# NEWS

25 YEARS OTEC
LEADERS IN PRECISION FINISHING

ANNIVERSARY ISSUE 2021


## FROM PROTOTYPE TO SERIES PRODUCTION

EPAG-Smart: the intelligent solution for intricate workpieces

## SHELL ECO-MARATHON

OTEC Präzisionsfinish know-how gives AIRBUS team TED the edge

## FOOD INDUSTRY

SCHAAF Technologie relies on Stream Finishing Technology

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# OTEC SF-HP
For your individual surface finishing

Video


## OTEC's reliable Stream Finishing takes on larger loads!

- For smoothing, polishing and edge rounding adjusted to your needs
- Processable workpieces with size and weight up to 650 mm and 200 kg
- Integrated automation solution

Like to learn more about the new OTEC SF-HP?

www.otec.de/en/sf-hp

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# EDITORIAL


## *Dear Reader,*

It is more than a year now since COVID-19 entered our professional and personal lives. We have learned to live with the limitations, and seen the positive side-effects on digitalisation. While some of us may initially have found digital meetings more tiring than helpful, we now view them not only as an opportunity for conversation but as a chance to exchange a friendly smile without having to wear a mask. Right now, our computers and cameras are the sole option for meaningful business communication.

But vaccination rollouts are bringing hope of a return to the old normal. The more vaccinations, the more optimistically we can look to the future and to the prospect of overcoming the virus for good. When we finally get there, we will all have a backlog of celebrations to catch up on – including OTEC's 25th anniversary!

Meanwhile, the positive attitude of our workforce is definitely helping to keep us moving in the right direction.
In our anniversary year, the OTEC team launched several new innovations including the SF-HP Stream Finishing Machine, the compact EPAG-Smart Electropolishing Machine and new abrasives, as well as fine-tuning many other details of our products.

In the wider world we have seen a change of government in the USA,
which, after much to-ing and fro-ing, has now laid clear, reliable foundations for trade relations among other things.

The capital goods industry, held back by recent events, has some catching up to do, which may well add extra momentum to the economy.

And not least because of all these factors, we are all keeping our fingers crossed for a relaxed, cheerful, sun-drenched summer.

