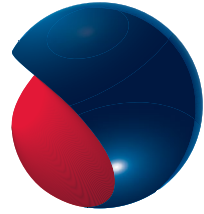


Pomini
TENOVA



SAVES
TOOL
TECH
TEXTURING

PDT™
POMINI DIGITAL TEXTURING™



Ternova is a worldwide partner for sustainable, innovative and reliable solutions in the metals and mining industries.

Building upon decades of experience, Ternova develop solutions that help mining and metals companies reduce costs, save energy, limit environmental impact and improve working conditions for their employees.

Ternova believes in on-the-job passion, and actively seek out professionals who truly love what they do. Their contributions to the business have helped make Ternova the industry-leading company it is today, and their passion is the driver behind the company business approach.

This approach can be summed up in four key pillars: Innovation, Reliability, Sustainability and Safety.

Through the Pomini brand, Tenova is worldwide leader in the design and supply of Roll texturing machines (PDT™- Pomini Digital Texturing™) and Roll Grinders for flat product rolling mills, as well as of special machines for grinding of heavy components. The product range of Pomini Tenova embraces CNC laser digital texturing machines for work rolls, heavy, medium and light duty, fully automatic CNC roll grinders, fully automatic CNC roll loaders, chocking and de-chocking machines for all roll types, roll lathes, able to speed up grinding, handling and maintenance operations on rolls, and to guarantee the level of precision required by the most sophisticated rolling mills.

Pomini Tenova also supplies other equipment ancillaries such as washing machines, tilters for chocks, roll cooling systems, storage racks and other devices used in daily roll shop operations. In addition, it boasts extensive expertise in reconditioning, upgrading and fully automatic revamping of used roll grinders of any brands.

The constant pursuit of innovation in automation and machine integration for the rolling mill process combined with the precision, reliability and safety features that have always distinguished Pomini Tenova, provide our Customers with products that represent the highest level in texturing roll grinding worldwide.



Pomini Tenova range of products include:

Fiber Laser CNC Texturing machines known under the brand PDT™ (Pomini Digital Texturing™) a disruptive referenced technology, multi-patented by Pomini, in the field of texturing of work rolls for cold rolling mill applications, allowing control of surface characteristics unobtainable with previous technologies, by significantly reducing both Customer's CAPEX and OPEX; environmentally friendly to the point of being recognized as the industry benchmark by the international EPD® system, according to ISO 14025.

Heavy, Medium and Light Duty Fully Automatic CNC Roll Grinders, for superb performance in terms of tolerances and surface finishing, high reliability and internationally patented measuring and control devices. The activity extends to the **modernization** of existing grinding machines, including those of competitors, to make them achieve Pomini Tenova's high performance standards, at the same level of new machines.

Roll Defect Detection and Vibration Analysis, known under the brand Inspektor³™, a complete state of the art system in technology for non-destructive rolls inspection, together with Vibration Analysis features, integrated on roll grinding machines or standalone.

Roll Shop Management System (RSMS), the complete web-based hardware and software solution developed by Pomini Tenova for full control and analysis of roll shop operations. RSMS enables analysis from actual grinding, texturing and maintenance process monitoring to collection and processing of production, consumption and requirement data, with minimum outlay of resources.

Fully Automatic CNC Roll Loaders, with either two or three controlled axes, combining high handling speeds with outstanding positioning accuracy, for faster roll handling and enhanced grinder productivity.

Shear Blade Grinders, CNC-controlled range of machines specifically designed by Pomini to grind with the highest levels of finish and precision knives and blades used in the roll shop, expanding the range of maintenance capabilities.

Chocking and Dechocking Machines for all roll types, to speed up maintenance operations and guarantee the level of precision required by the most sophisticated roll supporting systems.

Other Machines and Ancillaries such as Roll Lathes, Transfer Cars, Washing Machines, Tilters for chocks, Roll Cooling Systems and other devices used in daily roll shop operations.

Roll Storage Racks and Pads, to optimize use of the Roll Shop floor in relation to crane and grinder availability, leveraging Pomini Tenova know-how in handling all roll types.

