DONATONI K-SERIES

CNC Milling machines - Machining centres

DONATONI
Stone Tech Creators


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Flexible.
Reliable.
Powerful.

Contents

Main characteristics

- DONATONI K2 Q / K3 Q identifies a family of **numerical control milling machines / machining centres** featuring 5 and/or 6 interpolated axes and automatic tool changeover. They are available in two versions: with 600 mm or 800 mm Z axis stroke.

- 2 machines in 1: DONATONI K2 Q / K3 Q machines combine the typical features of a **bridge milling machine** with the features of a **machining centre**. The Parametrix software and the wooden bench top, with which the K-Series machines are provided, are designed for simple and functional performance of **cutting operations**, in addition to offering the possibility to make **different types of finishes.** When the bench top is removed, **the machine is converted into a 5-axis machining centre** - processes are performed directly on the aluminium table - or into a contour milling machine thanks to a kit of suction cups included in the supply.

- K2 Q and K3 Q are the ideal solution for a **multitude of machining processes**, including shaping, contour milling, polishing (kitchen tops included), low relief sculpting, engraving, drilling, block milling, and cutting on marble, granite, natural and artificial stone. The X and Y axes of these machines slide along linear rails and oil-bath lubricated racks, which helps achieve **extremely precise finishes.** Brushless motors coupled with high precision gear-motors are a guarantee of machine efficiency.

- DONATONI K2 Q and DONATONI K3 Q machines are fitted with an advanced, **inverter-controlled electrospindle** that is compatible with diamond tools featuring an end mill type ISO-40 tool holder, milling wheels, and a horizontal blade. K-Series machines are designed to **combine the features of a bridge milling machine and the features of a machining centre,** which makes them specially suitable for all workshops and businesses wishing to **optimise their production** processes.

- Machines from the K-Series require **oil-bath lubrication** (configuration Q).

Advantages

- Extremely broad range of **machining processes**
- **Easy and quick** to program
- **Extremely precise** machining processes
- Wide choice of **solutions and configurations**
- **Flexible and versatile,** from cutting to finishing: **2 in 1!**

The K-Series machines

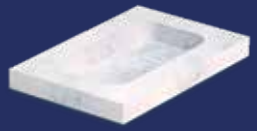
Donatoni K2 Q

Donatoni K3 Q

Machining processes

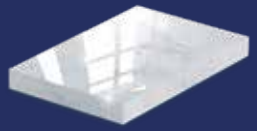
The **DONATONI K-SERIES** machines can be used for a wide range of machining operations, including:

Shaping

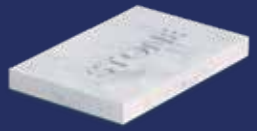


Block milling

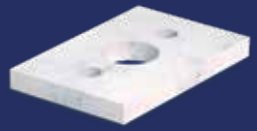
Contour milling



Polishing

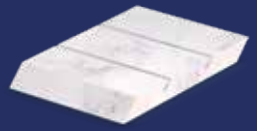


Engraving

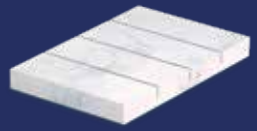


Drilling

Longitudinal cuts

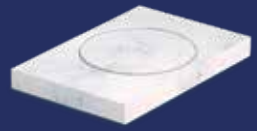


Inclined cuts 0-90°



Transverse cuts

Oblique cuts



Curved cuts

Product types

Machines from the **K-SERIES** are designed to manufacture different types of products.

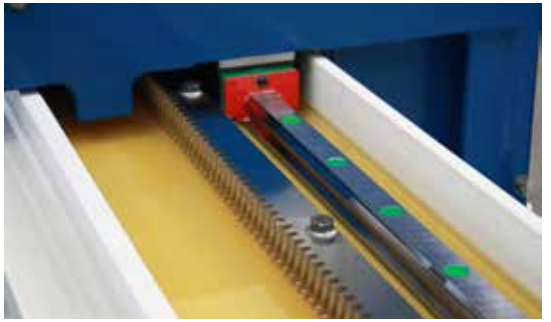
Components

Head unit

The head unit is fastened directly to the sleeve structure: the spindle is caused to move up/down (Z axis) by the **sliding movement of the sleeve along the carriage**. Head rotation and tilting are controlled by brushless motors and high precision gearmotors which are assisted by an encoder and a proximity sensor to achieve accurate movements. The machine operator controls locking/unlocking of the tapered tool holder directly from the control panel.

