

NEWS

ISSUE #
01
2020

OTEC SERVICE

Service with the help of data glasses.
Industry 4.0 set to define 2020.

OTEC-FINISH FOR THE AEROSPACE INDUSTRY:

IFT partners with OTEC | Safe research in space.

RELIABLE MILLING TOOLS

Targeted rounding of cutting edges
significantly increases service life!





**μ PRECISIONFINISH:
YOUR SURFACE REQUIREMENTS –
OUR PROCESSES AND MACHINES.**

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**Burr-free, rounded,
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OTEC Präzisionsfinish technology rounds workpieces quickly, simply, reliably, and accurate to the last μm . Defined, reproducible rounding makes cutting edges much smoother, which means longer tool life and higher process reliability.

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OTEC
SF ILS



EDITORIAL



Dear Reader,

2020 is already well under way but I would like to take this opportunity to sincerely thank all of our customers and partners for everything we achieved together in 2019. The time has now come to look ahead as we get down to business. As Mark Twain once said, “the secret of getting ahead is getting started.” With that in mind, I would like to wish all of us a successful start – not only to the year but hopefully to each new day, too!

An important step in ensuring reliable cutting tools is the rounding of cutting edges in the stream finishing process. Smoothing micro-defects on ground cutting edges and flutes significantly increases a tool’s service life and productivity.

There is increasing demand and necessity in the aerospace industry for engines that are not only quieter but that also emit less CO₂. This can’t be done without high-precision parts with ideal surface geometries. OTEC has a part to play in this too and we are committed to making our production and business operations more and more environmentally friendly by using renewable energies. We are grateful for every beam of sunshine that radiates onto our solar power plant because by making small adjustments to the way we work, we can help to combat climate change, now and for the future.

Now let’s look towards the future, quite literally. If you google Industry 4.0, you find hits such as ‘increased productivity’, ‘efficiency’ and ‘digital transformation’. According to the Fraunhofer Society, “expectations are high for tomorrow’s manufacturing: factories must be smart, changeable, efficient and sustainable.” If you have a problem that needs fixing, our service technicians can virtually look over your shoulder wearing data glasses. Our team can offer immediate support and rapid solutions. These are the kinds of individual developments that the fourth industrial revolution is made of.

The wide variety of topics in this first issue of 2020 offer fresh inspiration and ideas to take away with you. Spread the word!

We hope you enjoy reading the latest edition of our customer magazine.

Helmut Gegenheimer
Managing Director

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#01/2020

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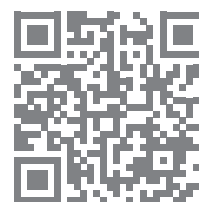
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<https://www.youtube.com/user/OtecGmbH>



Service with the help of data glasses

“I SPY WITH MY VIRTUAL EYE...”

Industry 4.0 is set to define 2020. It inevitably brings with it a fear of the unknown on the one hand but curiosity, enthusiasm and substantial benefits on the other. If you google Industry 4.0, you find hits such as ‘increased productivity’, ‘efficiency’ and ‘digital transformation’. According to the Fraunhofer Society, “expectations are high for tomorrow’s manufacturing: factories must be smart, changeable, efficient and sustainable.” There’s a lot to be done, so let’s get started! Quality plays such an important role in the production of the future, but it is also needed in the here and now, particularly in the services industry.

Many of us know from experience that things don’t always run smoothly. An unexpected system message can bring everything to a standstill. Downtimes lead to even tighter deadlines and extra costs. Inconvenient to say the least.

We think it’s time for a revolution. Don’t you?

If you have a problem that needs fixing, our service technicians can virtually look over your shoulder wearing data glasses. Our team can offer immediate support and rapid solutions. These kind of individual developments together make up the fourth industrial revolution in the age of Industry 4.0.

Thuan Nguyen, Area Manager for production, purchasing and logistics, explains this new digital technology and its potential uses.

Thuan, what are the biggest benefits of service via data glasses?

“Data glasses are essentially a virtual view over the customer’s shoulder; they are a very efficient solution for reducing downtimes. Help can be given quickly and remotely. It’s also better for the environment because long journeys are no longer necessary and up to four specialists can be brought in from across different departments. Communication is bidirectional via a sound and video link.”

What do OTEC customers need to be aware of in order to use this virtual service?