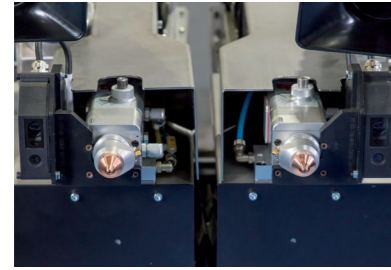
Machine Condition Monitoring and Full Digital Package including spare parts electronic catalogue, developed by Tenova Digital Team, fully dedicated to Industry 4.0 technologies in close cooperation with Pomini automation, implementing a secure cloud platform, deploying artificial intelligence (AI) and machine learning applications, augmented reality for remote assistance and commissioning, data exchange in customer plants, with constant focus on Cybersecurity.



PDT™ POMINI DIGITAL TEXTURING™

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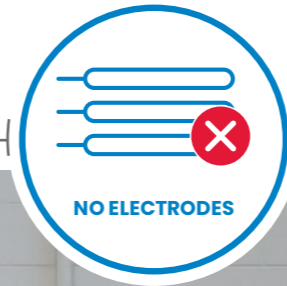
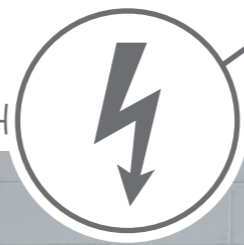
► From 1 up to 4 diode pumped solid state pulse fiber lasers



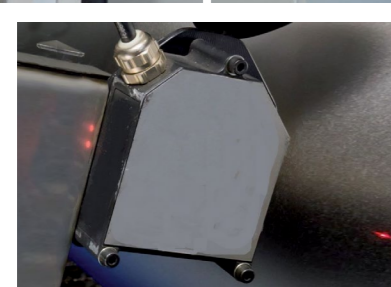
► Maximum accessibility for easy centralized point of maintenance



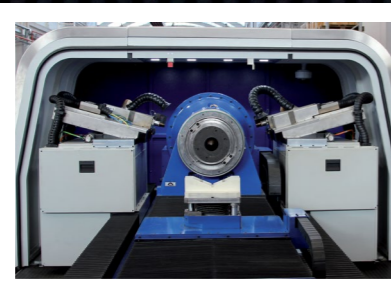
► Low-power electrical cabinets: minimal hardware