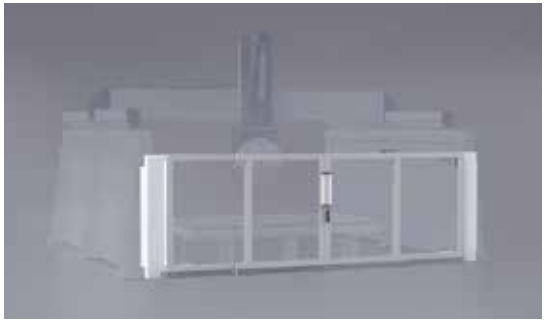
Electrospindle

Extremely high quality electrospindles featuring a **water cooling** system. Boasting a 28 kW / S6 power, control of the rev number, an ISO 40 tool holder, and automatic tool changeover, these electrospindles are part of a blade head that rotates from -5° to +545°, can be tilted 0° to 90°, and is installed on a sturdy steel carriage. The electrospindle is fitted with an encoder for easier **alignment of the head** with the ISO-40 tapered tool holder during tool changeover. It is also provided with a laser for automatic tool detection.



Oil bath lubrication

Machines from the K-Series are designed for oil-bath lubrication, an option which offers remarkable advantages in terms of **efficiency.** The oil bath notably contributes to keeping the sliding capabilities perfect even under **prolonged machine use,** which results into minimum maintenance and maximum precision during the machining steps.



Sliding front guards

The front safety barriers with a locking system offer a higher level of safety control. These barriers are designed to offer **maximum visibility** in the work area and to **minimise the machine footprint at the same time**. The barriers have a front door consisting of 2+2 wings, which makes them easy to open and close. This solution guarantees **high safety standards.**

Control panel

Everything within reach. The control panel is the basic instrument for using and programming the machine. This is why it must be as **simple and intuitive** as possible. It is a control panel with an innovative design and a large 21" touch screen. The operator uses it to programme the **machining processes in automatic mode** or to manage them in manual mode. Thanks to its ergonomic structure, machine operation is easy and functional.

Tool holder

Made of a steel frame, the tool holder features the mounts for the ISO-40 tapered tool holders and is provided with a **stainless steel** door that is driven by a pneumatic lifting system and is specifically designed to protect the tools against water during the machining processes. The tool holder is positioned at the back of the bench, inside the machine work area, for **easy and convenient access**. The tool holder has 20 tool locations and 1 blade location.

Work bench

Work bench with a large-size aluminium table - 3500 x 2000 mm -, which is the ideal solution for the **mechanical mounting** of suction cups. The fixed bench in K-Series machines is specifically designed for utmost stability during the machining process.

Wooden bench top

The bench top is made of wood and is a necessary option for operations such as **cutting and shaping** of materials like marble, granite, natural and artificial stone. Its strong frame offers the operator a stable and functional workstation, which is also ideal to achieve extremely high quality from the machining process.

Tool presetting system

System designed for automatic detection of tool diameter and length. This device **accurately senses the tool dimensions** and transfers them to the machine NC system in order for the software to update the position of the axes, thus offering remarkable benefits in terms of machining process quality and reliability.

Slab thickness probe

The slab thickness probe is a system designed to automatically detect the **thickness of the slabs**, which is of key importance for all cutting and engraving operations. This instrument helps optimise machining processes on the materials, offering quality and higher precision results, and makes the production process easier.

Handheld terminal

With its renewed design, the handheld terminal features a variety of buttons and a touch screen panel used to perform the different operations, including **manual movement of the machine axes**, **storage of the "zero" parameters, viewing of machine heights**, and performing miscellaneous operations, for instance laser system switch-on and switch-off.

Suction cup kit

System with suction cups designed to hold the workpiece in order to **perform accurate machining processes on the edge**. The suction cups are specifically designed to achieve a strong grip on surfaces such as marble, granite, and ceramic. A vacuum pump is included in the kit. This system is suitable for both fixed and tilting benches and is designed to lift and hold the workpieces during the machining processes, thus offering highly professional results.

