


Commitment to progress in cutting

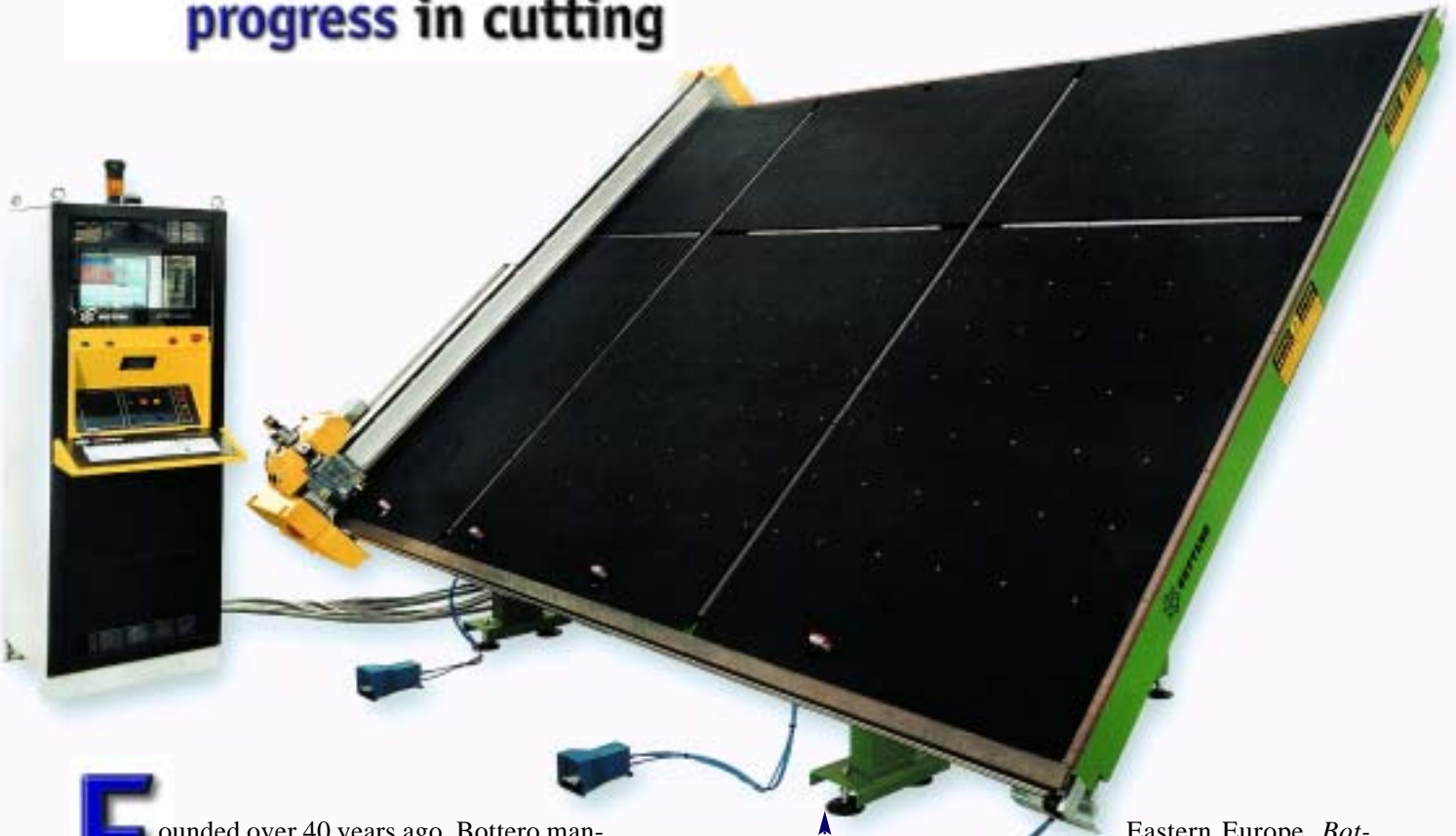
*Ferdinando Lucchesini**

BOTTERO SpA



For over 40 years, Bottero SpA has been manufacturing cutting machines and auxiliary equipment, as well as fully-automatic lines for processing flat glass. Here, Bottero's commitment to progress in its field is illustrated through the BCS and 352 LMT range of automatic cutting machines. Options such as the Shape Scanner™ for automatic detection of non-geometric profiles and the FCO - a plastic scoring device that enables reproduction of manual sandblasting are also presented.

