CMS Brembana
glass technology

PROFILE: the vertical machining centre for the glass industry

Case History Vetrodomus →

Efficiency and versatility: the strengths of an integrated technology system promoted by Vetrodomus

A worldwide reference in the production of glass sheets for architectural applications, Vetrodomus has upgraded its production technologies with the new generation of CMS "vertical" machining centres designed for arris grinding, rough and polished grinding, milling and drilling operations.

With the recent introduction of the vertical machining centre Profile, Vetrodomus has upgraded its range of machines and reinforced its integrated technology system for the glass industry.

Vetrodomus

With over 45 years of experience in the production of structural glass and the ability to satisfy even the most demanding requirements of contemporary architecture, Vetrodomus of Brescia is one of Europe's most successful companies in this sector. Its strength lies in the availability of technologically advanced systems that marry precision and versatility, thus enabling it to respond proactively to the varying needs of its customers. Vetrodomus'market positioning and identity have enabled it to put in place and develop important collaborations across broad market sectors including construction, and specifically the naval and railway sectors. The purchase of high-quality materials in line with EC standards, stored in the company's large warehouses, includes: clear and tinted, laminated, reflective, and low-emissions Float glass. Also polyvinyl butyral, used in stratification, is purchased from major international manufacturers and stored in special refrigerated spaces to maintain correct temperature. Completing the services offered by the company, customers are always given proper technical support so that solutions can be found that match requirements. Vetrodomus has for several years availed itself of CMS for installing the main glass sheet processing machines. The first machines were the Futura bilateral grinding machines and a Deltagrind machining centre with the specific function of arris grinding. An FT 6.73 multifunctional machining centre was then added to its range of machine capabilities, and was particularly effective in the processing of glass sheets with circles and ellipses. With the recent introduction of the Profile machining centre, Vetrodomus has further extended its range of machines, resulting in an "integrated technology" dedicated to the manufacture of glass, thanks to various solutions provided by CMS.

→ A machining center that has everything it needs for high productivity

Glass sheet loading and unloading
The machining centre uses two suction cup groups for the longitudinal transfer of glass sheets, each group being made up of 5 suction cups especially designed by CMS.

Electrospindle and rollers
Still exclusively engineered by CMS is the powerful electrospindle, which rotates at a variable speed of 0-15.000 rpm. The transport clutch rollers are characterized by long life and minimized maintenance.

Magazine and glass-guide system
The rotary tool holder magazine is provided with 13 stations. The Profile machining centre makes it possible to carry out raw and profiled milling, as well as single-side drilling. It is equipped with a glass-guide system which ensures a perfect coaxial relationship between glass edge and tool.

Profile is the most advanced and safest solution in the vertical processing of glass sheets. The Profile machining centre represents all the know-how developed by CMS to enable architectural plates to be processed rapidly and with maximum precision: covering needs which range from high power to extreme versatility.

Control facilitated and automated with special software and bar code scanning

Only 1 operator

required, who interfaces with the console where all the functional data is available

The operation of the machines reveals strategic intelligence, based on dedicated software developed at the CMS research centre. The Profile machining centre can be controlled and managed by a single person, who interfaces with a console containing all operating data specified completely and rationally, with full-time monitoring.

The use of the bar code labels proves to be of key importance: when the glass sheet reaches the vertical line, the operator scans the bar code with the scanner gun and the line automatically re-sets to activate the operations required for that type of glass. The programming, performed in the office and even remotely, involves the simple creation of a .dfx file with a layer for each particular process. The system facilitates a continuous production cycle, thus eliminating downtime caused by machine-based programming.