Cut marking laser and cross-shaped laser

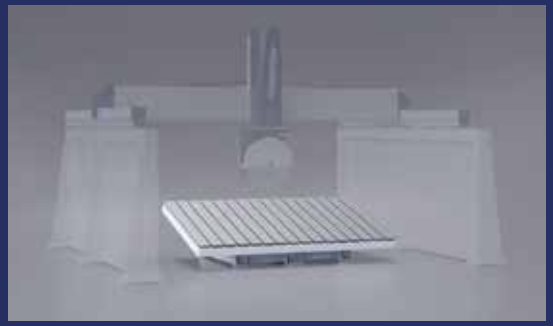
This 30 mW (red) cut marking laser is used to monitor the cutting path. The cross-shaped laser is installed on the spindle unit and **detects the head position**. It is necessary for detecting the slab parameters, defining the origin when machining with Cad/Cam programs, and is an aid for additional software that can generate profile and shape templates.

Camera + Photoslab

New high resolution industrial camera with support designed specifically to **reduce bulk**. Photoslab is designed to automatically detect the surfaces of the slabs in the loading area. The images are acquired thanks to software integration with Parametrix. This offers countless advantages, among which **fast process programming and detection of possible defects in the slab.**

Automatic blade changeover

Automatic blade changeover (400 mm diameter with ISO-40 tapered tool holder) designed for efficient and quick replacement of blades. With its sturdy and reliable design, this blade changeover system offers **maximum versatility and user-friendliness**. The blade holder frame is specifically designed for maximum **stability** during use.



Tilting bench with aluminium table

An aluminium tilting bench can be purchased for the K-Series machines, as an option to the fixed one (ref. page 11). A built-in hydraulic lifting system controls tilting of the table from 0 to 80 degrees, thus offering utmost **flexibility and user-friendliness**. This type of bench can handle slabs with a max. weight up to 1800 Kg.

Lathe 500 / 850

Lathe CN, numerical control and interpolated. The ideal solution to machine columns, capitals, and balustrades in both simple and complex shapes. The **sturdy frame made of sandblasted and painted steel** offers **utmost reliability**. The rotation movement is driven by a brushless motor and a high precision gearmotor. Material mounting is safe and easy thanks to the adjustable heads and the handle provided to tighten the positioning wedge.

Steel shoulders

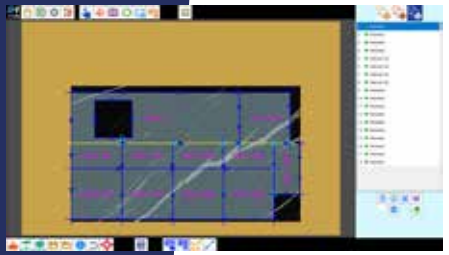
The machines from the K-Series offer the opportunity to mount the sliding beams of the Y axis on steel shoulders in place of concrete walls, which the customer normally needs to build. The frame is made of welded steel which is heat treated to improve its **resistance** and is painted with three coats for greater **protection against external agents.**

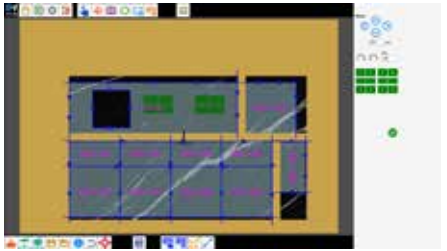
MOVE System

Advanced system featuring 6 independent picking areas for workpiece lifting and transfer, up to 600 Kg. This system optimizes efficiency by **maximizing the use of the slab surface and by automating the machining process.**

Advantages

- **Increased efficiency** and reduced downtimes
- **Workpiece movement** without any intervention by the operator
- **User-friendly,** even by inexperienced operators
- Machine conversion to fully **automatic**
- Better use of slab surface resulting in **reduced** processing waste





Summary table

	K2 Q	K3 Q
Electrospindle	S	S
Oil bath lubrication	S	S
Sliding front guards	S	S
Control panel	S	S
Tool holder	S	S
Work bench	O	O
Wooden bench top	O	O
Tool presetting system	S	S
Slab thickness probe	S	S