With best regards from Straubenhardt, stay well

Helmut Gegenheimer
Managing Director

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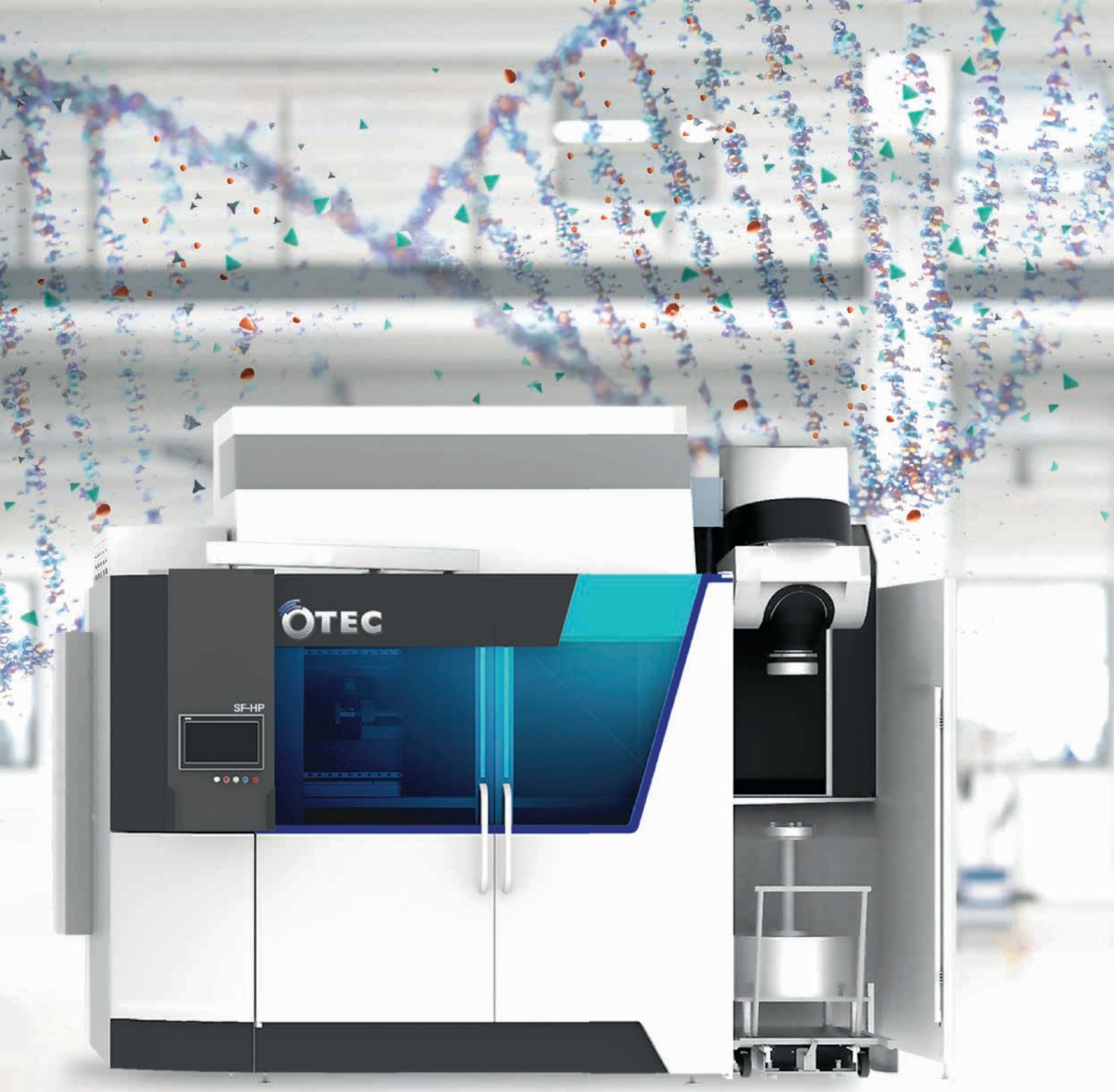
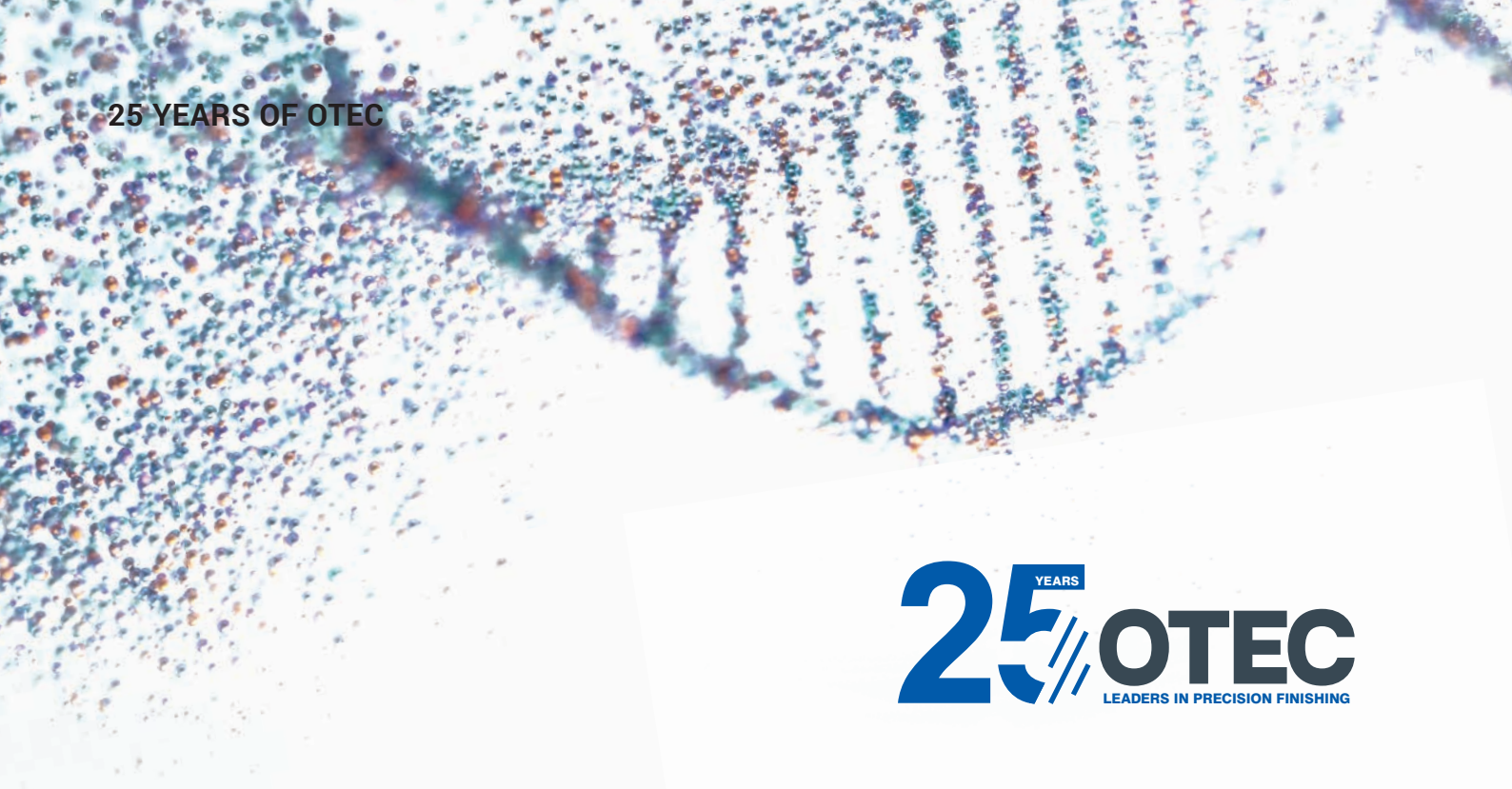



# ON THE TRAIL OF „OTEC DNA“



# ON THE TRAIL OF "OTEC DNA" IN THE ANNIVERSARY YEAR

**OTEC aspires to go on reinventing mass finishing while delivering tailored customer solutions for a wide range of surface requirements. Our customers reap the benefits of a quarter of a century's expertise in process development and machine technology. But where did OTEC's DNA come from?**

To quote Hermann Hesse, "There is a miracle in every new beginning". With those words in mind, we look back at OTEC's origins. Today, OTEC employs around 130 people. Walfried Wölk is our longest-serving employee. But he was also our first customer.