Commitment to progress in cutting



Founded over 40 years ago, Bottero manufactures fully automatic lines, including tilting tables, for loading, cutting, breakout and shaping laminated, float and automotive glass. Currently, a total of 250 people are employed in the flat glass division in two plants in Cuneo and Trana, both in the Piedmont region of north-west Italy. The Cuneo plant is dedicated to the engineering and production of equipment for handling and cutting, whilst edging and bevelling machines are manufactured at the Trana plant.

The company has three affiliated offices, namely *Bottero GmbH* which is responsible for the markets of Germany, Austria, Benelux and

BCS cutting table

Eastern Europe, *Bottero France* takes care of the French market and *Bottero Flat Glass Inc.* covers sales and service for the US, Canada and Mexico. Products manufactured by Bottero are exported in more than 50 countries across the globe. Employees in the engineering and marketing departments are on hand to work directly with clients when required, to produce customized machinery for complete production lines.

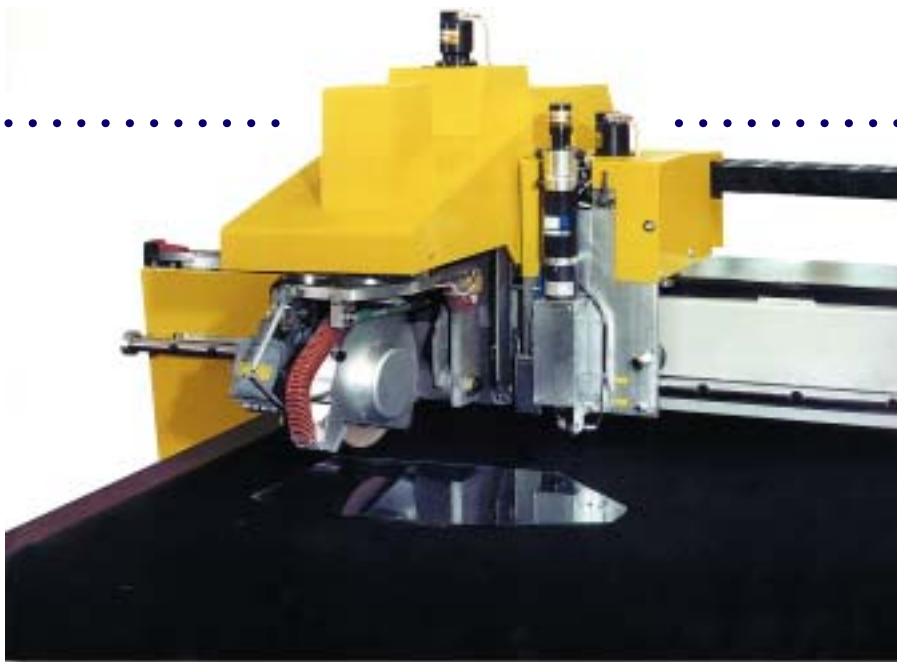
PRINCIPAL OPTIONS AVAILABLE FOR THE BCS

- The Bottero *Shape Scanner™* reads custom and unusually-shaped profiles from customer or user templates directly on the table surface.
- Shape Scanner comes complete with mini-CAD for shape editing.
- *FCO*, film cutting option provides for shape scoring of plastic film on glass for subsequent sandblasting.
- Automatic cutting pressure selection according to glass thickness provides for cleaner, easier breaks.
- Glass transport device, to move the scored sheet to the breakout table for higher productivity.
- Safety barriers, where required, comply with CE standards.

