



Maema, 37069 Villafranca di Verona, Italy



State of the art of technology for surface treatment of precast panels in Estonia

E-Betonelement, the Estonian subsidiary of the Consolis group, one of the world leaders in precast concrete solutions, has just acquired a new machine that pushes back the boundaries of creativity in the construction of buildings. Developed by the Italian company Maema Unipersonale, this new tool, enables the automated and rapid production of prefabricated concrete surfaces with complex graphic effects. This is when technique and aesthetics meet!

The machine chosen enables the automated and rapid production of prefabricated concrete surfaces with complex graphic effects"; the benefits of the machine, in simple words, are as follows:

- it is possible to get every kind of different effect: polishing, honing, brushing, bush hammering etc.;
- by using some additional devices, (such as pumps and nozzles), it is possible to get a water-washed effect (exposed aggregates);
- complicated geometries can be treated (such as curved surfaces or panels with multiple surfaces angulated in relation to each other);
- treatment of big size panels (up to 40 sqm) is possible in less than one hour in a fully automated way.

Maema, the machine supplier, is located in Villafranca Veronese (Verona), Italy. Verona is a very well known region of excellence for the natural stone industry; and the natural



Maema's Bellacrete machine in the production hall of E-Betonelement OÜ in Estonia

stone industry is the field, from where Maema took its experience and inspiration for application in the concrete world.

The company's portfolio covers products for precast producers in the fields of industrial and residential construction as well as for producers of interlocking pavers and blocks.

It is Maema's goal to always offer multipurpose machines. Gantry machines suitable to treat big size elements (such as concrete panels and columns) or stationary machines equipped with conveyor systems as well as automatic loading systems in order to treat small/medium size elements.



A concrete wall panel before processing with the Bellacrete machine - smooth concrete surface, no aggregates visible ...



... the wall panel after processing of the surface - the aggregates are visible, and they give the panel its special aesthetic finish.



Different processed surfaces of a wall panel

All Maema solutions are realized in order to be able to perform different kinds of effects and to handle different shapes for maximum flexibility. Combining the different options and choosing the more convenient configuration (guided by the expertise of the Maema team) every customer can find the most appropriate answer to his own demand.

Flexible, multifunctional surface treatment machine

The supply for E-Betonelement was finalized for the surface treatment of precast concrete panels and specifically consists of the following: a Bellacrete machine, three tilting tables with the size 12.1 x 4.6 m, operable with remote control.

The Bellacrete machine from Maema is a portal frame solution running on rails with the aim to treat panels that are placed in a horizontal position on a suitable supporting structure. The working capacity of the Bellacrete machine allows to process elements with a maximum width of up to 4.6 m, a height of about 1 m and an unlimited length (the length is determined only by the length of the rails).

With the use of the latest CNC technology and thanks to the use of a user friendly interface the different tools applied on the different working heads can follow the profile of the elements (flat or curved surfaces) and perform a series of different operations, such as special engravings, cutting operations and others; machine capabilities can be upgraded by the incorporation of different attachments that are always available, also for a later upgrade of the machine years after the first installation.

The flexibility of the solution together with the different accessories developed in 15 years and more than 50 applications allow the customer to design the actual need, keeping the concentration on the immediate future, without having to worry about what will be the unknown demand of the markets of tomorrow.

Desired finishing, as fast as possible in a repeatable and reliable way

The specific machine design for E-Betonelement foresees four main spindles suitable for the horizontal surface, all motorized with 22 kW motors, with inverters with independent

pneumatic floating for each spindle in order to follow the panels profile (macro irregularity). It also includes a special head called "Space head", an attachment that foresees a set of four spindles, motorized with 7 kW electro spindle mounted on a support with three independent controlled axes that together with the longitudinal movement of the machine body (which represents one further axis) makes it possible to cover every kind of shape (flat or curved) on five sides of the panel. One more special head, called "Smart head", with the same axes

INNOVATIVE LASER TECHNOLOGY FOR ALIGNMENT AND POSITIONING



QUALITY DECIDES

Rails, cutouts, formwork, fitting parts, and empty pipes are easily positioned with the laser light without measuring tapes.