“They don’t need to install any software, which means that the application can be used on any device, operating system or platform. They only need to allow access to the camera and microphone. The control panel is simple and intuitive. The application works on mobile end devices as well as on the data glasses. Pointers can be displayed on the support station as well as on the smartphone or AR glasses to show where the issue is. Markups indicate where intervention is needed. What’s more, there is a text message feature in case of loud background noise during the call.

Even support documents such as circuit diagrams can be sent via the chat feature, and an integrated translation tool helps to overcome any language barriers.”

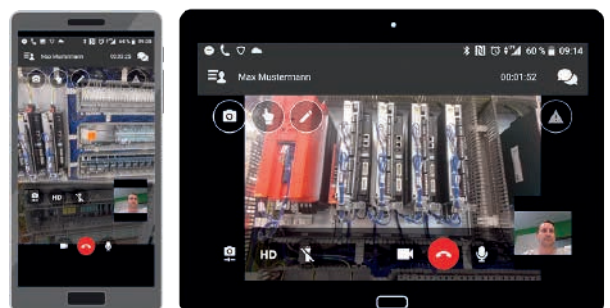
Based on your experience with the application so far, are there any basic technical criteria that need to be met?

“A stable and fast internet connection is essential. Router hardware and mobile end devices must also be sufficiently powerful. We’re very happy to advise customers on how to get the service up and running.”

Data glasses or mobile end device? What would be your personal recommendation for ‘beginners’, Thuan?

“With the data glasses there’s the advantage of having both hands free, which is very practical for troubleshooting. However, the data glasses are a one-time, costly investment. With a smartphone you can use an ad hoc licence to download the free app, and you’re ready to go! So there’s a decision to be made, but either way, customers can always be sure of receiving the best service quality.” **Thank you, Thuan!**

Virtual service for smartphone or tablet





A glimpse into the world of Dörfler & Schmidt

Felix Dörfler from Dörfler & Schmidt



Felix Dörfler tells us why OTEC is the go-to machine manufacturer for service providers in surface processing.

Felix, how long have you been using OTEC machines? And what's the "human" story behind your relationship with the company?

"We've been using OTEC machines ever since 1998. Actually our very first machine was an OTEC. At the time we opted for a CF 3x50. Back then, OTEC's machines were the best in the business for processing jewelry and watch components."

Would you say that your company has grown alongside OTEC?

"Absolutely. After our first CF3x50, we expanded our capabilities pretty quickly with additional disc finishing machines from OTEC. And we've reaped the benefits of OTEC's continuous development and high quality. We now have over a dozen disc finishing machines.

Then, when OTEC brought yet another innovation to market with the stream finishing process, we expanded our offering again with the new technology. That opened up a lot more application areas. More recently, we adopted the new pulse finishing system, which once again is cutting-edge technology."

Aside from automotive components, what kinds of parts does Dörfler & Schmidt process with OTEC machines?

DÖRFLER & SCHMIDT AND OTEC PRÄZISIONSFINISH

QUALITY CREATES STRONG BONDS

Dörfler & Schmidt Präzisionsfinish and OTEC Präzisionsfinish are based about 140 miles apart – but it's what bonds them that matters: a passion for precisionfinishing and a working relationship spanning two decades.

"We use them to deburr and polish a wide range of materials, mainly metals and plastics, but also ceramics and wood. We use the DF, stream finish and pulse finish machines to deburr, round and polish components that mustn't come into contact with each other. Most often stamping, forming, milling and cutting tools, but also decorative components."

What's the specific benefit of the OTEC stream finishing process for your customers in the toolmaking industry?

"Well, for instance, it really boosts the quality of stamping and forming tools. The surface processing reduces

the friction coefficient, which in turn reduces wear on the tool surface. Polishing forming surfaces extends the service life of stamping and forming tools as well as improving machining results. Smoothing off roughness peaks improves forming by reducing the effort required and enhancing flow properties. Surface processing with OTEC machines not only saves on cost-intensive manual work but also guarantees process reliability. Our customers really appreciate that."

Thanks for such a candid interview Felix. All the best to you and your customers!

OTEC IN CONVERSATION WITH THE SECOND GENERATION



NICO GEGENHEIMER, (25)

What did you want to be when you were young?
A chef.

