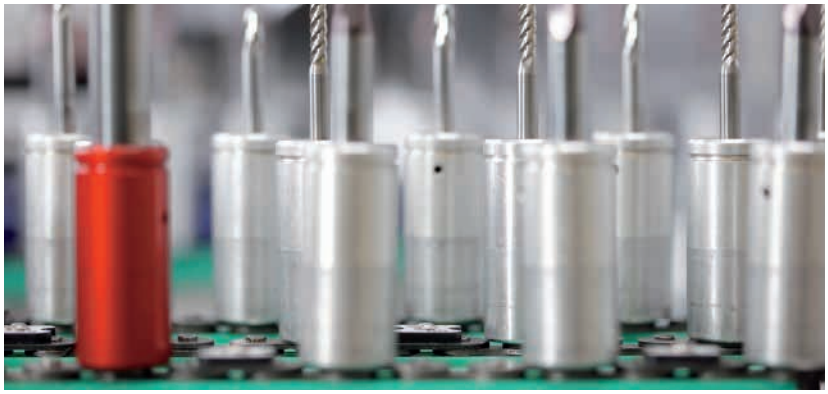
# NEWS

EDITION #
01
2018

## REVIEW: EMO 2017
OTEC with KA-RaceIng

## POLISHING CARBIDE TOOLS
Improving the quality of carbide cutters and drill bits

# EDITORIAL



## *Dear Reader,*

2017 was a very exciting year, and also the most successful in our company's history. This year we achieved a strong increase in turnover. The introduction of lean production throughout the company is bearing fruit.

We were therefore able to significantly increase productivity in the departments and employee satisfaction. Sales of pulse finishing systems also increased very well. The fastest mass finishing machine in the world, for which we were granted a worldwide patent last year, is an enormous advantage for many applications. It is a very cost-effective process with extremely short machining times of often only a few seconds, which achieves a very good surface finish, especially when processing difficult contours.

In areas such as the automotive and tooling industries, we were already able to complete some very successful projects in 2017, with fully and semi-automated systems such as our new SF 1 ILS. The demand for automated systems is constantly growing and will certainly play an even greater role in the future. Digitisation and Industry 4.0 are the driving forces behind this. In this area we can already offer some interesting solutions today and a full store of ideas for the next few years.

We therefore feel well prepared for the demands of the future and are constantly working on innovations that can add value for our customers.

We hope you enjoy reading this newsletter.

Yours sincerely,

Soran Jota

Soran Jota
Managing Director

OTEC NEWS
EDITION #01/2018



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# REVIEW: OTEC WITH KA-RACEING AT THE EMO 2017

**The EMO metalworking fair took place in Hanover, Germany, on 18-23 September 2017. With around 130,000 trade visitors, it is the world's leading trade fair for the sector. Half of the visitors came from abroad, 70 % of them from Europe. However, the number of Asian trade visitors also rose significantly compared to previous years. The EMO 2017 was more international and showed more innovations.**

SF 1 ILS

SF 3 RLS

This was also noticeable at the OTEC booth. Many trade visitors from abroad were interested in the surface technology of OTEC, the leader in this field. OTEC dealers from different countries were represented at the booth and were therefore able to present the innovations to international trade visitors in their national languages.

Automatic workpiece changing in the SF1 1LS

OTEC demonstrated a high degree of innovation with its latest machine concepts for the tooling industry. At the EMO, the **SF 1 ILS** (Integrated Loading System) and **SF 3 RLS** (Robot Loading System) stream finishing systems were presented to a large specialist audience for the first time. The two machines focus on automatic loading, which replaces manual loading for both very small and large batch sizes. This saves time and work capacity by eliminating the need for each workpiece to be clamped individually by an operator. Depending on the machine type, the workpieces are loaded and changed automatically by a robot or chain loader with a loading unit. Therefore, workpieces such as drill bits, cutters, engine shafts or bone screws can be deburred, rounded and polished quickly and efficiently. Reproducibility is also important. OTEC machines enable a defined process with consistent machining results.

The individual process control and simple handling of the SF 1 ILS, in particular, impressed trade visitors at the OTEC booth. The compact machine design also surprised visitors. Despite its space-saving design, the SF 1 ILS is extremely powerful. The process times range from 30 to 300 seconds, depending on the type of machining and the workpiece geometry. With a processing time of 60 seconds per piece, the machine processes approx. 40 parts per hour. The SF 1 ILS can machine different workpieces with various diameters in a single batch. For this purpose, the workpiece and collet adapter are changed automatically as required. The integrated chain loader has 64 places with loading sleeves that are adapted to different workpiece diameters. When the finishing process is complete, the tools are returned to their loading sleeves. Consequently, the SF 1 ILS enables a very flexible process sequence and is therefore ideally suited for small batch sizes and frequently changing series.