An integrated technological system for all Vetrodomus' needs

"Futura" bilateral machining centre for arris grinding and other grinding operations

"Futura P55/26" machining centre for structural and interior glass walls, arris grinding and standard grinding

"Deltagrind" machine for arris grinding on double-glazing and tempered glass

Vertical "Compact Drill Mill 45/26" machining centre for shaped glass sheets and small special series

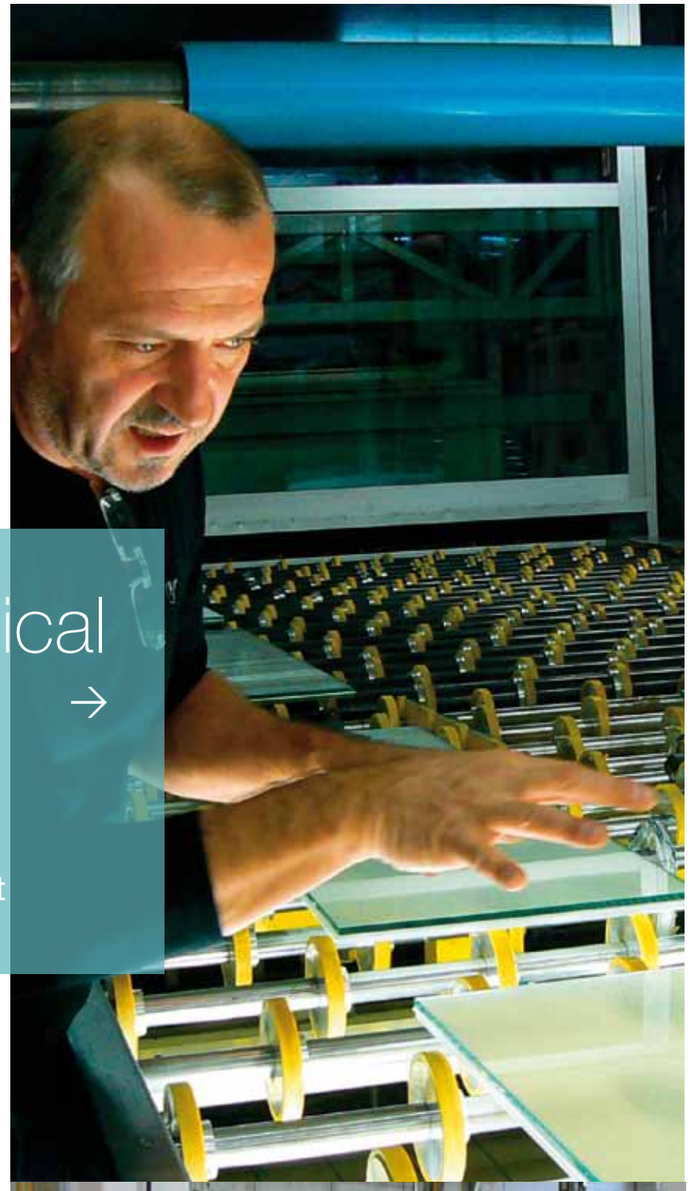
"FT6.73" machining centre for circle, ellipsis and small-sized sheet processing

Vertical "Profile 45/28" machining centre for shaped sheets and small special series

The new Profile vertical line is the most recent acquisition of Vetrodomus as part of an integrated technological system supplied and installed by CMS to satisfy the various requirements of glass sheet processing (types, sizes, specifications and special characteristics, serial and special production flows). Within this system the bilateral lines remain operational centres of key importance, since they deal with serial processing. Here, the recently introduced horizontal numerically-controlled CMS FT 6.73 machining centre stands out: it is used primarily for the production of special modelling or notch machining, works which benefit from its well-equipped tool magazine; it can also work in a pendulum working cycle, dividing the workbench into two areas in order to optimise the execution time (maximum dimensions: 3100mm x 6000mm). The new Profile electronic numerically-controlled vertical line of CMS consists of two workstations: a new grinding machine for VEC finishes or vertical POLISHED edges for straight and shaped glass sheets and is equipped with a rotating tool magazine for rapid replacement of tools according to the thickness of the glass being processed, as well as a vertical drilling and cutting machine, for boring holes and making a variety of notches on the edge of and inside the glass. The two stations placed in line enable perforated, ground, and notched glass to be processed in a single movement (dimensions: min.250mm x 500mm - max 4500mm x 2500mm).

