

Digital Lithic Design

CURATED AND DESIGNED BY RAFFAELLO GALIOTTO

Advanced computerised engineering systems used to process stone offer incredible design possibilities.

By International Correspondent, Joe Simpson.

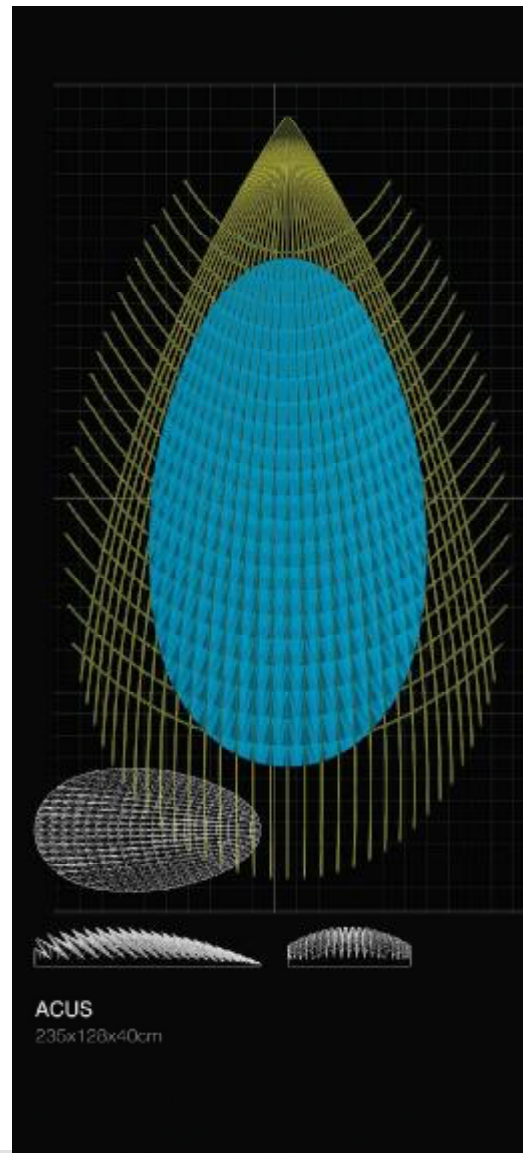
Marble is an ancient material that has been used to write human history. For millennia man has, over and above the planet's geological history inherent in the material itself, overwritten the peculiarities of stone to record culture, style and technique.

Today, the advanced computerised engineering systems used to process stone offer incredible design possibilities. The use of these tools, which may be considered as digital chisels, opens up new creative possibilities and could spark a far-reaching re-appraisal of the creative use of stone.

The Digital Lithic Design exhibition, curated by Raffaello Galiotto at last year's Marmomacc exhibition, sought to highlight – through the creation of a collection of 13 experimental works in marble – the potential of modern technology to transform stone through both conventional and digital design.

Machinery suppliers, software houses, tool producers, marble workers and quarries all took up the challenge to stretch their skills to the limit to highlight the new opportunities that this technology has to offer the industry.