What's your chosen career path today?
I studied business administration and engineering at Pforzheim University of Applied Sciences.

Hobbies?
Photography and cooking.

Favourite food?
Steak and lasagne.

Most recent holiday destination?
A camper van road trip around Italy.

What's your role at OTEC?
Since January 2019 I've been a management assistant, Lean expert and have worked in Predevelopment.

What are the benefits of working for a family company like OTEC?
I've grown up with OTEC and the company has become an important part of my life. When I was 13 I started cleaning machines in the Finishing Center and since then my roles have gradually grown as the company has grown. I've always valued the openness, solidarity and unique OTEC spirit. It turns every working day into something special.

What values and attitudes are important to you?
Team spirit, creativity and the courage to try new things.

What's your greatest wish for the future?
I hope that the company will continue to be a successful and innovative player in the industry. That means bringing together established and proven practices with new ideas and approaches.

FLORIAN GEGENHEIMER, (28)

What did you want to be when you were young?
I wanted to work in the finance sector.

What's your chosen career path today?
I studied business administration at Pforzheim University of Applied Sciences, where I specialised in controlling.

Hobbies?
Strategy games (like Risk and Monopoly). And barbecuing.

Favourite food?
You can never go wrong with pizza.

Most recent holiday destination?
London and New Zealand.

What's your role at OTEC?
I've worked as a controller since May 2015 and took on the additional role of HR manager in 2019. I'm also responsible for accounts receivable and am the contact for legal issues.

What are the benefits of working for a family company like OTEC?
For as long as I can remember OTEC has been like my second home. I enjoy the close working relationship I have with my colleagues, the rapid decision making and the great lunches.

What values and attitudes are important to you?
Loyalty, honesty, fairness, character, dedication and empathy.

What's your greatest wish for the future?
I hope that our dad will be at the helm for a long time to come and that as second generation Gegenheimers we'll follow in his footsteps to keep up established practices and combine them with new ideas and approaches.



OTEC GOES GREEN

Hardly a day went by in 2019 when climate change, CO₂ emissions and renewable energies weren't covered in the international news.

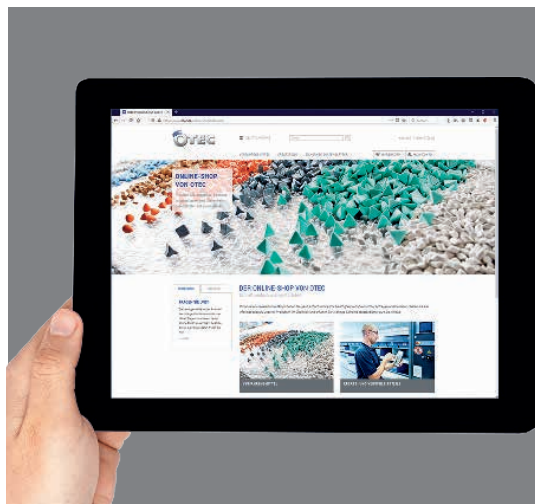
According to Wikipedia, almost 1.8 million people are estimated to have taken part in the Fridays for Future (FFF) demonstration during the first worldwide climate strike on 15 March 2019. This was an unmistakable sign that younger generations are also concerned about climate issues and the effects they will have on their future.

“OTEC wants to make an active contribution to the German energy revolution and to reduce our carbon footprint,” says Florian Gegenheimer, a controller who, as the son of Managing Director Helmut Gegenheimer, is part of the next OTEC generation.

Mid-July 2019 saw the commissioning of 1,992 solar panels on the sunbathed roof of the company building. “These panels can produce up to 450,000 kWh a year. This should mean that 85–90% of our entire electricity and heat consumption will come from renewable sources, allowing us to save around 55 tons of CO₂ emissions each year,” explains Florian.

But the company doesn't want to sit back and enjoy the sun from its laurels. Heating technology and electricity consumption are also points on its green agenda.

The firm has a biomass heating system. “The system burns wood and the warm water is then pumped into our hot water circuit,” Gegenheimer explains. He is optimistic about OTEC's green future: “We've already converted all of our lights to LEDs, which should save up to 80,000 kWh a year and reduce our annual electricity consumption by up to 19%.”



HAVE YOU VISITED OUR ONLINE SHOP?