The SL laser system can be installed in fixed locations and project onto carousel pallet system or as a mobile trolley to move along rails above multiple setup zones.

The perfect interaction of SL hardware and software guarantees a safe and speedy work-process.

- Simple to use
- Error-free work
- Low maintenance
- Highest precision
- Effective production
- Set-up times reduced
- Optimal quality control



Dieselstr. 2 D-83301 Traunreut | +49 8669 8638-11 | contact@sl-laser.com



Wall panel immediately after processing



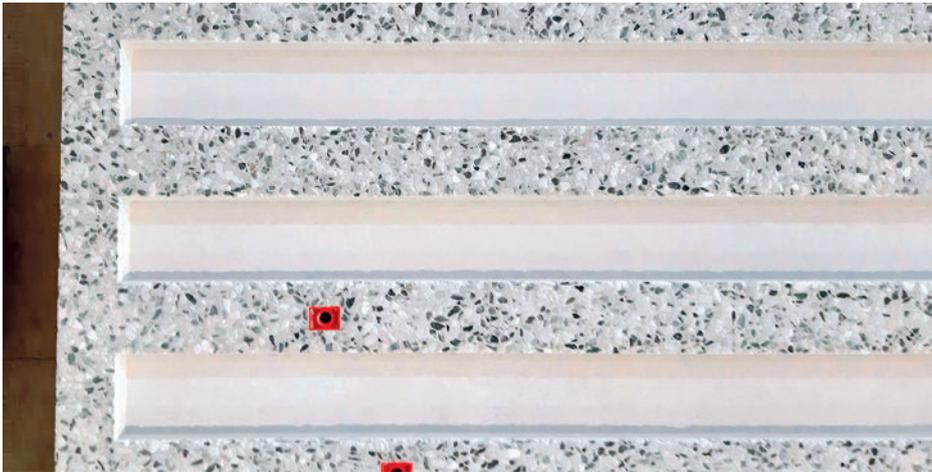
The different tools applied on the different working heads can follow the profile of the elements (flat or curved surfaces) and perform a series of different operations, such as special engravings, cutting operations and others.

BESSER
Trusted Since 1904



Vibro-Mac® Dry Casting Machine

Responsive. Reliable. Versatile.
+1.989.354.4111 | besser.com | sales@besser.com



Openings and recesses are already provided in the wall panel.

configuration like with the head just mentioned, but by the use of a single spindle head powered with a very powerful spindle, makes it possible to perform engravings and cuttings either using end mills or disks.

By using different ways, fully automatic or manual, the operator will transfer all the information necessary to define the shape of the panel: the real panel perimeter, the presence of

encumbrances or openings (such as openings for windows and doors), different features to be realized, such as engravings for technical purposes or simply for a company logo. In the most automatized way, the machine-user interface will read the information from dxf drawings or from an IGS file that will be used to generate the ISO program necessary for the machine's working process. In the meantime the operator will move the machine, using a remote control, in correspondence of a key point of the panel (such as a corner) to take the zero point, collimation is simplified by the use of a vision system (high definition camera). At the last stage, the right machine set up (a set of tools and the relative parameters) will make it possible to realize the desired finishing, as fast as possible in a repeatable and reliable way.

Only by using different tools, or better, a sequence of different tools, it will be possible to get every kind of different effect: honing, brushing, polishing and bush hammering. By using some additional devices, (such as pumps and nozzles), it will also be possible to get a water washed effect (exposed aggregates) - a batch of different possibilities always in the customer's pocket.

The complete plant has been in operation since October 2019 and is now running at full capacity to the satisfaction of the production department and the inspiration of the sales and marketing departments. ■



Wall panel ready for removal

FURTHER INFORMATION

E-Betoelement OÜ
 Tammi road 51, Vatsla 76915, Harju county, Estonia
 T +372 671 2500
ebe@betoelement.ee
<https://betoelement.ee>



Maema Unipersonale srl
 Viale del Lavoro 9,
 37069 Villafranca di Verona, Italy
 T +39 045 6305781, F +39 045 6309178
info@maemasrl.it, www.maemasrl.it