The Digital Lithic Design exhibition formed part of the Italian → 12





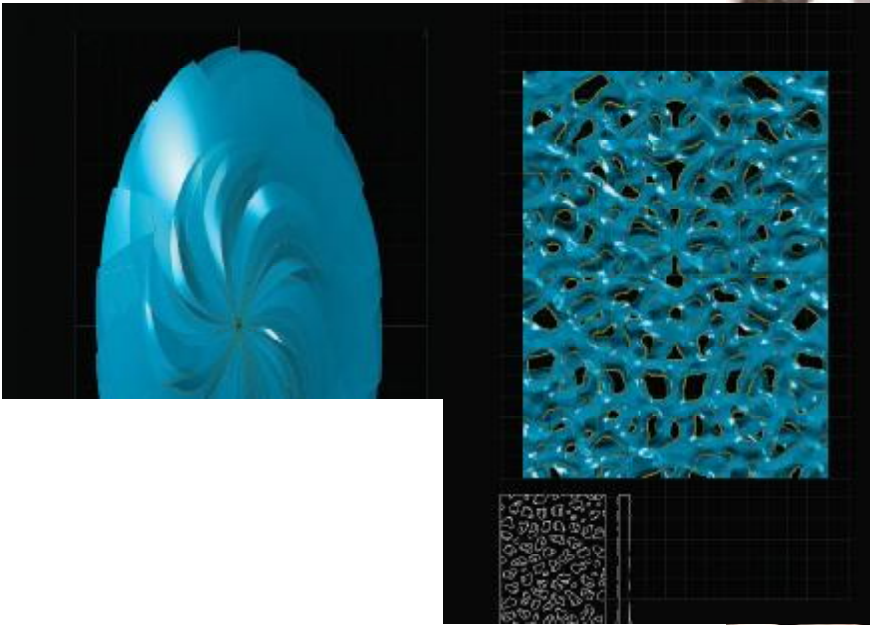
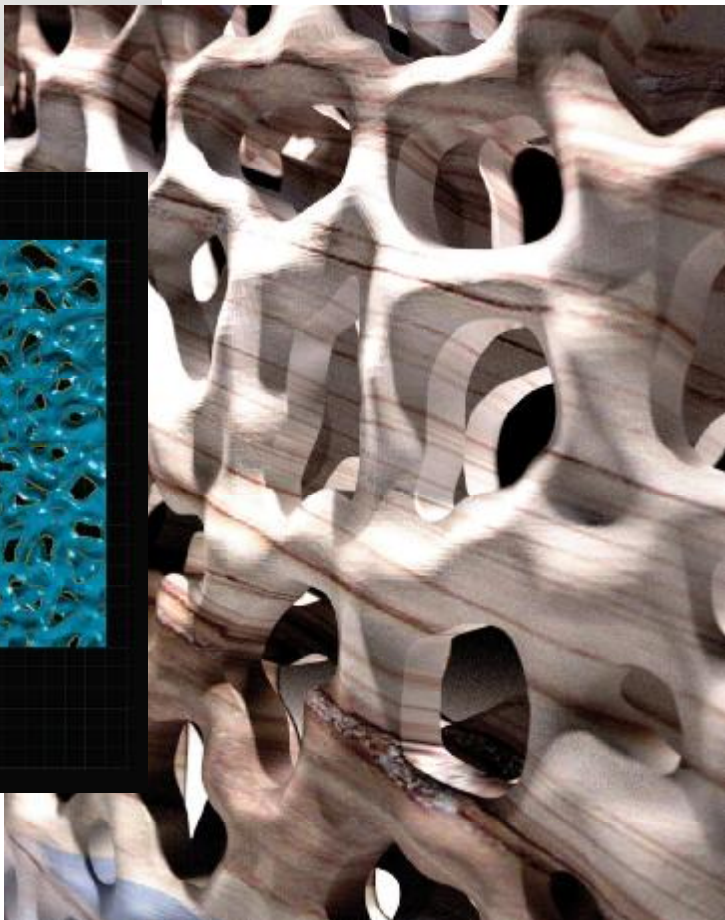
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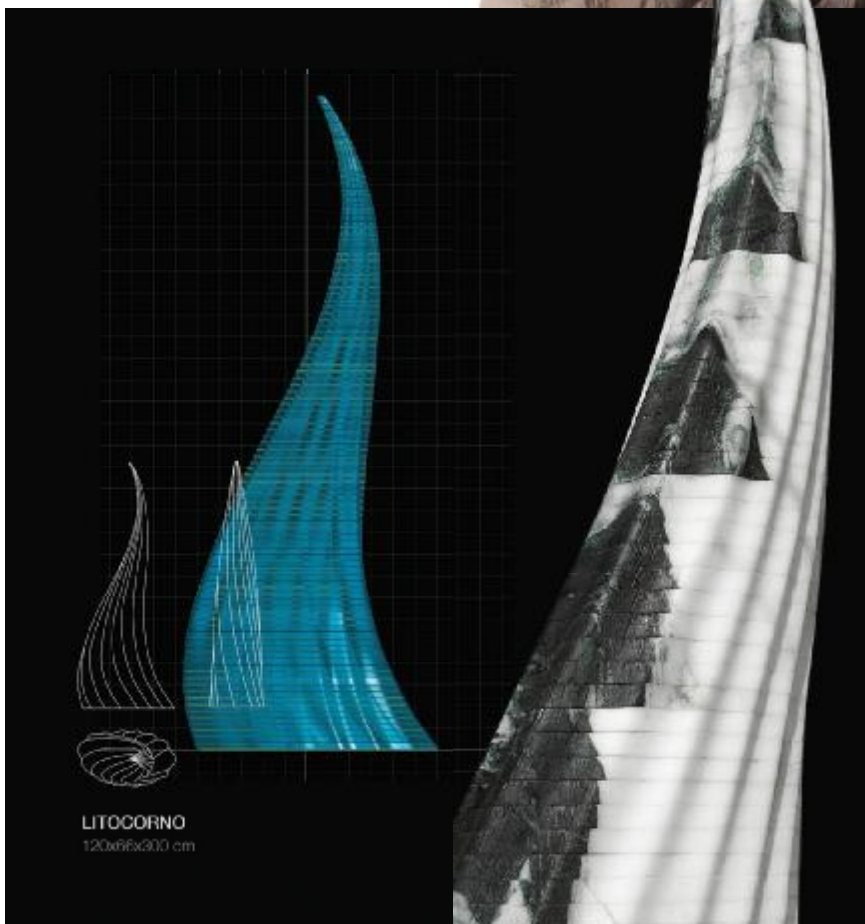
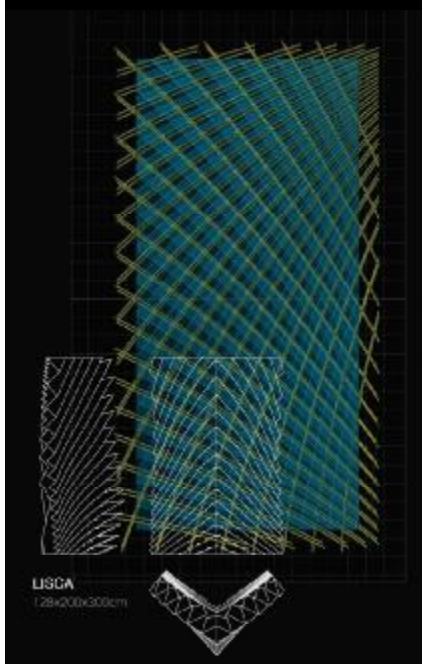
x† < , > ° » % ð » † “ - ° † „ ð < fi • ç † „ < ç fi ð > » % « - † > ° • fi » , ç “ » ¾ » † % fi » ç « ... - † ç single marble block using a five-axis ç • • † „ † ç % ç • † “ • < , ... : ç † - † ... ¾ ç ... ð Û ç % ç “ ð , ç ° » ... ° ç > ç „ » ' ç > - ¾ < ç † “ ... ¾ § fi « † † † „ ç ¾ ç ... » > < ç < - ° - > « ç ç † „ » on the same path twice. The resulting % « < > « fi ” ç % ... ° ... † - < fi » fi « • fi » ç † § “ « fi < , » fi sanding. The changing slope of the spires ç † ... < , » • fi ° » « ç • ç fi ç fi fi ç † „ » † † < ç † ç » the final object particularly dynamic and > • „ , < § ç > § † ç † « fi • ð - fi ... « % ... ¾ § Û - † ç < - † • † ç † ç - Ô ç > ç ð