S Standard O Optional

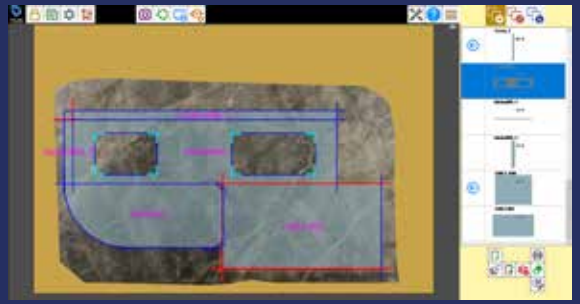
	K2 Q	K3 Q
Handheld terminal	O	O
Suction cup kit	O	O
Cut marking laser	S	S
Cross-shaped laser	S	S
Camera	O	O
Automatic blade changeover	O	O
Tilting bench with aluminium table	O	O
Lathe 500 / 850	O	O
Steel shoulders	O	O
Move system	O	O

S Standard O Optional

Software

Donatoni Digital Suite

Over time, we at DONATONI have developed a software and platform infrastructure that can mutually interact and can support our customers on their way to full production process automation and digitization. The intent is to **harmonise the different digital** tools produced over time so as to make the daily work of machine users **simpler and less costly.**

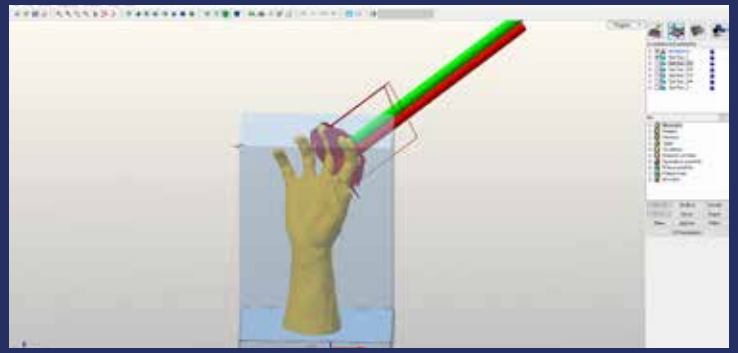


PARAMETRIX

Optimising operations such as cutting, drilling and milling becomes simple and intuitive with Parametrix, the software firstly designed by DONATONI in 2006 and improved over the years. With Parametrix you can manage **blade cutting operations and insert straight and curvilinear shapes** (stairs, kitchen countertops, rectangles, covers) using preset shapes or shapes imported from a DXF file.

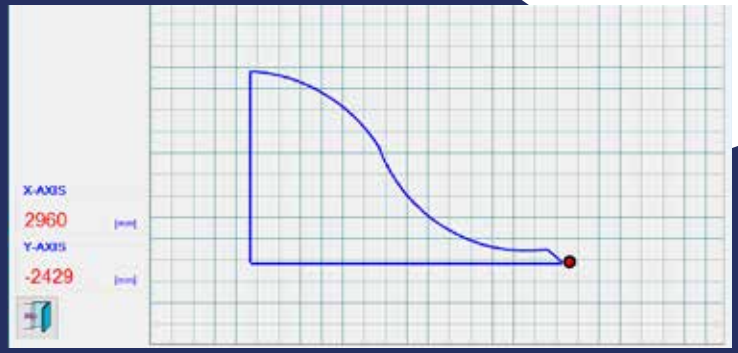
Depending on the surface, it is **possible to set the position of the workpieces and the sequence of cuts**, thus optimising times and reducing material waste. This software includes functions to prevent workpiece collision, manual and automatic nesting, as well as management of production and job order statistics.

Parametrix can be used together with Photoslab and the **Move System**, which are used to automatically detect the slab and to move the workpieces after cutting with the help of a suction cup system, thus minimising operator interventions.



EASYSTONE

EASYSTONE is the CAD/CAM software specifically for the marble processing sector. It is a simple, intuitive software program: all the functions are “click-friendly” and can be used even by people with no specific computer skills. The software can be used to design or import 2D and 3D files in different formats, or to define surfaces and shapes through laser scanning. Ideal for **roughing, drilling, profiling, emptying, polishing and 5-axis machining** as it optimises the execution process.