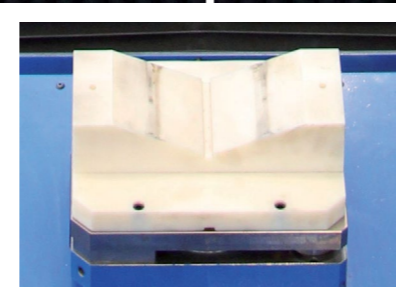
► Automatic measurement system



► Laser heads modular supporting carriages



► From 1 up to 4 diode pumped solid state pulse fiber lasers

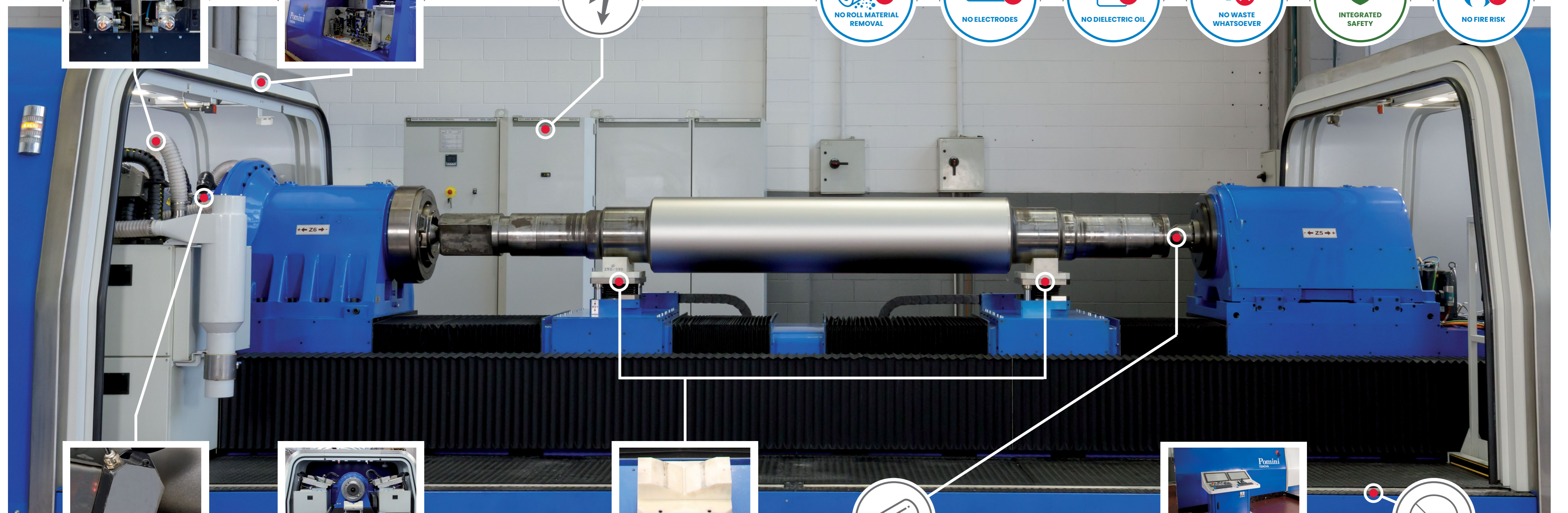


► Roll supported between centres, with automatic runout compensation

► From 1 up to 4 diode pumped solid state pulse fiber lasers



► FOUNDATION FREE




PDT™ POMINI DIGITAL TEXTURING™


Environmental Product Declaration

In accordance with ISO 14025 for:

**[Pomini Digital Texturing™ (PDT™)
Machine]**

from
[Tenova-Pomini]





Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-03100
Publication date:	2021-09-10

PRODUCT CATEGORY RULE ON MACHINE TOOLS FOR FINISHING

The document provides the first Product Category Rules (PCR) for the assessment of the environmental performance of Machine-tools for material working by removal of material and the declaration of this performance by an EPD.

The product category corresponds to UN CPC 44221 Machine-tools for working material through removal of

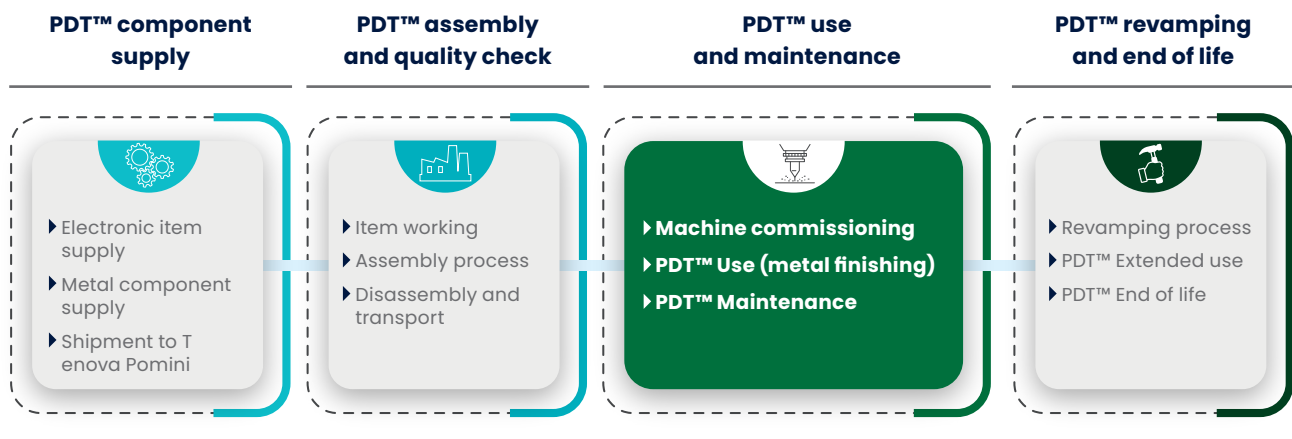
material by laser or similar processes.

The PCR approval required interaction with 30 relevant key stakeholders in the metal working area including associations, NGO's, 4 academias, 11 Industry associations, 15 companies including end user, machine and upstream producers, 6 EPD experts.



