DIGITAL LITHIC DESIGN – THE WORKS ON SHOW

Curator & designer Raffaello Galiotto

1. **Acus**

This is a kind of armour sprinkled with pointed, slanted elements. Processing this item was made possible thanks to diamond disc cuts on a five-axis milling machine following precise 3D machining paths. The particular delicacy of the tips is preserved by the precision of the device that cuts and polishes the surfaces simultaneously to avoid the need for subsequent finishing operations.

produced by Gmm

2. **Bicephalus**

The pretext of animal morphology becomes a chance to investigate and play with the numerical rules behind natural forms, interpreted and translated here with numerical control milling passes with a spherical tool. The automatic "graphics" of the machine, which is usually eliminated by manual polishing, now becomes the characteristic aspect of the work.

produced by Intermac

3. **Cactus**

Marble polishing following the three-dimensional milling-cutting operations is usually performed by hand. This work experiments the possibility of polishing the surface directly on the machine by using dedicated tools and processing paths without any manual input. The complex and sinuous shape is closely related to the shape of the processing disc.

produced by Omag

4. **Glomus**

The challenge faced by this project is the three-dimensional milling of a complex surface with a continuous tool pass also managed from an aesthetic point of view. As in a ball of wool, comprising a single, continuous

thread, in this work the tool rests on the rough surface and takes a long, winding uninterrupted path to process the surface through to finishing without ever losing contact.
produced by Helios

5. **Leucon**

The singular character of this double spaced permeable wall lies in the difficulties of implementing the "undercut" area, i.e. the portions not normally accessible to processing tools. After developing the contoured double-sided surface, undercutting operations were performed using a special tool with a broader head which entered every single opening in a diagonal direction with a rotating movement that made it possible to process apparently inaccessible gaps.
produced by Odone Angelo – Gruppo Tosco Marmi

6. **Lisca**

The conventional diamond cutting disc is re-interpreted with curved cutting paths distributed over an undulating surface. The disc makes two cuts over each path with opposite slants to produce V-shaped grooves that intersect with the rear surface to create a grooved network allowing light to pass through it with a strong three-dimensional character.
produced by Lithos Design

7. **Litocorno**

In addition to its formal virtuosity, the work is a compelling challenge in terms of saving material and energy. Thanks to careful design and use of 5-axis Waterjet cutting technology, it was possible - starting from a workpiece of only 60 cm in height - to develop a grooved, sinuous, twisted and hollow cone impressively 6 m high comprising 100 superimposed monolithic rings.
produced by Antolini

8. **Micete**

This project can only be achieved with the specific technology used: a diamond wire mounted like a bow on an articulated robotic arm. The device's extraordinary rotation and tilting features made it possible to

achieve the undulating, deformed-spiral cutting of the item. The surface finish is achieved directly during the cut without requiring subsequent manual finishing.
produced by T&D Robotics

9. Pavo

The huge stone fan inspired by the bird feathers was created by managing the repetition of elements using 3D software. The special features of the work lies in the achievement of surface texture directly derived from the tool's machining path controlled individually for each single item to become an integral and distinguishing aspect of the project.
produced by Donatoni

10. Pinea

This work project experimented with the possibility of managing cutting with a slack diamond wire. Slackening the wire introduces a series of path variables that cannot be foreseen by software, the combination of digital paths and physical results push the cutting technique towards a new dimension where it is also possible to achieve concave and convex surfaces while minimising waste. The petals obtained by repeated cuts were then arranged using phyllotaxis criteria, i.e. with fixed rotation in relation to the axis of rotation.
produced by Pellegrini - Margraf

11. Quadrilobo

The complex volume in this work is exclusively generated by means of diamond wire cutting repeated four times on a monolithic block. The design and cutting paths were developed using 3D software allowing control and optimisation of paths by anticipating the results and avoiding the testing waste.
produced by Decormarmi

12. Trama

The long, perforated double-trumpet element was exclusively developed by means of diamond wire cutting on a ten-axis device. The binary path of the cutting wire automatically generated the curved, cross-slotted

surface and the perforation arising from internal cuts. The interior was created by inserting the wire into a previously drilled hole.
produced by Breton

13. Vortex

The wrap-around, triangular cross-section coils were developed on the block by cuts using a diamond disc mounted on a five-axis milling machine. Each V-shaped path was obtained by means of dual disc pass at opposite angles over the same path and the smooth and uniform cutting surface did not require any type of subsequent honing. Rhythmic variation of the angles of the spirals and their arrangement on the top part achieves a slight asymmetry with a particularly dynamic impact.
produced by Denver

The **Digital Lithic Design** exhibition is part of *The* Italian Stone Theatre (Hall 1) project implemented by Marmomacc with support of the **Ministry for Economic Development (MISE), Italian Foreign Trade Agency** and **Confindustria Marmomacchine** within the scope of the Special Made in Italy Promotion Plan valorising excellence in the Italian natural stone and related technology field.

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