Quick, easy and convenient: visit our online shop to find out more about abrasives, spare parts and machines you have purchased or to download our up-to-date safety data sheets. Register and log in:

<https://www.otec.de/en/online-shop/>

THE AEROSPACE INDUSTRY OPTS FOR OTEC

AVIATION: IFT USES OTEC TO MANUFACTURE ITS HIGH-PRECISION PARTS

OTEC customer IFT GmbH & Co. KG, based some 30 miles south of Frankfurt in Ober-Ramstadt, specialises in high-precision parts for the motor-sport, medical technology and aerospace industries.

“Technical innovations and reliable process performance in the surfacing techniques and systems we use are essential because we’re constantly

optimising our portfolio. We’re uncompromising in our choice of machinery and processes. They have to be absolute-ly right for the order and help us deliver the quality, efficiency, fast turnarounds and absolute deadline reliability that we promise our customers. We also review existing processing steps again and again to see how we can improve them,” explains IFT Junior General Manager Robin Breitwieser.

was all about deburring and smoothing – we wanted to deliver better surfaces without compromising the sharpness of the edges. So the specifications we gave the experts at the OTEC Finishing Center were exacting down to the last micron, because precise surface roughness and edge rounding meets the quality our aerospace customers demand, and which of course we always aspire to meet,” sums up Breitwieser.

OTEC disc finishing machine up to 20 times more effective than trough vibration? Challenge accepted!

“OTEC assured us that surface processing with its disc finishing machines was up to 20 times more effective than conventional trough vibration. That sparked our curiosity. Our trough vibration processing time for aerospace hydraulic control pistons was four hours, which was simply too long. With these particular workpieces it

Achieve more with μ precisionfinish!

OTEC accepted the challenge. At our Finishing Center in Straubenhartd on the edge of the Black Forest, we processed some samples free of charge using the CF series disc finishing machine with the gap during wet finishing set to normal. Fifteen minutes later we delivered the goods to specification – complexity and all!



MORE THAN JUST WARM WORDS

OTEC Präzisionsfinish supports adults and children who, through no fault of their own, find themselves in need of financial and social support. We are delighted to support three organisations whose valuable work has a lasting impact on people’s lives. Any help they receive can go a long way.



**SAFETY THAT IS OUT OF THIS WORLD:
OTEC SUPPORTS SPACE RESEARCH**

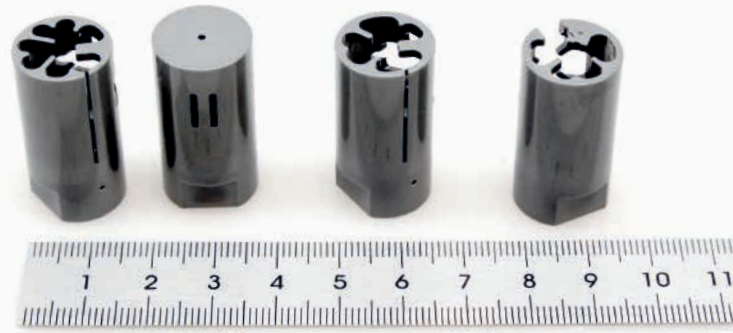
Yes, really! Ceramic parts made by CeramTec GmbH and processed using OTEC Präzisionsfinish are flying around Earth in space. What’s the story behind the collaboration? It all began with a research project. Completely homogeneous metals cannot be produced on Earth because of various physical limitations, such as the Earth’s gravitational pull. To overcome these, a series of tests was carried out on board a crewed space station where certain physical limitations no longer come into play. In space, metal can be melted in a contactless process by suspending it in electromagnetic fields. Ceramic sleeves were used to allow researchers to observe and document the process safely from up close. The specially designed cavities in the sleeves allowed researchers to see exactly what was happening during the experiment and acted as a buffer zone and fire precaution in case hot material leaked from the melting area.

Why use OTEC technology to process the ceramic sleeves?

Although ceramic is extremely heat-resistant, flammable residue from production can sometimes remain on

the surfaces of the sintered parts. OTEC was contracted to polish and clean the ceramic sleeves in order to remove all remaining residue, and with the help of the SF series machine, we did exactly that – in a process time of just five minutes.