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PDT™ ASSESSED LIFECYCLE PHASES

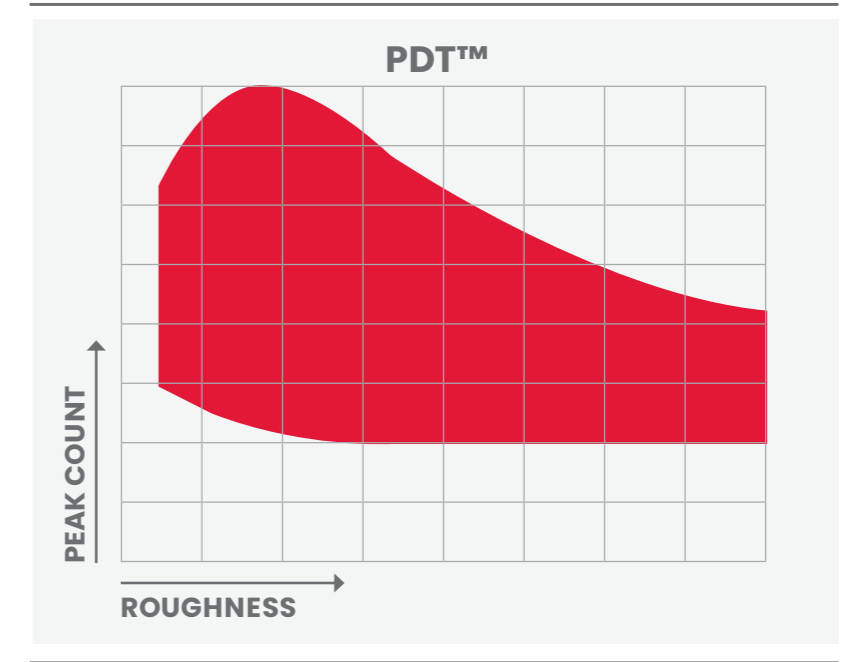
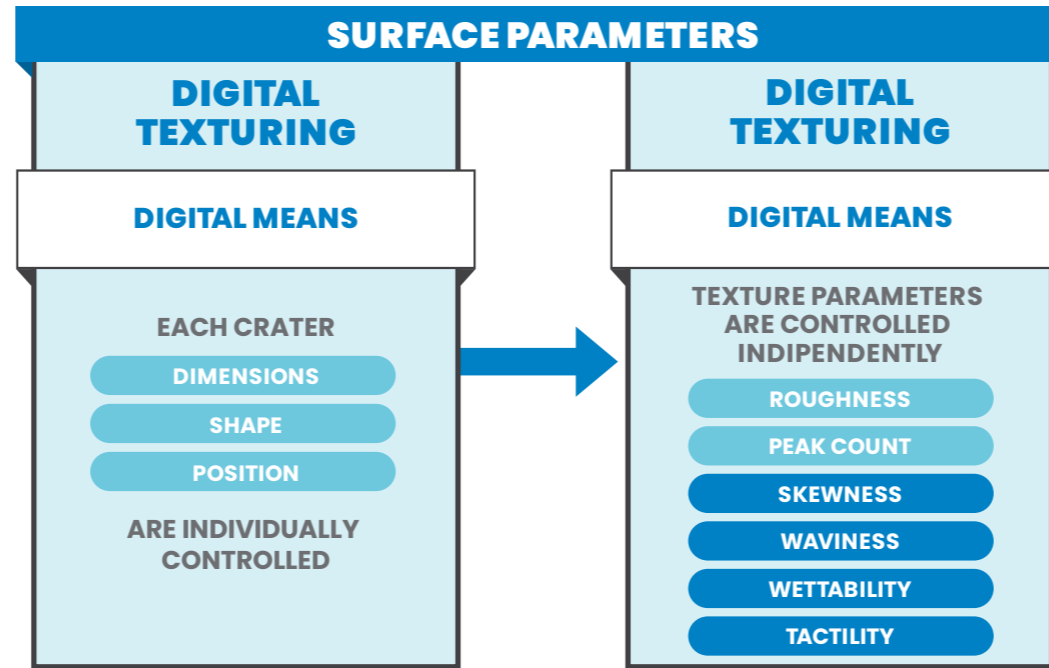
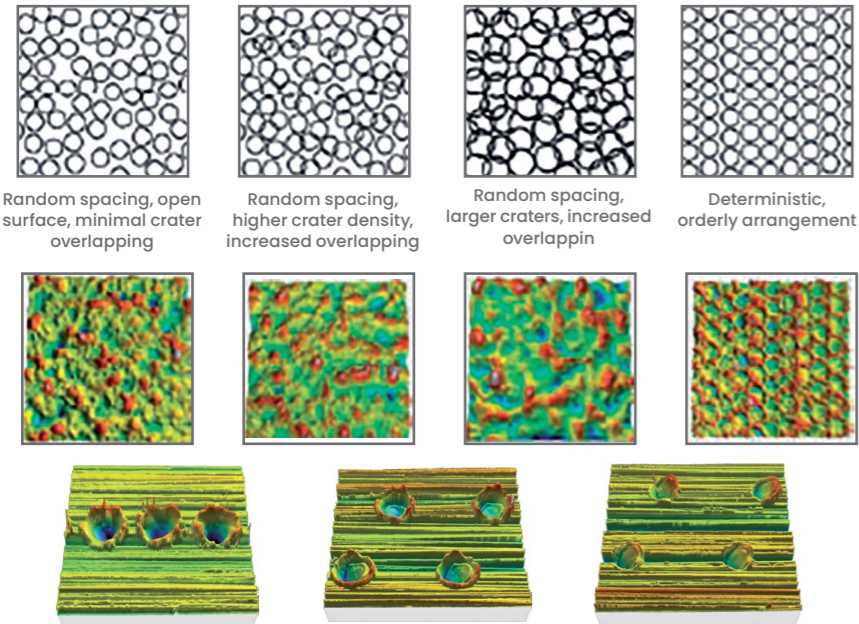