SCAN CNC

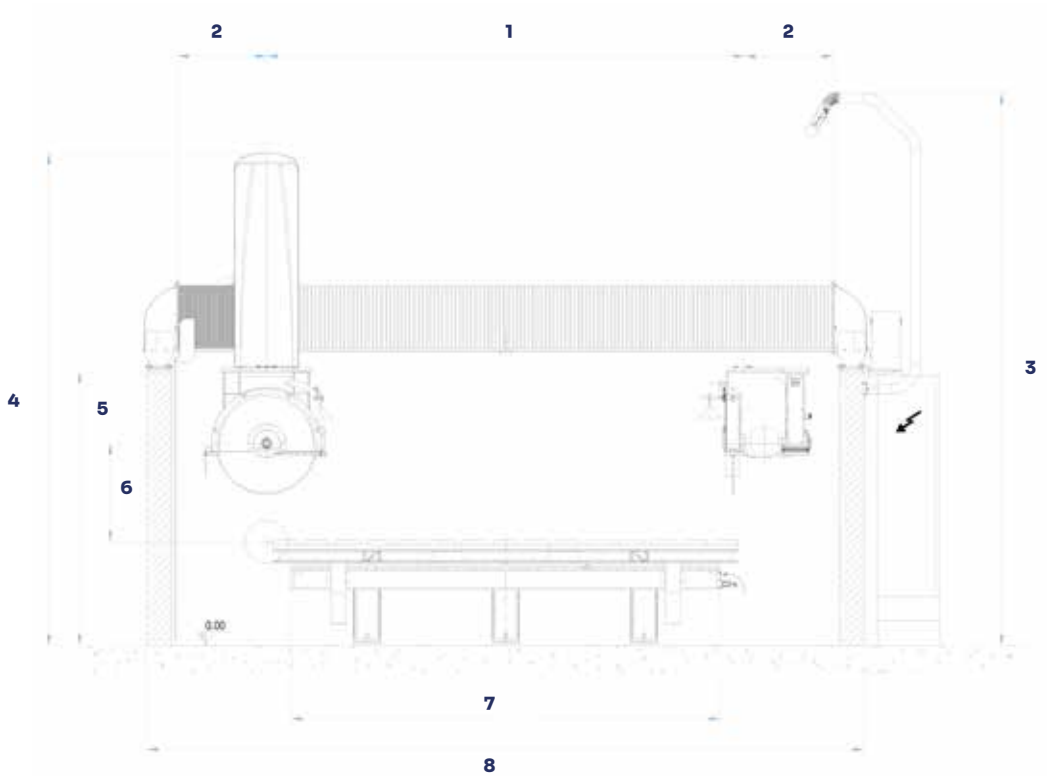
Detection system made of a laser pointer mounted on the machine head and Parametrix built-in software that identifies **two-dimensional shapes**. At the end of the detection process, the operator **works out the shape** on the machine display with Parametrix and can either archive the file in the on-board PC or on an external PC.

Technical data sheet

		K2 Q	K3 Q
Max number of interpolated axes	**No.**	5	5
Carriage stroke (axis X)	**mm**	3900	3900
Maximum carriage speed (axis X)	**m / min**	45	45
Bridge stroke (axis Y)	**mm**	3450	3450
Maximum bridge speed (axis Y)	**m / min**	45	45
Head up/down stroke (axis Z)	**mm**	600	800
Maximum head speed (Z-axis)	**m / min**	6	6
Blade head rotation (axis C)	**degrees**	-5° / +365°	-5° / +365°
Blade head tilting movement (axis A)	**degrees**	0° / 90°	0° / 90°
Bench dimensions	**mm**	3500 x 2000	3500 x 2000
Minimum blade diameter	**mm**	350	350
Maximum blade diameter	**mm**	725	825
Maximum cutting depth	**mm**	250	300