We asked how he came to join the company 25 years ago: "Helmut and I were neighbours! We barbecued together, socialised together and worked together. At the time I was working for a jewelry manufacturer. We've always been kindred spirits in our professional passion for mass finishing. Back then, OTEC sold its first machine to the company where I worked.

Helmut and I were confident that the CF-Machine would revolutionise mass finishing. And indeed it did. I gave Helmut a handful of unfinished silver rings, he processed them in the CF, and the next day I took the finished product to my boss. He was bowled over by the results, recognised the potential for his production operations and immediately bought the first CF-Machine.

I think it's that combination of advice, technology and sample processing which has blazed the trail for OTEC's growth ever since. The factors that OTEC customers have always greatly valued is the extensive consultancy they receive before buying a machine, and our sample processing service, where we work with customers at our Finishing Center to identify and clearly document the ideal processes and machine recommendations for their workpiece requirements. When you give someone sound advice and then they see the possibilities of OTEC technologies for themselves, they know for sure that the machinery is a good investment. I was delighted when I was asked to work as a process developer at the OTEC Finishing Center all those years ago, and I'm still delighted today."

But it is also our customers themselves, and their positive experiences ever since OTEC was founded in 1996, that helped make these building blocks of consultancy, expertise, technology and practical proof a success story, and ultimately, the 'genetics' of our company culture. We love hearing about your experiences of working with us. Here are just a few of those stories.

# CUSTOMER PARTNERSHIPS: INTEGRAL TO OUR STORY

**Andreas Bär, Managing Director, Artur Farr GmbH + Co. KG, Feinmechanik**

"We've been an OTEC customer from the start. When the company developed its Disc Finishing Machines for small turned parts and so on, we were impressed by how efficient they were. That was a good 25 years ago. We set great store by our mass finishing partnership with OTEC because they always develop their processes hand-in-hand with the ideal abrasives. We also find their mass finishing and free online workshops very worthwhile. The overall package they provide helps us achieve our daily objective – delivering the best possible results to customers from a variety of sectors. Sincere congratulations to OTEC. We wish the whole team every success!"

FARR FEINMECHANIK

**Adrian Hegedüs, Managing Director, Viktor Hegedüs GmbH**

"Our reputation for delivering exceptional innovations and high precision to the medical devices, manufacturing and jewelry industries dates back to 1980. Our maxim is 'Innovation in perfection'. So it goes without saying that we want to work with partners who share that philosophy in every way. OTEC continuously improves its technologies and processes, which means we deliver on our promise, which in turn gives our customers a competitive edge. We particularly appreciate being able to work with OTEC on new challenges such as surface refinements for workpieces made of specific materials. OTEC's door is always open to us and they pay close attention to our requirements. That level of reliability and R&D interaction isn't something you come across every day. Congratulations from all the team to OTEC Präzisionsfinish on reaching this 25-year milestone. We look forward to working with you for many more!"

SCHAEFFLER

**Gerrit Koch, Punching and Heat Treatment Production Chain, Schaeffler Automotive Buehl GmbH & Co. KG**

"On cutting-punches and dies, consistently accurate edges and precision rounding are obvious benefits because they improve tool quality. A project we did at the Finishing Center several years ago convinced us that OTEC's drag finishing technology offered us specific advantages. OTEC's experts gave us the right help and advice to identify the ideal process technology for improved tool quality and the maximum smooth cut. OTEC is a reliable partner whose expertise we can always depend on. Congratulations on your company anniversary, and here's to our continuing partnership!"

Schaaf

**Ron Hanke, Production Manager Schaaf Technologie GmbH**

We became an OTEC customer relatively recently, and use their Stream Finishing to process extruders for the food industry. OTEC is a great fit for us because we're both family-run businesses and we share values like quality, flexibility, transparency and customer satisfaction. The results we obtained from OTEC Stream Finishing Technology and the huge saving in processing time confirmed that they were the right supplier for us. Congratulations OTEC on your 25th anniversary. We and our customers look forward to more mass finishing innovations!"

**A big thank you to all our customers and partners.**

FINTEK AND OTEC

# A 25-YEAR PARTNERSHIP

**British company Fintek has been at our side since day one: what better reason to reflect on our shared history across a quarter of a century.**


(left to right) Kyle Mellish, Dom Sillett and George Hargreaves

Fintek sells the entire OTEC machinery portfolio and provides a wide range of services to industry suppliers from aerospace to Formula 1.

"Fintek is a partner we can always depend on. We struck up a relationship of mutual trust and appreciation right from the start – solid foundations that in my opinion have served our partnership very well. Thank you for your unfailing loyalty over the years!" says OTEC Managing Director Helmut Gegenheimer.

