Press Release

SHELL ECO-MARATHON

OTEC PRÄZISIONSFINISH PUTS AIRBUS-TEAM TED 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, AIRBUS Engine development, explains …

"The surface finishing of piston rings and other parts in OTEC machines demonstrably reduces friction in the engine. This becomes visible through reduced fuel consumption while maintaining the same engine performance. After second place with 2,561 km/l consumption in 2019, the goal is now to become the world champion in 2021!"

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:

The CF-Series

THE 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.

The SF-Series

THE 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 itself is also rotated to produce an even finish. This helps achieve high-quality surfaces even on the most complex geometries, achiev-

ing roughness depths of up to Ra 0.01 µm. See for yourself! ...

DEFINE YOUR PROCESS WITH THE HELP OF OTEC PRÄZISIONSFINISH EXPERTS

Our specialists at the OTEC Finishing Center will take on just about any challenge to define the ideal, efficient custom solution as part of our no-obligation sample processing service. Arrange an appointment today to experience your sample processing.

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ABOUT OTEC PRÄZISIONSFINISH GMBH

OTEC GmbH Präzisionsfinish provides precision technology for achieving perfect surfaces. OTEC machines are used for smoothing, polishing, precision edge-rounding and deburring on a variety of workpieces, with the aim of improving surface quality cost effectively.

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 food, tooling, medical devices, jewellery, and automotive and aerospace.

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