprehensive, market-leading technical expertise in developing the perfect interplay of machine and abrasive benefits a wide range of industries including tooling, medical devices, jewellery, and automotive and aerospace.

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