Founded by Jonathan Dean in July 1981, originally under the name Finishing Techniques, this British firm has established a reputation as a specialist in metal surface processing. Jonathan tells us how the two companies collaborate:

### Is there a personal side to the story of how Fintek and OTEC joined forces?

"I first met Helmut in Germany when he was still working as a mechanical engineer. Later on, when I found out he'd set up a business with his brother Soran Jota I had to track him down through the phone book – there was no internet back then so I couldn't search for him online! I met with both of them and was there for the commissioning of their very first machine. I knew immediately the new machines would be a market leader that Fintek should bring to Great Britain.

### Has Fintek grown alongside OTEC?

"Fintek has definitely grown alongside OTEC. German-made machinery was and still is in great demand in Britain. But the big turning point was the SF-Series. Stream Finishing opened up so many high-end applications where painstakingly precise processing is vital. That boosted machine sales and quickly expanded our subcontract portfolio."


(left to right) Jason Hornby, Jamie Phillips, Jonathan Dean and Richard Ainsworth

**What makes theFintek-OTEC partnership so dependable and strong?**
"Aside from the fact we've been partners from the start, OTEC's new innovations never cease to amaze us – not just the machinery but also the processes they develop. Whenever one of us from the British team visits OTEC we come back with new ideas that move us forward.

**What makes Fintek a specialist in surface processing?**
"We have a wealth of practical subcontracting knowledge. We currently operate 16 OTEC machines, eight of which are newer SF systems, some with pulse finishing and multi-step processing. That gives us a huge insight into the whole machine sales environment. We have first-hand experience of the challenges facing engineers."

**What are Fintek's values?**
"We aim to provide a low-stress environment for the team, where precision is more important than rushing to finish the job. That helps to minimise mistakes. If a problem comes up, we look at how we can work together to improve the underlying processes or circumstances and make the business run even more smoothly."

**What impact has Brexit had on Fintek?**
"Very little. Other than the new red tape, it's business as usual. The availability of OTEC machines, abrasives and technical support for British customers hasn't changed at all."

**Where do you see things going from here?**
"We're looking forward to continued growth and success in our partnership with OTEC, and we're confident we'll soon be moving to bigger, purpose-built premises. We're in the process of looking for the right property. We're very excited about what the future will bring."

**Thanks for the interview Jonathan.**

**Fintek will be 40 in July. Congratulations from OTEC to the whole Fintek team. Happy anniversary!**

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*More information on Fintek:*
**www.fintek.co.uk**

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# EPAG-SMART: THE INTELLIGENT SOLUTION FOR INTRICATE WORKPIECES

## From prototype to fully-fledged production model

In our previous edition, 2/2020, we ran the story of how an idea spawned a prototype of the EPAG-Smart.

Marcel Franzke, a former placement student who subsequently joined our New Product Development department in May 2020, was handed a daunting task on his first day: to take the prototype and develop it for series production as the EPAG-Smart, a compact, ergonomic Electropolishing Machine. Target costing in new product development makes it possible to implement a machine concept at an attractive price-performance ratio. The principle ensures that no corners are cut in any aspect of product or processing quality, which would obviously be disastrous. After all, the OTEC brand stands for all-round quality and reliability. Being designed to finish intricate jewelry and dental parts, the EPAG-Smart had to be no exception in that respect. According to Marcel, "Having only just graduated, it was both a special challenge and a vote of confidence in my abilities, which says how much OTEC values the skills of young employees like me. That's a huge incentive."

The man tasked with developing the EPAG-Smart processes specifically for silver and gold alloy workpieces was Luca Wölk, who came up with the original idea for the machine while working as a trainee chemical technician at the OTEC Finishing Center. He helped take the new product all the way from development to international launch. For Luca and the rest of this young team, receiving positive customer feedback when the machine was presented at an online workshop was a tremendous endorsement.

But the EPAG-Smart story is not over yet. OTEC Process Development is already working on processes for other workpiece alloys and industry applications.


The new compact EPAG-Smart


**Luca Wölk**
Chemical Technician


**Marcel Franzke**
Product Developer
New Product
Development

**Managing Director Soran Jota is proud of their achievement: "OTEC is based near Pforzheim, nicknamed the 'Golden City' on account of its jewelry and watch-making industry. So our early history was very much about surface processing solutions for this sector. I'm so delighted that we're keeping that tradition alive with the EPAG-Smart in our 25th anniversary year, and it only goes to prove that OTEC is continually reinventing surface processing."**

*For full details of EPAG-Smart, visit:*
**www.otec.de/en/epag-smart-jewelry**

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# OTEC GOES DIGITAL!

**Virtual over-the-shoulder support from technicians with digital glasses was just the start. Discover the new Industry 4.0 innovations that OTEC has introduced since our last report.**

### Coronavirus gives digitalisation a boost

Until March 2020, trade fairs and especially customer visits to the OTEC head office in Straubenhardt were cornerstones of our business. Prospective customers came to explore our machines and processes, attend mass finishing workshops, and work with our sample processing service at the OTEC Finishing Center to identify the ideal process for their applications.

**Our Online-Workshops, machine acceptances, sample processing and services will take you where you want to go – forwards.**

In-person customer acceptances for large systems were a regular feature in our diary, often in conjunction with an on-site visit to Straubenhardt and a bite to eat with us at the VINOTEC.