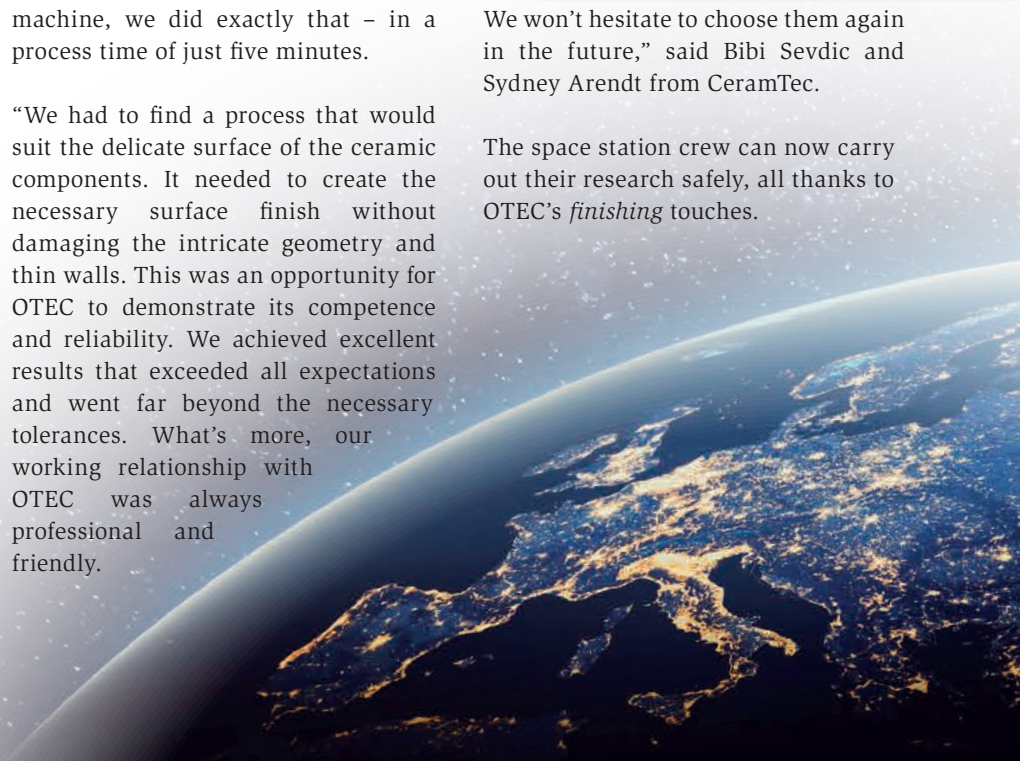
“We had to find a process that would suit the delicate surface of the ceramic components. It needed to create the necessary surface finish without damaging the intricate geometry and thin walls. This was an opportunity for OTEC to demonstrate its competence and reliability. We achieved excellent results that exceeded all expectations and went far beyond the necessary tolerances. What’s more, our working relationship with OTEC was always professional and friendly.



After processing: the ceramic sleeves used in the research project

We won’t hesitate to choose them again in the future,” said Bibi Sevdic and Sydney Arendt from CeramTec.

The space station crew can now carry out their research safely, all thanks to OTEC’s finishing touches.



RAIN TREE FOUNDATION – THAI CARE E.V.

Thai Care e.V. and Rain Tree Foundation support local communities and children in particular by providing them with a safe environment to live in and access to education, food and healthcare. They believe that by building on the existing knowledge and skills of local individuals and communities, they can improve peoples’ prospects and give them hope.

Find out more at: www.thaicare.de

STERNENINSEL – HOSPICE CARE FOR CHILDREN & YOUNG PEOPLE IN PFORZHEIM AND ENZKREIS

The families of those diagnosed with a terminal illness have to live with the knowledge that their loved one will not grow old or will leave their own children behind. 50 Sterneninsel volunteers support and take care of these families, regardless of their religion or beliefs. They are also there to support families during their bereavement.

Ever since it was founded ten years ago, Sterneninsel’s aim has always been to improve the quality of life of both patients and families.

Find out more at: www.sterneninsel.com

GERMAN ASSOCIATION FOR CHILD PROTECTION IN PFORZHEIM AND ENZKREIS

Children are wonderful! The DKSB (German Association for Child Protection) is a voluntary organisation committed to providing friendly, expert support for children and their families. It can provide preventive care to children of all ages and takes pride in nurturing both children and parents. Its work is based on the principle that if parents thrive, their children thrive, too. Since it was founded in 1969, the DKSB has been a lifeline for families in difficulty, not just providing them with practical help, but helping them to help themselves.