CMS solutions judged by Vetrodomus' customers

As a result of its knowledge and professional insight into architectural culture, Vetrodomus is able to provide its customers and suppliers with an attentive, personalised, constantly updated, and consistent quality service, which represents a genuine partnership as well as quality products that are second to none in terms of reliability and creativity. For Vetrodomus, the decision to acquire a vertically-operating machine grew out of its relationship with CMS, which is now a reference point on the technological landscape, a relationship which also expressed itself in terms of consultancy and took into consideration Vetrodomus' innovation and its opportunities for optimising its production chain. The close working relationship between CMS and Vetrodomus is emphasised by Pasquale Pastore, the Chairman and founder of the company: "CMS was the first company in the world to develop machines of this type, vertical solutions which immediately captivated our interest. The machine was developed for shaped glass panels, and then was combined with the drilling machine, since we felt this to be the right combination. Our long-standing collaboration with CMS has been given a further boost by this new machining centre: we were the forerunners, so to speak, ensuring that we would be able to operate with increasingly large glass plates. Besides, we are fond of new things, of technologically advanced machines. Our vocation is as experimenters. The trust we have generated over the years - and the significant results Vetrodomus has achieved using CMS technologies provided the logical basis for introducing a vertical line - not an everyday development in our sector. We wagered once again on CMS, due to that company's ability to manufacture machines having the specific requirements we seek. In practice, we have applied the experience gained in recent years with the bilateral CMS machines, transferring this know-how to the vertical system, which has its own specific features, in particular flexibility in the change of format, assisted loading and unloading without the need for manual tools and with the ability to process rectangular glass as well as shaped glass sheets. All this translates into a noticeable reduction of downtime and a speeding up of continuous production flows. This enables us to better satisfy our customers' requests: maximum precision and equal rigour in complying with delivery deadlines, also for highly customised requirements and non-serial orders. With the vertical line, we are now able to work in one continuous flow in operations that, in the past, were separated into several separate stations, which required time going between one station and the other, apart from the risk of causing damage to the plates."



Technological innovation →

Vetrodomus is focused on technological innovation throughout all its departments

Vetrodomus' concern for technological innovation spreads throughout all its departments. Of peculiar interest is the system for the production of laminated and multilayer armoured glass by an in-line and vacuum process. This plant, measuring up to 2600 x 5000, is made up of a washing area for glass sheet layering by means of demineralised water, a glory hole, de-aeration mangles, cold rooms for storing polyvinyl butyral, pressure tanks and an assembly room equipped with an electronic supervisor in charge of controlling, saving and filing PVB temperature and humidity data.

Roberto Pastore, President of Vetrodomus with Stefano Aceti, Director of CMS Brembana

Advantages

Reduced floor encumbrance
The vertical and horizontal development makes it possible to reduce the space occupied, while at the same time making it possible install the line in structurally complex environments.

High operating flexibility
The machine can be used separately or integrally with highly-automated production lines. It does not require any manual tooling operations and makes it possible to change work configurations easily.