Capex Open 

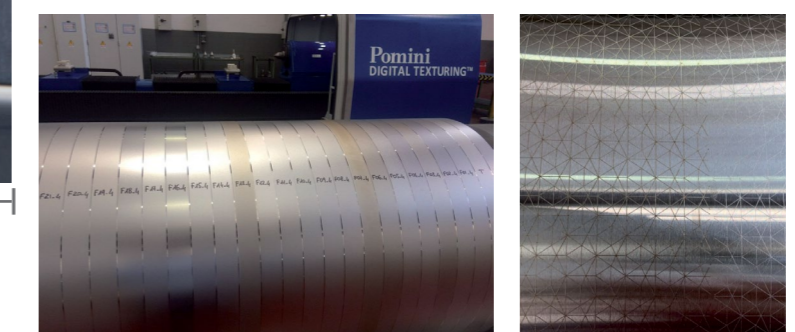
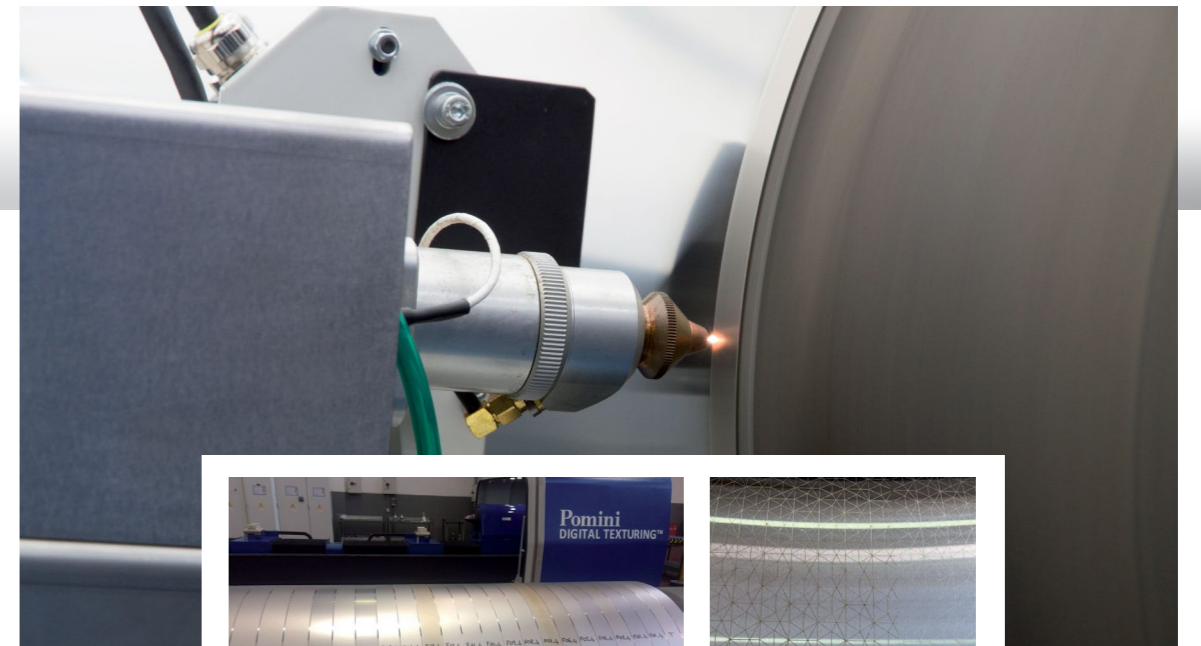