"It all became impossible overnight. But OTEC is about finding solutions to challenges. So that's what we did. In this case, digital solutions. Despite the conditions imposed by the pandemic, we support customers every step of the way and aim for the best possible proximity," explains OTEC Sales and Marketing Director Simon Stamm.

### Digitally connected: knowledge and technology transfer

We replaced internal and external in-person meetings with digital meetings between home offices. OTEC Germany Sales Manager Nicolas Petri says that looking back, "It was obviously a huge adjustment and it felt alien. Plus we had to test the technology beforehand. Now it's a daily routine holding internal and external online meetings instead of getting our heads together around the table. But thanks to technology, we're still working closely with customers and providing them with solid advice and knowledge."

Our partnerships with customers revolve around technology, so we intend to carry on sharing our knowledge in these new digital formats.

Stamm continues: "By April 2020 we had the first OTEC Online-Workshop up and running as a digital CPD offering, and it was a great success. Barely a year later, it's a well-established monthly feature and we're looking back at over 50 online mass finishing events with over 2,000 international attendees."

Online machine acceptance at OTEC

No-obligation sample processing at the OTEC Finishing Center is practically the company's hallmark. This is where customers – now virtually – see how OTEC technologies can solve their surface processing challenges:

"Our in-house Finishing Center processes customers' sample workpieces. This aspect of pre-purchase consultancy is about identifying the right machine and working with customers to tailor the processes to their specific objectives. Customers attend by video call and watch the live transformation as their workpiece is processed. They can also evaluate the measurement data, which is shared online in real time and professionally documented, and give their verdict. Our digital sample processing service is a genuine OTEC experience, just like it always was," says Finishing Center Manager Nico Gegenheimer.

For customers who opt for a larger OTEC system, we provide digital Covid-safe machine acceptance on site with cameras and microphones. Customers can thoroughly examine and inspect the machines, processes, control systems and machine safety as usual, and can view and document measurement and test records live.

## Interact with your machine online

Digitalisation is far more than a substitute for making contact in ways not currently open to us. The IoT (Internet of Things) and Industry 4.0 are increasingly prevalent in machine development and service at OTEC.

Customer Connectivity Manager Thuan Nguyen explains: "Our current digital activities are mainly geared towards making it easier for customers to operate their machinery and workflows. For instance, if the machine operator notices a spare part is required, all they have to do is scan the OTEC QR code on the wear part. This takes them to the My OTEC Online-Shop, where they can automatically email a purchase requisition to their buyer, which the buyer can then send to the Online-Shop. It saves time and it's less error-prone. Customers can also use their HMI to access detailed product information including safety data sheets and much more."


On new machine concepts like the EPAG-Smart Electropolishing Machine, we are even taking things a step further towards IoT, i.e. connecting physical and virtual objects so that they can communicate with each other. Each EPAG-Smart is fitted with a network module. Once it goes online and the app function is activated, it appears, along with its status, on a user-friendly machine overview on the home page of the new OTEC App.

Operators can see the status of all their machines at a glance, call up any machine as needed, and access data-driven process and machine status monitoring.

As an alternative to the OTEC App, the EPAG-Smart can be connected to an external monitoring system.

Thuan elaborates: "We're gradually implementing these digital features on all OTEC machine series for even more intuitive operation and to go on increasing customers' understanding of mass finishing and electropolishing. The only thing we haven't yet managed to replace with a digital solution is dining at the VINOTEC with our customers. On that particular front, we just have to hope things will soon get back to normal."

**The OTEC App also has features that make processing easier and safer as well as helping to prevent downtime and stoppages:**

- An audible and visible alarm signal when a process ends
- Email capability including machine number and operating state in the event of a fault
- Convenient in-app recipe entry and management
- Access to recommended OTEC recipes
- Access to each machine's transaction record
- Operating instructions
- Contact with OTEC Service


**Do you have suggestions or requirements for customer connectivity?**
Write to us at: connect@otec.de.
We look forward to hearing from you.

*Digitalisation in the OTEC news:*
**Issue 02/2019**

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25 YEARS OTEC
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# OTEC EPAG-SMART
## The smartest solution for polishing of filigree jewelry


## The EPAG-Smart combines the highest quality with great economy!

- Processing of jewelry parts with filigree geometries and stone-set jewelry
- Quick and easy container change
- Reproducible processes due to simple programming of the parameters

**Like to learn more about the new OTEC EPAG-Smart?**

**www.otec.de/en/epag-smart-jewelry**

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# GIFTING THE FUTURE

## OTEC gives charities some much-needed support

OTEC supports people who, through no fault of their own, find themselves in need of financial and social support. The work of Thai Care e. V. and the Raintree Foundation is close to OTEC's heart. For over 10 years now, these two organisations have been working tirelessly and compassionately to provide a better future and a fairer life for poor communities in Thailand. Respect, reliability, sustainability and responsibility are the values at the heart of their work.

OTEC's close ties with these charities drives us to live those values to the full, and is also the reason why Ralf Oberg and his company Protech Transfer has been an OTEC sales partner for many years. Right from the start he threw himself wholeheartedly into the work of the Raintree Foundation.