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The singular character of this double > ° ç % ... ° » fi † » ç ¾ » ' ç • • » » • † < , » difficulties of implementing the « † ... » fi % « ç ç fi » ç ð • ð » < , » ° - fi « - † > † - < † - fi † ç • § ç % » » » » ¾ » « - ° fi - % » » » † „ tools. After developing the contoured ... - « ¾ » ð • ... » » « fi ” ç % ð « † ... » fi % « ç • † „ - ° » fi ç < - † > ' » fi ” ° » fi - fi † » ... « • † „ ç > ° » % ç : < - - ' • < , ç ¾ fi - ç ... » fi , » ç ... ' , % ç » † < » fi ... » » » fi § > • † „ » - ° » † † „ • † ç ... ç „ - † ç : ... fi » « - † ' • < , ç fi - ç ç • † „ † - “ » † » † < < , ç ç † ç ... » < ° - > » ¾ » « - < ° fi - % » » ç ° ç fi » † < § • † ç % » » » ¾ » ç • ç ð - fi ... « % ... ¾ § Ñ ... - † » ß † „ » - ç † ... Û fi « ° - Ì - > % - Ô ç fi † • • † - ç • » » ç † ... fi - ç • ç ð → İ İ



STONE AS ART



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Lisca

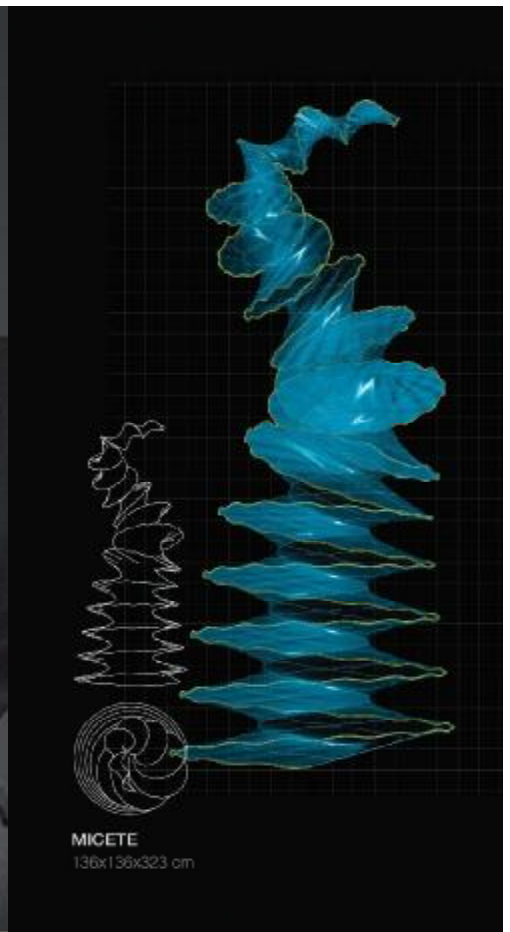
In this, the conventional diamond cutting disc is re-interpreted with curved cutting paths distributed over an undulating surface. The disc makes two cuts over each path with opposite slants to produce V-shaped grooves that intersect with the rear surface to create a grooved network allowing light to pass through it with a strong 3D character.

Produced by Lithos Design in Travertine.

Litocorno

Due to careful design and use of five-axis waterjet cutting technology, it was possible – starting from a workpiece of only 600mm in height – to develop a grooved, sinuous, twisted and hollow cone 6,000mm high comprising 100 superimposed monolithic rings.

Produced by Antolini in Bianco Lasa, Covelano “Macchia Vecchia”.



Micete

This project was achieved using a diamond wire mounted like a bow on an articulated robotic arm. The device's rotation and tilting features made it possible to achieve an undulating, deformed-spiral cut. The surface finish is achieved directly during the cutting without requiring subsequent manual finishing.

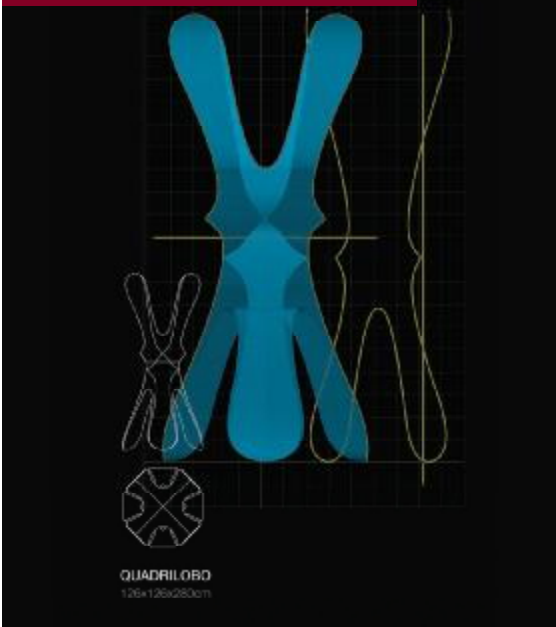
Produced by T&D Robotics in Bardiglio Imperiale.