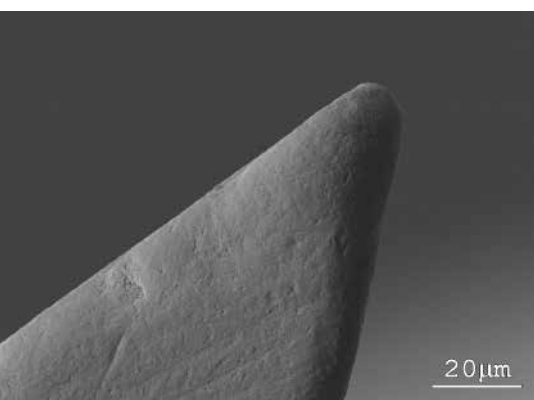
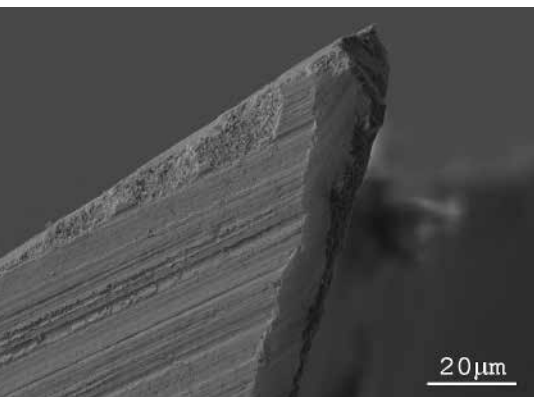
Find out more at: www.dksb-pforzheim.de

OPTIMISING CUTTING EDGES
AND FLUTES WITH μ PRECISIONFINISH

RELIABLE MILLING TOOLS



There are all kinds of different milling tools. They belong to the tool group used for machining with geometrically defined cutting edges. They are generally made of hard metal because a tool must obviously be harder than the processing material it is designed to cut.



Milling edge before (above) and after (below) processing

Hard metals make for tools with excellent properties: their extreme hardness and resistance to temperature and wear and tear are considerably superior to those of HSS cutting materials. They do, however, have a low resistance to fracture and thermal shock. These properties increase cutting speed, but high cutting speeds and forces also put hard metal milling tools under enormous thermal and mechanical stress. The tool becomes worn and must be repaired or replaced.

Targeted rounding of cutting edges significantly increases service life

Rounded edges are crucial to extending tool life and reducing wear and tear, which helps to increase overall efficiency. The intentional rounding of cutting edges may seem surprising at first, but it does achieve visible benefits.

If you examine a cutting edge that has been smoothed on both sides under a microscope, you can see micro cracks and defects along its edge. The cutting edge is chipped and loose parts will eventually be torn out from the hard metal when under stress. This will ultimately shorten the service life of the tool.

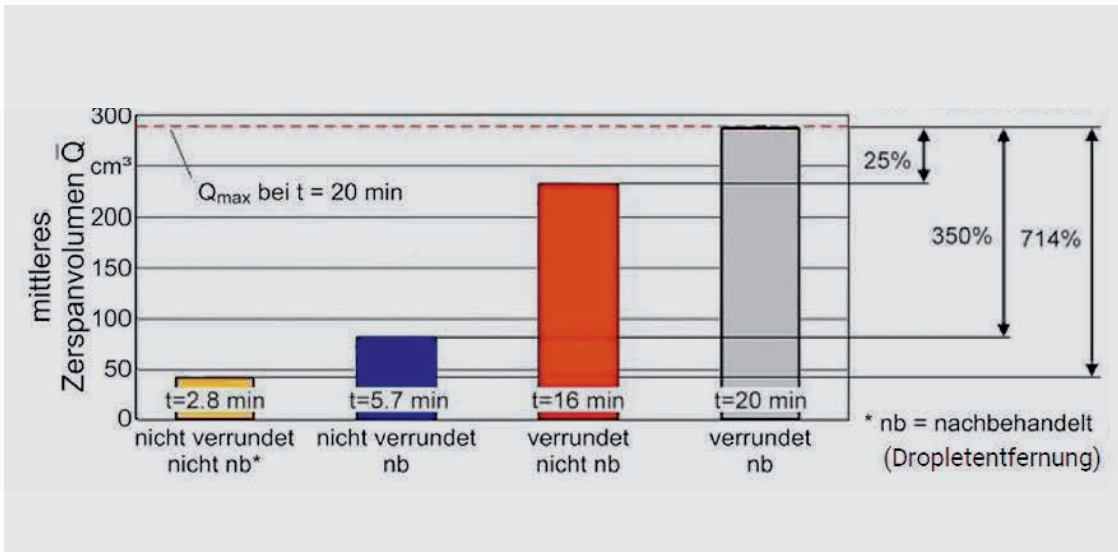
Cutting edges rounded in OTEC's stream finishing process are much more stable, meaning they deliver reliable process performance. Our process reduces chipping so effectively that the treated cutting tools are less likely to break and their service life is not only much longer (usually at least double) but also more predictable, allowing you to plan ahead. The overall workpiece surface is also improved.