In early January we received good news from Ralf: "Dear OTEC, thank you for your financial support, which has really helped us move forward. During lockdown, many of our children's homes were closed, so we made the most of the time to do some long-overdue renovations to the bathrooms, kitchens, laundry rooms and so on. Sadly, donations have been hit by the global pandemic and we were almost in the red. But thanks to your sponsorship we managed to complete the projects by the end of the year. Congratulations to OTEC on its 25th anniversary. We look forward to working with you for many years to come!"

**More at www.thaicare.de**

Thai Care e.V.

Image source: Raintree Foundation and Thai Care e.V.

# EMPLOYEES INTRODUCE THEMSELVES

OTEC aspires to go on reinventing mass finishing. As one of our 130 or so employees, mechanical engineer Daniel Stelzer has his sights set on the same ambitious goal. He joined OTEC six years ago and has been heading up the Predevelopment department for the last two years. His team develops processes and technologies for use in future OTEC machines.

"I look after our innovation management and sponsored projects. What motivates my team and I is playing an active role in shaping the future of surface processing, and helping OTEC grow as a result. For me, the most exciting aspects of the job are its complexity, novelty, blue-sky and lateral thinking, and exploration. I happily take on the major challenge, and the risk, that comes with high complexity," explains Stelzer.

Daniel's profile is worth a look: even outside work, he thrives on curiosity and unusual challenges.

## DANIEL STELZER

**What are your hobbies?**
I'm heavily into re-enactment – specifically the authentic historical representation of Viking life in the Swedish town of Birka, which was the biggest trade centre in Scandinavia during the Early Middle Ages. I research historical sources, and get together with like-minded people to explore the technologies and processes of the time and how to apply them. And for a contrast I also do trail running and martial arts sword fighting.

**What is your favourite food?**
I don't really have a favourite meal but I'm generally a fan of Mediterranean cuisine.

**What did you want to be when you grew up?**
An astronaut or a speleologist (a cave explorer)

**What is special about working for OTEC as a family-run business?**
The camaraderie and the way everyone gets along really constructively regardless of seniority.

Obviously a lot is expected of you, but you have a lot more creative freedom than you would in a big corporation.

**What are the values and attitudes that matter to you most?**
Honesty, integrity, solidarity, and being able to laugh at yourself.

**What has been your biggest challenge since joining OTEC?**
From a technical point of view, developing completely new processes.

*Reenactment:*
**See a taster on LinkedIn**

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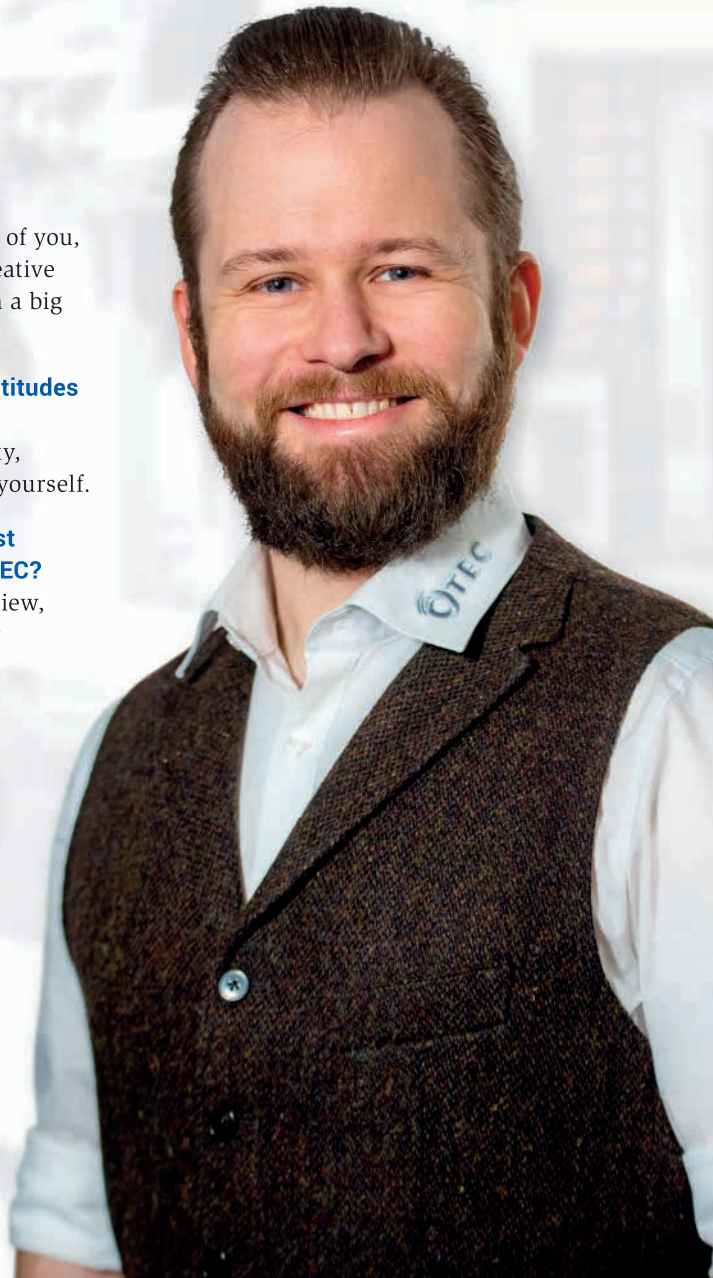


# SHELL ECO-MARATHON

## OTEC Präzisionsfinish puts Airbus TED team in pole position

The Shell Eco-marathon is one of the biggest energy efficiency competitions in the world. The challenge is to design a vehicle that can travel further than any other on just one litre of fuel. Drivetrain friction plays a huge part in this. AIRBUS's team TED (Technologies et Energies de Demain) has the advantage of OTEC Präzisionsfinish know-how: targeted surface processing technology that produces a marked improvement in the tribological properties of drive components.