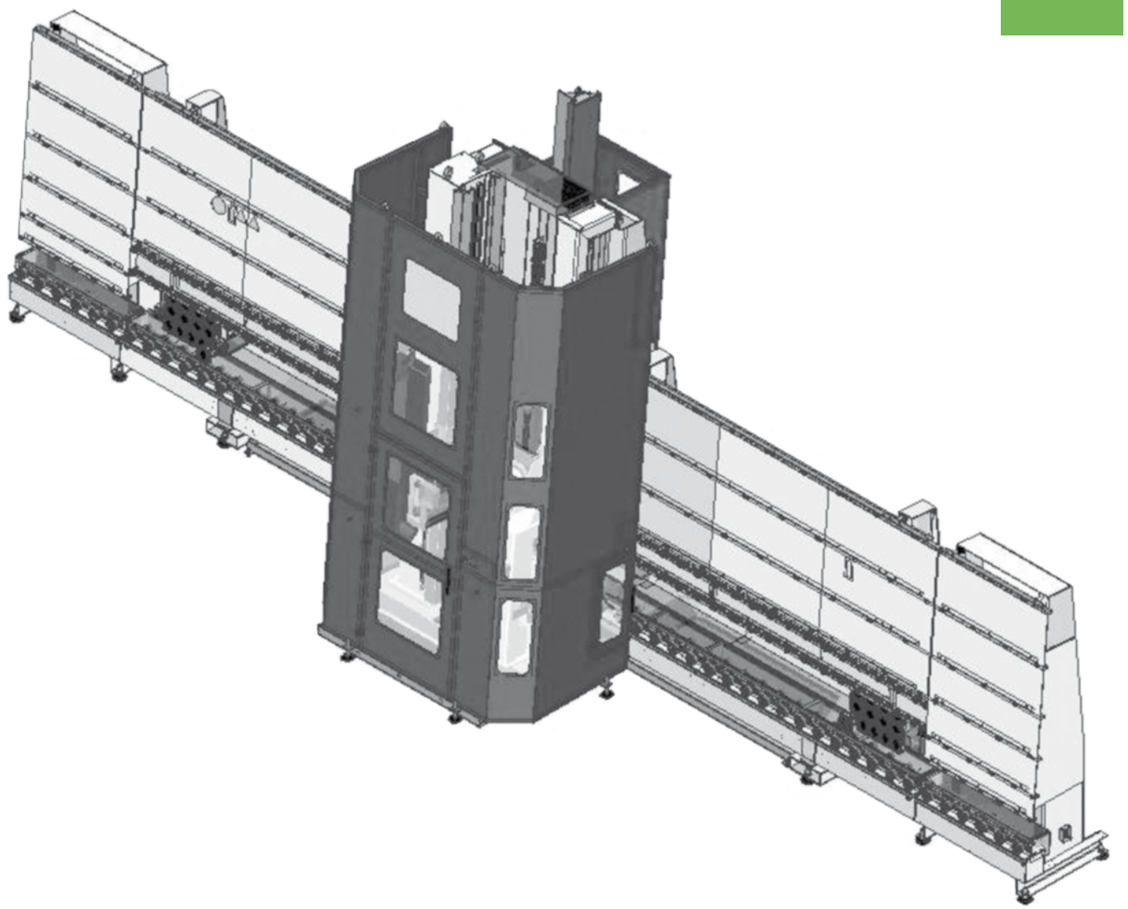
Downtime abatement
The work flow is continuous, owing to the glass sheet loading/unloading feature which does not require the typical vertical-to-horizontal glass rotation.

Utmost safety
The machine is equipped with a special integral protection cab, with front door and casings covering all moving machine members.

The Profile machining centre is one of the most formidable operational tools of the technological systems of Vetrodomus, the “beating heart” of the system, thanks to the typical features of the vertical machines: smaller structural dimensions, high process automation, assisted loading and unloading, elimination of the need for rotation of the glass sheets, maximum flexibility of change of configuration and production lot, ability to operate on modelled glass sheets and on small series, no manual tooling operation, a consequent reduction of production downtime and continuous production flows. In addition to the individual machines, CMS provides all the equipment to support the lines, such as loading/unloading, paper laying and palletizing systems. The CMS machine range, moreover, was devised from the very beginning for in-line assembly and for integration with robotization - also developed by CMS or other suppliers.

Technical data

Description	Measuring unit	Value
Maximum workable glass lenght	mm	3200 – 6000
Maximum workable glass height	mm	1600 – 3300
Minimum workable glass dimension	mm	500 x 300
Glass thickness	mm	3 - 30
Tollerance on 1000 mm glass	mm	±0,15
Electrospindle power and rpm	KW	13,5–0÷15.000 giri/min



CMS Industries

www.cmsindustries.it

CMS SpA has been active as an engineering company since 1969. It is now operating in various industrial automation fields (CNC multi-axis machining centres, thermoformers, water jet cutting systems, etc.) under the brand of CMS Industries that includes all the Company divisions and is backed by a sales and customer service network that spreads all over the world. Its wide range of products combined with the well-deserved renown for quality and accuracy enables CMS SpA to offer flexible, innovative and effective solutions for meeting various production process phases and customers' specific needs. Since 2002 CMS SpA has been part of SCM GROUP, global leader in the production of woodworking machining centres, with over 3500 employees, an annual turnover of 650 million Euro and a worldwide presence in 120 countries of all continents.

CMS Brembana is CMS' division dedicated to Glass processing machines manufacturing. CMS Brembana projects and realizes a complete range of machines and CNC centres for various industrial sectors, also for architecture, building. Together with its CNC centres Brembana's offerings also include cutting tables and systems for flat glass transformation.

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