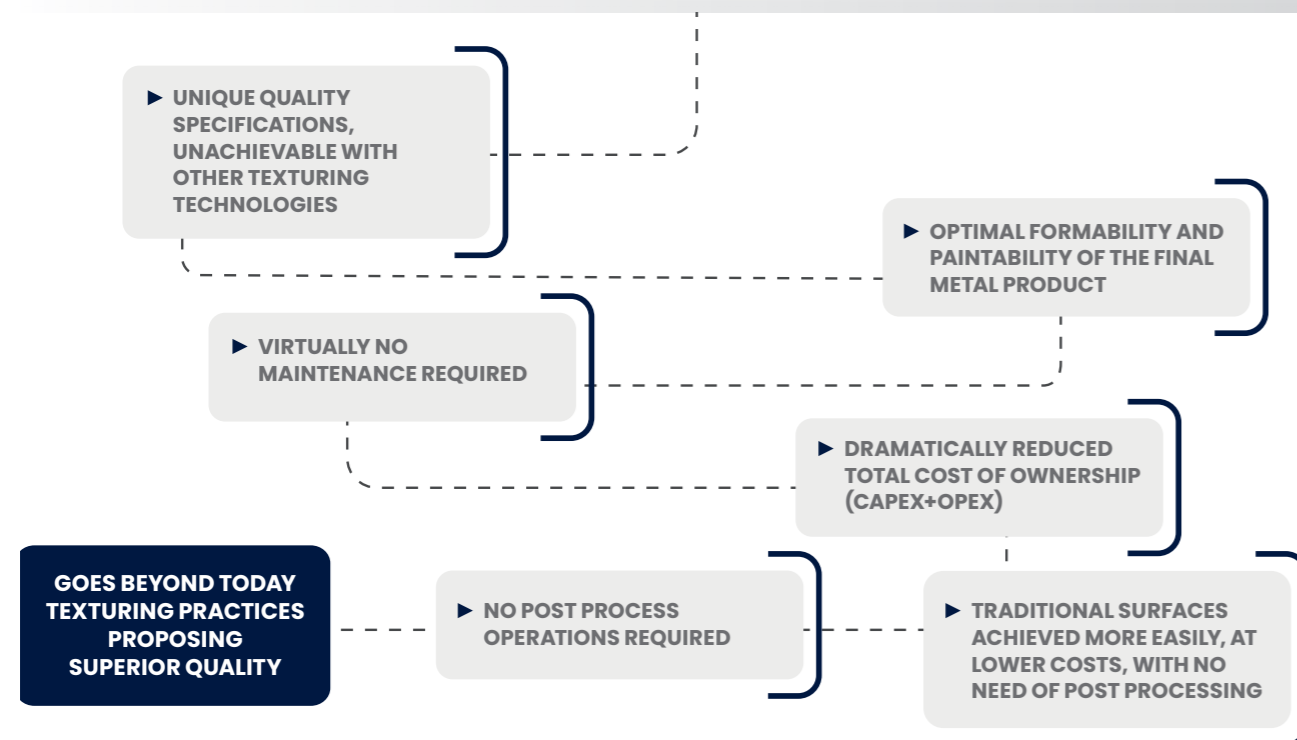
PDT™ POMINI DIGITAL TEXTURING™