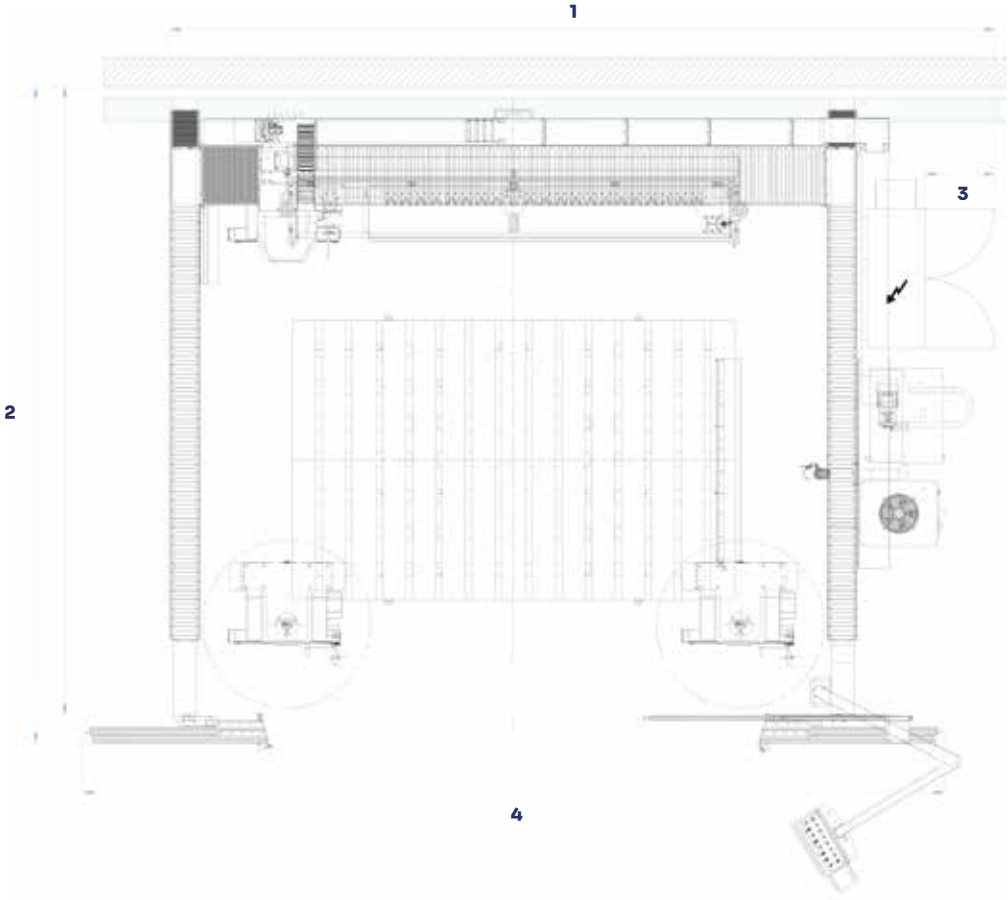
		K2 Q	K3 Q
Electrospindle motor power	**kW**	28/S6	28/S6
Electrospindle motor nominal torque	**Nm**	115/S6	115/S6
Electrospindle motor speed range	**rpm**	0-10000	0-10000
Tool holder cone standard	**-**	ISO40	ISO40
Spindle shaft diameter (blade holder tool)	**mm**	50	50
Motor cooling	**-**	Liquid	Liquid
Suction cup stroke	**mm**	245	295
Max. blade when using the suction cups	**mm**	625	725
Maximum liftable weight with both suction cups	**kg**	600	600
Slab thickness probe stroke	**mm**	300	300
Max. blade when using slab probe	**mm**	725	725
Tool holder	**No.**	20 Tools + 1 Disc	20 Tools + 1 Disc
Tool mount centre distance on tool holder	**mm**	130	130
Max. tool diameter on tool holder	**mm**	Ø120	Ø120
Water consumption	**l/min**	50	50
Air consumption	**l/min**	20	20
Standard voltage	**V / Hz**	400±10% / 50	400±10% / 50
Total installed power	**kW**	46	46
Approx total weight of the machine	**kg**	6100	6150

Machines layout



	K2 Q	K3 Q
1	3900	3900
2	723	723
3	4280	4580
4	3577	4010
5	2000	2230
6	600	800
7	3500	3500
8	5850	5850

All values are in **millimetres**.



	K2 Q	K3 Q
1	6540	6540
2	5642	5642
3	500	600
4	7412	7412

All values are in **millimetres**.