Corteccia

The long, perforated double-trumpet element of this piece was created by 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 Pellegrini Meccanica and Margraf in Crema Nuova. → 18





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Quadrilobo

This highly complex work was generated by diamond wire cutting repeated four times on a monolithic block. The design and cutting paths were developed using 3D software that controlled and optimised the paths to limit waste.

Produced by Decormarmi in Bianco Carrara. ●



Contributing companies

GMM

www.gmm.it
GMM manufactures innovative and easy-to-use stone machinery featuring an in-house developed SW system.

Gruppo Tosco Marmi

www.gruppotoscomarmi.com
The Tosco Marmi Group specialises in the extraction, processing and trade of marble and granite. The Group owns the world's only quarry of Palissandro Marble, a particularly valuable material offering an infinite variety of veins and colours that has become a prime choice for designers around the world.

Intermac

www.intermac.com
Intermac, part of the Biesse Group, specialises in glass, stone and metal processing technologies. The company offers waterjet cutting systems; CNC processing centres; and a complete range of tools for stone through the Diamut brand. The Bicefalo sculpture was created in collaboration with Marmi Fontanelli.

Omag

www.omagspa.it
Omag creates machine tools for cutting and processing marble, stone, granite and glass. Omag develops and tests each solution in-house, co-ordinating the development of related software and providing constant technical support.

Henraux

www.henraux.it
At Henraux art and industry are inseparable. Artists, such as Henry Moore, Hans Jean Arp, Joan Miró, Antoine Poncet and Isamu Noguchi, all worked for Henraux in the past. Henraux holds incredible marble deposits in Monte Altissimo.

Helios Automazioni

www.heliosautomazioni.com
Helios Automazioni specialises in the design and construction of CNC machining centres and software for processing marble, granite, glass and metals.

Donatoni Macchine

www.donatonimacchine.eu
Donatoni Macchine produces cutting-edge stone processing machinery that has revolutionised the world of marble processing.

DDX

www.ddxgroup.com
DDX provides innovative, reliable and easy-to-use software applications to companies specialising in wood, marble and glass processing. From intuitive design solutions through to workpiece machining, DDX software provides effective support to facilitate each step of the manufacturing process.

Odone Angelo

www.odonemarmi.it
The Odone Angelo company has been operating in the marble, natural stone and granite since 1950, covering all aspects of design and manufacturing in the fields of street furniture and interiors, wall coverings, quarry block processing, floors and furniture accessories and other finished products of various kinds.

Lithos Design

www.lithosdesign.com
Founded in 2007 by brothers Alberto and Claudio Bevilacqua, Lithos Design was one of the first companies to introduce the concept of industrial stone design.

Antolini

www.antolini.com
Antolini has been synonymous with excellence in the field of natural stone for over 50 years, with a reputation for constantly seeking out new ways to process natural stone in order to obtain flawless products in terms of visual appearance and shape.

T&D Robotics

www.tdrobotics.com
T&D Robotics manufactures robots for architectural, design and replacement/restoration projects. T&D's systems have been used in combination with 3D scanners to create the spires of Milan's Duomo, clean the crosses of American war cemeteries, and restore the marble friezes of Guarini's Dome in Turin, which hosts the Holy Shroud.

Pellegrini Meccanica

www.pellegrini.net
Pellegrini Meccanica manufactures equipment for mining blocks of ornamental stone, cutting them into slabs and creating rustic surface treatments, such as flaming, bush-hammering, sanding, grooving, and high pressure water-jet scarification. It is also a leading manufacturer of diamond wire shaping machines. The most advanced version - Robot Wire EVO - features seven interpolated axes allowing for the creation of extremely complex works.

Margraf

www.margraf.it
Established in Chiampo in 1906, Margraf is a leader in the procurement and processing of stones from around the world; extracting marble, cutting blocks into slabs, offering a wide range of selected marble, and then working it using highly mechanised, high technology processes.

Decormarmi

www.decormarmi.com
Decormarmi brings its signature style to large-scale projects around the world, collaborating with international architects on customised work plans that combine excellent craftsmanship and advanced technology to create extremely precise inlays and mosaics.