PDT™, Pomini Digital Texturing™, is a digital repeatable programmable process based on modern fiber-optics laser heads, allowing unparalleled wider range of surface possibilities in comparison to any other existing texturing technology thanks to engineering of each single crater in terms of size, shape and distribution on the roll surface.

New concept: " " Control of all three dimensions of the craters. Complete control of the **distance** between craters, by positioning (**random** or **deterministic**), defining the desired crater **overlap**.



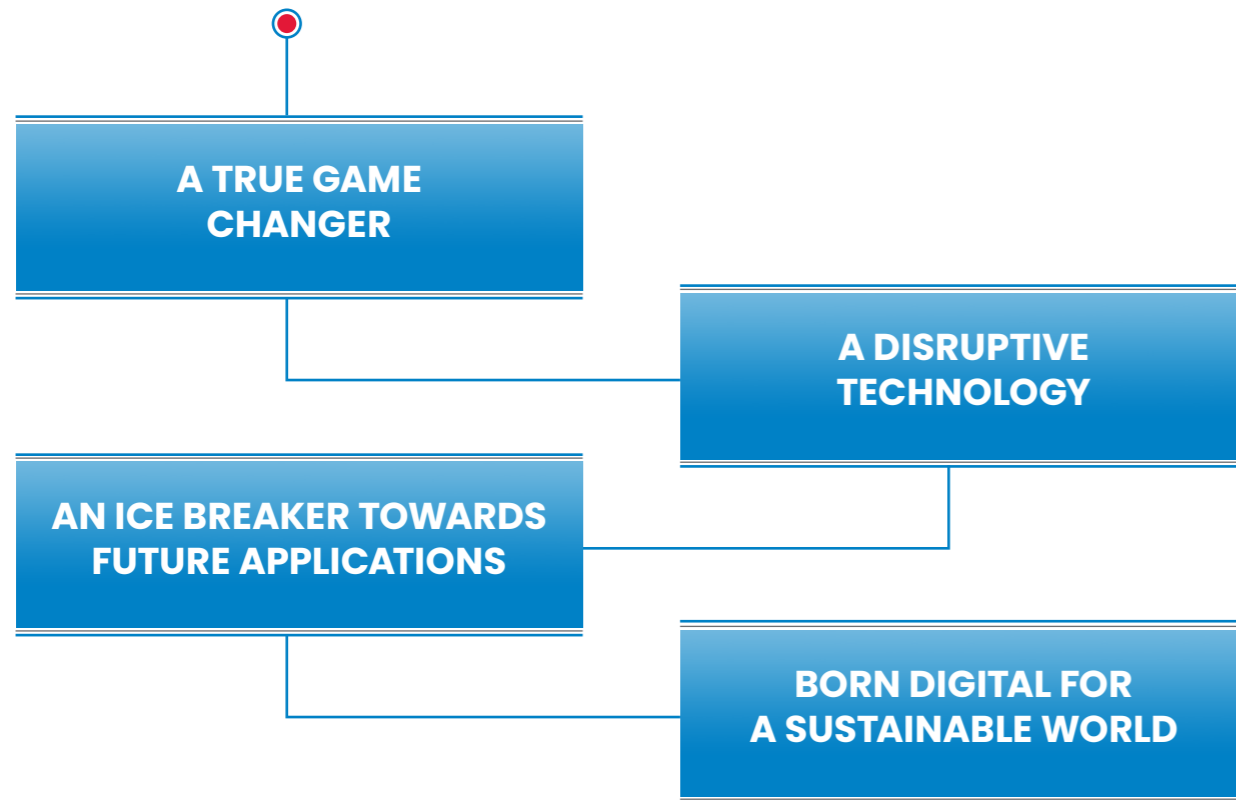
ADVANTAGES FOR END USERS



► Stochastic and combination of stochastic & deterministic ► Deterministic

Surfaces Research & Development in Pomini

PDT™ IN A NUTSHELL



Sustainable solutions for a green transition of metals

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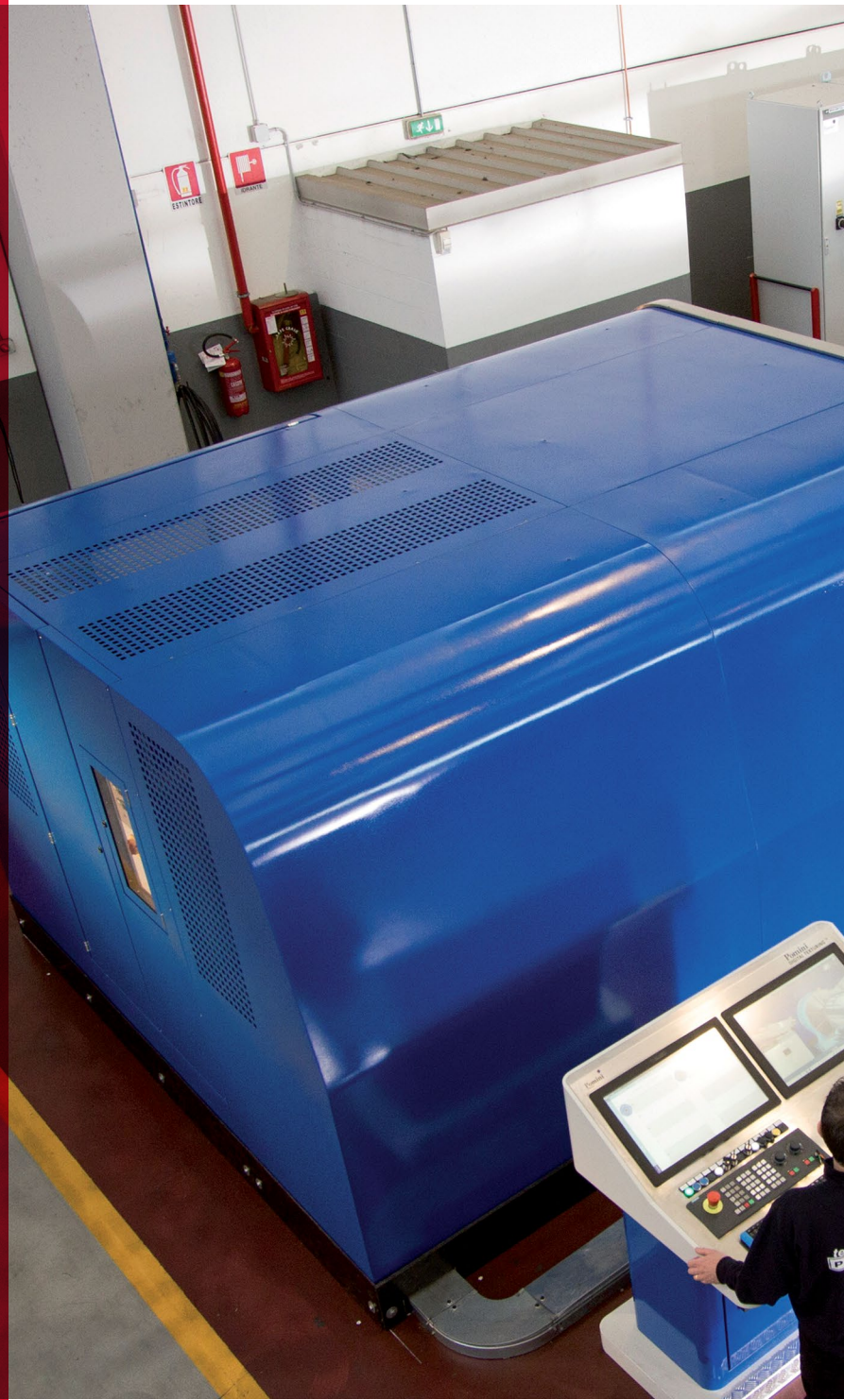
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