Non-stop quality due to its integrated chain loader

In contrast, the SF 3 RLS is especially suitable for large series and can work alone on a shift without manual intervention. The intelligent control system ensures that while machining is in progress at two stations, a tool can be changed in parallel at the third station. In this way, there is optimum use of the system's capacity.

The wide range of OTEC machines not only covers the production of large quantities, but also offers suitable solutions for small to medium-sized production lines.

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Trade visitors were therefore also able to experience the DF-3 HD drag finishing machine in its new design and with an automatic lifting door live in action at the EMO booth. This allows fast and convenient manual changing of workpieces. For producers of small workpieces, OTEC presented the centrifugal CF polishing machine. This is ideal for large quantities that can be machined in a bulk goods process. Typical workpieces are jewellery, and fine blanking, turning, milling and punching parts, for example. There was also great interest in new service solutions to reduce machine downtime. OTEC offers remote maintenance access and internal remote control solutions for all machine series, which allow easy access.


Successful partnership - the OTEC fair team and KA-RaceIng

In addition to mass finishing machines, a race car built by the KA-RaceIng university team attracted the attention of many trade visitors. The university team explained to trade visitors how surface treatment works in racing and what positive results have been achieved so far. Every year, the team designs and makes one race car with an internal combustion engine and one with electric drive. With these vehicles, they compete with students from other universities in Formula Student. This is an international design competition in which universities from all over the world compete against each other. OTEC supports KA-RaceIng by sponsoring and providing machines for surface treatment. This is because OTEC's mass finishing process makes it possible to improve component properties in a holistic way. For KA-RaceIng, this post-processing is crucial for the success of the racing cars. This is why many components, such as camshafts, gear shifters or planetary wheels, are machined using stream finishing. Since parts such as gears are subjected to enormous loads and forces, the surfaces of the components are particularly important. Processing with OTEC machines can increase efficiency in the first gear stage by 0.1 % to 99.5 %. In the second stage, efficiency can be improved from 98.9 % to 99.1 %.

Last year, the students from Karlsruhe were crowned the best Formula Student Electric Team in the world, thanks in part to the use of OTEC surface processing machinery.

# OTEC PARTNERSHIPS IN THAILAND – W.P.P. ENGINEERING CO., LTD.

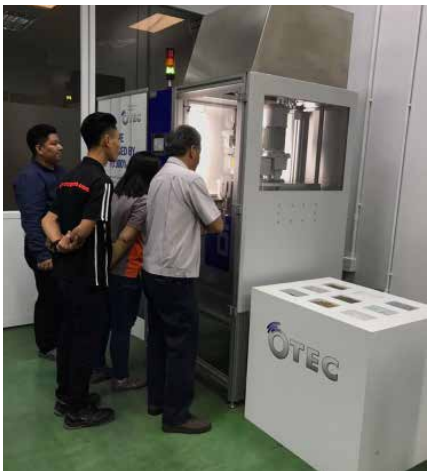
**Founded in 2008, W.P.P. Engineering Co., Ltd. is a technology service company based in Thailand and represents OTEC Präzisionsfinish GmbH on the Thai and Vietnamese market. W.P.P. specialises in machines for the manufacture of cutting tools and high-precision CNC grinding machines. This partnership with OTEC enables customers to achieve a significantly longer service life for their tools.**


Mr. Wittaya Ponpet (centre) and some of his sales team


OTEC's machines for demonstration purposes and training at W.P:P.

W.P.P. offers its customers optimum solutions in the field of cutting tool production. Comprehensive care includes help with selecting the right machines as well as service and support for them. This also includes the development of a production process including technical staff training. The company serves customers from a wide variety of sectors, such as the automotive and electronics sectors, and the aerospace, medical technology and tooling industries.