### The green light

The collaboration was sparked by the recommendation of a major automotive manufacturer involved in motorsports. The idea got the go-ahead, and OTEC Präzisionsfinish processed a variety of components for the AIRBUS TED team.

The challenge: mechanical precision polishing of gear wheels, crankshafts, camshafts and piston rings to guarantee the indispensably high-quality levels demanded in racing.

Alongside vehicle weight, aerodynamics and tyres, friction plays a decisive role in the drivetrain. The more precisely each relevant component is polished while preserving its geometry, the better its tribological properties – and the lower the friction. And the lower the friction, the further the vehicle can travel on that one litre of fuel.

Team member Marc Denante from AIRBUS Engine Development explains: "Using OTEC machines to surface process piston rings and other parts significantly reduces friction in the engine. Which of course means lower fuel consumption at the same engine power. Having taken second place at 2,561 km/l consumption in 2019, the goal is to make World Champion at the next race!"

## The optimum custom process for each component

OTEC Präzisionsfinish has strong ties to motorsport. For one thing, we understand the importance of surface finishing processes and their influence on a workpiece's tribological properties. In engine, motor and drivetrain components, tribological surface properties are a critical factor in friction and wear behaviour and have a huge impact on performance. Changing the surface topography and adapting the surface microstructure for optimum run-in are crucial. OTEC's Stream Finishing Process achieves precisely that, increasing drivetrain efficiency in combustion engines and electric drives.

Secondly, OTEC has a long-standing track record in assisting Germany's Halder Motorsport team. Michelle Halder made history in September 2020 when she became the first female winner of a TCR Europe series race. After a perfect start at the Sunday race in Zolder, Belgium, she left her rivals trailing, maintaining a breathtaking pace right to the finish.

It was this passion and experience that led the AIRBUS TED team to choose two OTEC process technologies for their finishing needs:

## CF-Series: OTEC Disc Finishing

The piston rings were wet-polished in the OTEC CF-Series Disc Finishing Machine, where workpieces are processed in an open container that has a disc-shaped floor with a rotary bearing. Components are added to the fixed container along with a suitable grinding or polishing granulate. When the disc turns, the contents are set in motion in a toroidal flow. Centrifuging the granulate and workpieces makes this process highly intensive. And the results certainly impressed the AIRBUS TED team.


AIRBUS-Team TED

## SF-Series: proven Stream Finishing Technology from OTEC

For the AIRBUS TED project we processed large, complex components such as camshafts in our SF-Series Stream Finishing Machine. In this process, which was developed in-house, the components are clamped in a holder and immersed in a rotating container filled with an abrasive or polishing medium. The workpiece is also rotated to produce an even finish. This helps achieve high-quality surfaces even on the most complex geometries, achieving roughness depths of up to Ra 0.01 µm. See for yourself! ...


Machine in the SF-Series

Machine in the CF-Series

Extruder after processing

# EXTRUDER SCREWS PERFORM BETTER WITH EVENLY SMOOTHED SURFACES

## Food industry: Schaaf Technologie GmbH relies on OTEC Stream Finishing Process

### Smoothing rough surfaces and rounding edges

Extruders are used for a variety of conveyed goods. They move not only bulk goods but also viscous masses such as dough. It is easy to assume that a rough surface helps to "grip" and move the product. But it actually does the opposite. First, a rough surface is prone to food residue and micro-organism deposits, which makes surface cleaning much harder. Second, sharp, unstable edges are a drawback since they can repeatedly break off when under stress, leaving small fragments in the food. The only way to prevent this, and to guarantee uninterrupted production and food purity, is smooth, even surfaces in even the smallest angles, and rounded, stable edges.

Extruder before and after processing

### Manual processes are costly

Generally speaking, components used in the food industry are post processed in several steps. First, a belt grinder is used to smooth the surface as much as possible. Then the hard-to-reach areas are painstakingly smoothed by hand and the edges manually rounded. As extruders can be heavy and unwieldy, this can take several hours. And for those doing the work, the risk of injury from sharp edges is high.

### Achieving surface quality efficiently

The most efficient way to obtain evenly smoothed surfaces and rounded, stable edges is customised post processing with OTEC Stream Finishing Technology: a mechanised, reliable, repeatable process for smoothing and edge rounding. Targeted, controlled processing ensures that the extruder screw can do its job unimpaired: no catching, no increased resistance and no deposit build-ups.