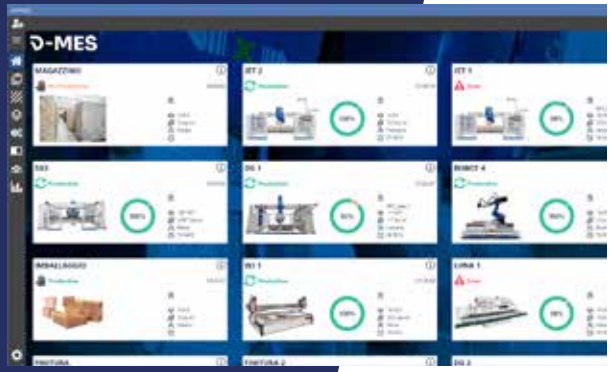
D-MES

DONATONI MES is the first MES system on the market designed and manufactured exclusively for the stone industry. DONATONI MES is not just a software: it is a complete MES (Manufacturing Execution System) system that can support your company's growth.

The company of the future is digital and connected.

Advantages

- Production monitoring
- Real-time data
- Integration with working areas
- Improved efficiency and profits
- Reduced waste and time
- One single database for the whole company



D-PORTAL

The D-Portal platform can be considered as a **library for all your DONATONI machine** documents and has direct channels for contacting our After Sales service, which means that clients can do ordinary maintenance easily and precisely.

Donatoni Service

Donatoni service offers a wide range of consulting services to meet the different needs of customers, wherever they are.

After-Sales Service

You can contact our **after-sales service** for any requirement. In this manner, any type of problem can be identified and solved asap, finding the fastest, **most efficient solution.**
Our telephone assistance department is available for giving support to clients on everything about machine functionality.
Telephone support is available from Monday to Friday, 7.30 a.m. to 6.30 p.m., and on Saturdays from 8 a.m. to 12 p.m. (UTC +1 CET - Central European Time).
Tel. +39 – 045 6862899

Donatoni support is also available by e-mail at the following addresses:

For assistance
assistenza@donatonimacchine.eu / service@donatonimacchine.eu

Whatsapp: + 39 0457740052 **Telegram:** @donatonimacchine_bot

For spare parts
ricambi@donatonimacchine.eu / parts@donatonimacchine.eu

Maintenance

Donatoni's routine and special maintenance service is entrusted to its own specialist **technicians** to guarantee **the reliability and efficiency of our clients' machines**, no matter whether in Italy or the rest of the world. Our technicians are prepared to recognise and solve problems quickly, optimise problem solving times and keep the machines - as well as the systems - longer lasting.

Consultancy service

To support and enable our customers to meet the demands of the market, we offer **consultancy services** that can widen and **deepen your awareness and skills**. Offering a complete after-sales service does not just mean solving mechanical or software problems, but also includes **finding solutions** and managing any production requirement independently.

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Friday: 8:00 - 14:00

Donatoni Group

The Donatoni Group was established after **along experience** in the natural stone industry, a process that began in the 50s and developed over the years. Today, **Donatoni Group** is recognised as one of the world's leading manufacturers of high-quality stone processing machines.

Constant research, technological innovation, and customer service are key values for the company, which employs highly qualified personnel in order to guarantee the end customer a product that best reflects their expectations in terms of quality and performance.

To support its global development, **Donatoni Group** operates in international markets with its own agents and direct overseas branches.

1959 – "Officina Donatoni" is founded.

2001 – The first CNC cutting machine with rotating head is produced.

2008 – Founding of "Donatoni Macchine".

2017 – Inauguration of the new headquarters and offices.

2018 – Founding of "Donatoni Macchine"

2019 – Inauguration of the second production site.

2022 – Establishment of branches in the US, France and Germany.

Donatoni Academy

Donatoni Academy supports the marble industry through technical and practical training courses, conferences, events and activities aimed at developing skills and know-how for companies and operators in the sector.

About us

We rely on qualified teachers and speakers to develop technical courses with specific content and linked to the real needs of the industry.

Our addressees

Donatoni Academy provides services for companies in the stone industry that want to train, perfect or expand the skills of their operators. Our courses are also addressed to students and anyone wishing to update and expand their skills.

Training course location

Courses are held either face-to-face or remotely. We have 3 training rooms for theoretical classes and one showroom for hands-on sessions with 5 machines.

Donatoni Macchine Srl reserves the right to make any technical modification which, under its own incontestable opinion, improves its machines. As a result, all information, data or images in this catalogue are indicative and are not in any way a contractual obligation of Donatoni Macchine Srl.

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