For demonstration purposes, W.P.P. Engineering has installed OTEC's DF-3 drag finishing machine with different abrasives and various holders in its showroom. This is used not only for training courses but also for customer sample processing. This way, workpieces can be machined directly on site to demonstrate the improved quality. ■




OTEC's DF-3 machine arouses the interest of visitors

# OTEC PARTNERSHIPS IN THAILAND – PROTECH TRANSFER CO., LTD.

**After completing his apprenticeship in Germany, Ralf Oberg went to Thailand in 1986 and worked there for the first five years as a voluntary helper with an NGO (non-governmental organisation) on a slum children's project. In 1991 he finally opened his first nursery school in Northern Thailand. In order to support this project financially, he founded ProTech Transfer Co. in Bangkok that same year.**

ProTech offers its customers in the jewellery industry highly professional technical advice, sales and after-sales service. As a distributor of machines "Made in Germany" for Thai jewellery production, ProTech has made a name for itself and stands for excellent customer service and support, as well as high quality standards in technical expertise and service.

ProTech is headquartered in Bangkok, Thailand. Further subsidiaries and joint ventures are located in Chiang Mai, Thailand, Rangoon, Myanmar and Phnom Penh in Cambodia.

The steadily growing company now has over 50 employees in Thailand and 19 additional employees in Myanmar, providing a comprehensive network for sales, technical service and support for local jewellery manufacturers.

Enquiries can be dealt with quickly thanks to the company's extensive technical expertise. Highly qualified employees, whose technical knowledge is continuously being expanded and maintained at the highest level, ensure on-site technical support. The well-equipped in-house spare parts warehouse also guarantees the shortest possible repair times and minimum downtimes for customers. ProTech also maintains close contact with its suppliers for immediate updates on technical innovations and to keep jewellery manufacturers up to date in this way.

Services include custom service contracts that ensure the machines are in top condition even after the warranty period. This ensures smooth and consistent production.

ProTech also provides technical assistance in the planning of jewellery production systems. Thanks to more than 20 years of expertise, this planning process has become routine. Before a customer orders a new machine, ProTech inspects the customer's existing premises. This guarantees the best and most cost-effective installation of the system. Once all aspects have been clarified, ProTech offers the customer a turnkey solution. This also includes transport arrangements and customs clearance.

As soon as the machines are installed at the customer's site, a ProTech application engineer trains the future operators for these machines. During the

ProTech employees' high level of technical expertise ensures excellent customer service.

warranty period, preventive maintenance of the machines is carried out by a technician every month.

What began with support for a children's aid project in Northern Thailand has developed into a well-established and ever-growing business throughout Southeast Asia and, like a chain reaction, more and more Raintree Foundation projects have been implemented.

OTEC also regularly donates to Thai Care e. V. and the Raintree Foundation, which are concerned with the upbringing, education and healthcare of children in need in Thailand. In addition to arranging sponsorships and volunteers who work directly on local projects, the focus is on financial support for the children. The organisation is therefore still dependent on donations to meet the needs of over 300 children in eight different institutions.

ProTech would also like to thank the many other suppliers for their support for the social projects run by this children's charity.

For more information, please visit www.protech-transfer.com and www.raintree-foundation.org.

# THE PERFECT START TO YOUR CAREER

## Apprenticeships at OTEC

Whether in the technical, commercial or IT sector, OTEC offers many opportunities for apprentices. Working on machines, analysing samples in the chemistry laboratory or developing strategies at the desk – personal interests, knowledge and skills take centre stage. OTEC also knows that qualified and motivated specialists are indispensable for the company. This is precisely why the mechanical engineering company offers a variety of apprenticeships with exciting areas of responsibility.

*» FROM ANALYTICAL THINKING IN CHEMISTRY TO MACHINING PROCESSES AND ELECTRICAL ENGINEERING - THERE IS A BIT OF EVERYTHING. «*

When the apprenticeships began in September 2017, OTEC was able to welcome four new apprentices to different areas. Over the next two to three years, these young people will be trained as either mechatronics engineers, chemical technicians, management assistants or IT specialists in system integration. To make it as easy as possible for newcomers to enter the world of work, during their first week they can expect a tour of the company and an introduction to the various departments and colleagues. What machines does OTEC actually manufacture? What are typical areas of application? How are customer samples machined? In the first few weeks of their apprenticeship at the Finishing Center, they will learn everything they need to know about OTEC machine technology. There, they will gain an overview of OTEC's products and processes before entering their specific fields of expertise.

Having arrived in their own department, the young professionals will become involved in their department's processes and workflows from the very beginning, enabling them to acquire important specialist knowledge at an early stage.