### At Schaaf Technologie, manual finishing is a thing of the past

Schaaf Technologie GmbH manufactures screw extruders. Manually post processing the parts after turning and milling used to take the company around four hours. The workpiece went through three steps: First, milling tracks along the longitudinal axis were manually removed with a belt grinder. In step two, after hardening, the outer diameter of the screw was ground using a cylindrical grinder, producing undesirably sharp edges. In the last step these edges had to be rounded, and fine sandpaper used to obtain the finished smooth surface by rubbing off the scale caused by hardening. Schaaf Technologie has consigned all of this manual post processing to history by switching to OTEC's efficient Stream Finishing Process.

Schaaf Technologie Production Manager Ron Hanke: "The OTEC Stream Finishing Process means that we can process our screw surfaces automatically, evenly and consistently. The new process also improves tribological properties all-round, which in turn ex-

tends the service life of the parts by reducing friction. The process now takes just 30 minutes, and the time it takes for our employees to load the machine is minimal. We even obtain a better surface result than we did with manual finishing. The OTEC Stream Finishing Process gives us a huge advantage in terms of both quality and time."

### No more working at a snail's pace

OTEC's Stream Finishing (SF) Process, which was developed in-house, is ideal for particularly complex geometries.

Components are clamped in a holder and lowered into a rotating container filled with an abrasive or polishing medium. The workpiece is also rotated to produce an even finish. This makes it feasible to achieve highly refined surfaces with roughness depths of up to Ra 0.01 µm even on the most complex geometries – all without manual strain or risk of injury.

The enormous machining forces used in Stream Finishing can remove material faster and more precisely than any other type of surface processing. It is also easy to store and retrieve custom process programs, ensuring repeatability.

OTEC's latest innovation, the SF-HP, can even process large and heavy workpieces with a diameter and length of up to 650 mm and a maximum weight of up to 200 kg.

*For more information, visit:*
**www.otec.de/en/foodindustry**

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## PUT OTEC'S EXPERTISE TO GOOD USE IN YOUR BUSINESS

### Mechanical grinding and rounding

- Precision rounding down to the last micron, customised to your requirements
- Homogenous, stable edges
- Extends workpiece service life without compromising quality
- No product contamination from broken edge fragments

### Surface polishing and smoothing for a mirror finish

- Fewer sticky material deposits on components
- Improves the workpiece's tribological properties
- Reduces friction and wear

# MASS FINISHING FOR PRECISION TOOLS: ROUNDED EDGES, RELIABLE PROCESSES, LESS WEAR!

**Southern Germany-based manufacturer Wunschmann is boosting the performance of its precision cutters with a new Drag Finishing Machine from OTEC.**

"Actually, it goes completely against common sense," laughs Stephan Wunschmann, "first we grind the cutting edges of our milling tools until they're as defined as possible and then we round them off again in the Drag Finishing Machine."

It may sound like nonsense but there's method in the madness: In Drag Finishing (or mass finishing), parts – in Wunschmann's case milling tools for metal cutting – are pulled through a bulk container. The material abrasion is clearly specified beforehand: deburring/rounding or smoothing/polishing. This optimises the tool's surface and improves its functional properties. The process on the new OTEC DF-3 Drag Finishing Machine takes between 30 and 60 minutes. Wunschmann GmbH has now been using the machine for several months at its Hailfingen site and is impressed with the results.

"A lot of people are sceptical about mass finishing at first, but it's definitely won me over. Obviously it's not suitable for every tool. You have to use it for specific purposes and always with accurately defined edge-rounding values. So you need to be prepared to tinker a bit to obtain the optimum rounding value for each cutter," says Wunschmann, a toolmaking specialist and veteran, who invested almost 80,000 in the Drag Finishing Machine.

## Bite and wear resistance

For example, preparing the edges in this way has extended the service life of the Wunschmann HPC-Vplus 187 high-performance cutter by around 30 percent when milling chromium-nickel steel (1.4301).

"The tool still bites despite rounding, and on top of that we've seen an improvement in wear resistance and process reliability," says Wunschmann. "Before treating them, the cutting edges on our 187 were more ragged, which tended to cause erratic wear. Rounded edges wear more slowly and evenly." Moreover, Wunschmann's toolmaking experts have found that the benefits of mass finishing go beyond edge rounding: it also helps to polish chip flutes on milling tools, which in turn improves cutting performance and chip removal. All in all, Stephan Wunschmann considers the machine a good investment and believes that Drag Finishing will provide


Image source: KRAAS & LACHMANN Werbeagentur GmbH, Tübingen

Drag Finishing Machine at Wunschmann, OTEC customer

Polished chip flutes for optimum chip removal and high process reliability (HPC trochoidal cutter 175 ER)


Machine in the DF-Series

his discerning customers with even higher-performance cutting tools.

And not just new ones: edge rounding or chip flute polishing can also boost the performance of resharpened tools.

### About Wunschmann GmbH

Wunschmann precision cutting tools have enjoyed a good reputation in metalworking for 40 years. Our customers rely on the quality and performance of our standard and custom tools made of solid carbide (SC) and high-speed steel (HSS). Long-standing users of our products value our technical expertise, experience and personal service.

*More information:*
**www.wunschmann.de**

Information

*More on the DF-Series:*
**www.otec.de/en/df-series**

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