High-quality flute surfaces for better chip removal

In addition to edge rounding on cutting tools, OTEC's stream finishing process can achieve smooth surfaces within very short processing times in even the smallest flutes, with roughness depths of Ra 0.05 μ m, and can optimise chip removal. This boosts the tool's productivity significantly.

Stream finishing – process reliability and automation

OTEC's stream finishing is an advanced mass finishing process that uses a variety of physical forces. The workpiece rotates and is processed as the grinding or polishing medium also rotates around it. In comparison to other mass finishing processes, the forces are much higher and material can be



Example of increase in material removal volume of a DCH stainless steel end mill (Source: IFW Hanover)

removed more quickly and more precisely. The SF Automation series enables automated workpiece loading – either with robots or with a chain loader.

OTEC's SF series covers a wide range of processes, from deburring after coating to high-gloss polishing, smoothing, polishing and edge rounding, depending on the workpiece requirements.

Pulse finishing – OTEC's stream finishing innovation

Our stream finishing machines have been available with pulse finishing technology since 2013. The pulse finish principle is based on repeated, precisely defined movement intervals between the media and the workpiece. OTEC's patented pulse drive was specially designed to meet the requirements of production lines in sectors such as the modern tool industry. Pulse finishing allows users to meet the demanding speed, quality and reliability requirements in mass production.

- Deburring, rounding and smoothing from e.g. Rpk 0.2 µm to Rpk 0.1 µm in less than a minute and in a single operation.
- The contours of the workpiece are superbly well maintained.



SF Automation with chain loader



VISIT US AT GRINDTEC 2020! HALL 1 · BOOTH 1005

OUTLOOK

AMB 2020: International exhibition for metal working



The highlight of the metal working calendar is taking place in Stuttgart from 15–19/09/2020. Around 90,000 international trade visitors and 1,500 exhibitors are expected to attend the 20th AMB trade fair. The focus will be on innovations and new developments for metal-cutting and metal-removal machine tools, precision tools, measuring technology and quality assurance, robots, workpiece and tool handling technology, industrial software and engineering, components, assemblies and accessories.

VISIT OTEC PRÄZISIONSFINISH IN HALL 5, BOOTH 5A71!

	WIN EURASIA 12–15/3/2020	Istanbul Turkey
	Amberif 2020 18–21/3/2020	Gdańsk Poland
	GrindTec 2020 18–21/3/2020	Augsburg Germany
	Istanbul Jewelry Show 19–22/3/2020	Istanbul Turkey
	MECSPE 2020 26–28/3/2020	Parma Italy
	Stom Tool Kielce 31/3–2/4/2020	Kielce Poland
	Global Industrie Paris 31/3–3/4/2020	Paris France
	MACH 2020 20–24/4/2020	Birmingham England
	SIAMS 21–24/4/2020	Moutier Switzerland
	Surface Technology GERMANY 16–18/6/2020	Stuttgart Germany

For details of all our trade fair dates, visit:
<https://www.otec.de/en/news/trade-fairs-and-events/>

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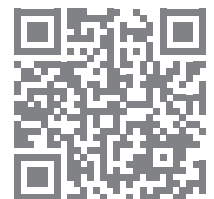
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