With OTEC's broad expertise in the development and manufacture of grinding and polishing systems, comprehensive service and perfectly tailored product solutions, OTEC offers an innovative and varied environment for starting a career. The high quality of our apprenticeships guarantees excellent preparation and paves the way to future careers. For OTEC, recruiting these specially trained apprentices and profiting from their knowledge and acquired skills is a good opportunity to gain valuable employees for the company. ■

# POLISHING CARBIDE TOOLS

**OTEC machines allow the quality of carbide tools to be improved considerably. The special procedure enables the chip grooves of carbide cutters and drill bits, for example, to be polished to a high gloss.**

### Impact of surface finish

Generally the chip flow is dependent on surface smoothness. When the chips are able to flow better, there is less tailback on the cutting edge. This significantly reduces the pressure on the cutting edge. As the chips are removed from the chip groove more quickly, the chips are heated less. These positive effects of the smooth surface mean that higher cutting speeds and significantly longer tool life can be achieved. The smooth surface also reduces the risk of fusing with the material being machined. The polish enables higher cutting values and feed rates to be achieved.

### Additional effect

To increase the quality of cutting and forming tools, these are often coated with carbide layers. These are applied either in the PVD or CVD process. These coatings are intended to increase tool life and contribute to higher cutting speeds. The quality of these coatings depends largely on the surface finish, deburring condition and sharpness of the cutting edge. A rough surface with pointed contours increases the notch effect under load, leading to chipping of the hard material coating. Coatings

**Cutter before and after:**
Ra unpolished: 0.31 µm
Ra polished: 0.03 µm

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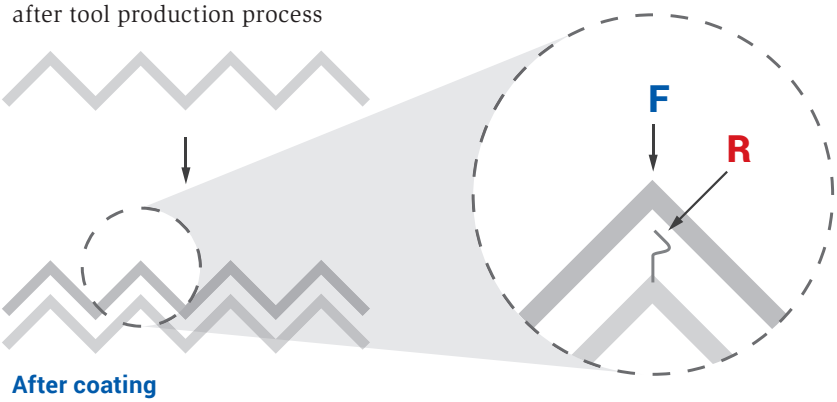
**+ + + EDITION #02 OF OTEC NEWS WILL BE PUBLISHED IN AUGUST 2018 + + +**

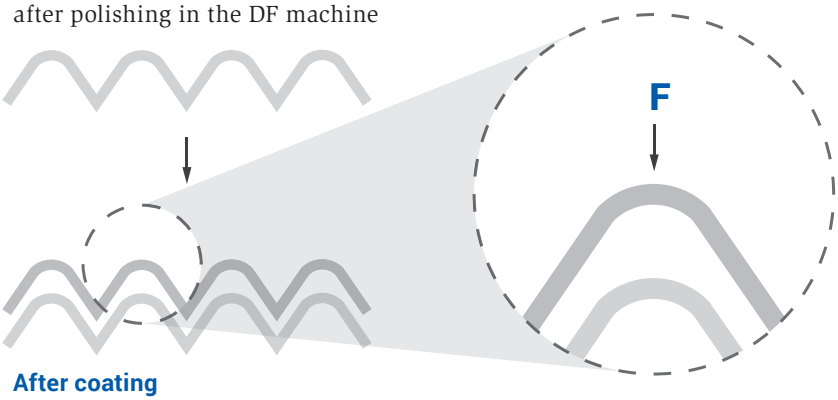
**Before coating**
Typical roughness profile
after tool production process




**After coating**

**F -** Pressure load **R -** Crack formation due to notch effect

**Before coating**
Typical roughness profile
after polishing in the DF machine




**After coating**

**F -** Pressure load No crack formation as there is no notch effect

generally increase the roughness parameters. This is another reason why it is desirable to smooth the surface before coating. OTEC has developed a process in which these roughness peaks are rounded. This significantly improves the surface finish and considerably reduces the notch effect. ■

## Trade fairs in spring 2018:

In spring 2018, we and our dealers will also be represented at various trade fairs in Germany and around the world. You can find an overview of all trade fairs at: **www.otec.de/en.**


# IMPRINT

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