BCS RANGE

Bottero's *BCS* range of automatic cutting machines, available in mini, regular and jumbo sizes, is designed for straight, diagonal and shape cutting. Thanks to continual evolution in electronics and software, they provide constantly high levels of performance, reliability, production quality, safety and versatility. Software for use with the BCS is also developed by Bottero, and includes a wide range of standard and auxiliary information.

For easier glass sheet handling, the machine's working surface is equipped with an air flotation system which is activated at the touch of a button. Accurate positioning of the cutting bridge and carriage are achieved by means of a precision rack and pinion design, located underneath the working surface, to prevent glass chips from



obstructing the transmission. An automatic precision electronic glass squaring device enables the machine to begin cutting at high speed without using slower mechanical or inexact manual glass squaring.

The BCS is available either as a fixed table or in a tilting, hydraulically operated model (with pneumatic tilting arms in the mini version). It comes with the option of pneumatically operated break-out bars located in both directions for easy breaking.

A lubrication system with oil flow concentrated on the score lubricates and cools the glass and wheel, keeping the score open longer and enabling faster and easier breaking. The cutting wheel is the only part touching the glass, thus enabling high cutting speed and accuracy, as well as avoiding scratching of the glass surface. Vast numbers of shapes can be created directly from the cutting machine PC by using an on-board geometric shape catalogue. A DFX file import feature loads and cuts shapes created by CAD office software.

352 LMT, specially designed for rectangular and shaped cutting

programmes and cutting patterns on hard disk. A five-axis shape cutting bridge is fully controlled by PC to offer quick and precise cutting of complex shapes. All machine functions are automatic. The following specific grinding functions are included:

- automatic adjustment of grinding pressure;
- automatic peripheral speed adjustment depending on wheel diameter;
- control of the dressing cycle for the grinding wheel.

In order to make standard maintenance as easy as possible (replacement of cutting and grinding wheels), specific cycle programmes place the machine in the most suitable position for the operator to quickly and easily access the parts to be replaced.

RECTANGULAR AND SHAPE CUTTING WITH THE 352 LMT

The 352 LMT is specifically designed and developed for rectangular and shape cutting, as well as edge deletion of low-E glass. Data input (for cutting and edge deletion) is managed by a PC which is able to store all task functions,

AUXILIARY EQUIPMENT

Shape Scanner™

Bottero's Shape Scanner™ is a patented system for the automatic detection of non-geometric closed-shape profiles. The profile is read from a template (made of wood, paper, glass, metal) by simply placing it on the table surface. Powerful operating software sets the table to scan and store up to 20 shapes in one single operation (Multiple Scan), or read an outer profile with inner profiles included (Multi-merge Scan), taking advantage of machine idle times.

Software comes with a mini-CAD software module to edit profile imperfections caused by template inaccuracies, and to perform other useful functions such as resizing, mirroring, import/export of shapes, and shape optimization in the blank.

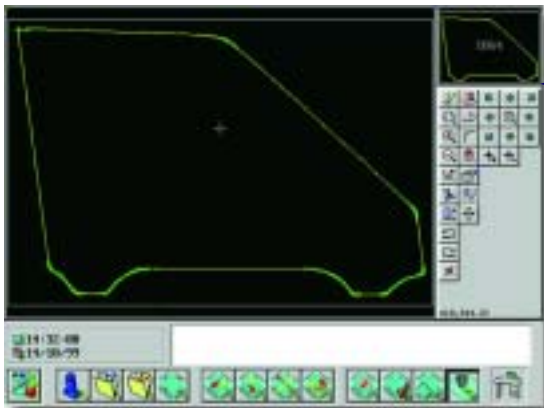
LMT SOFTWARE FEATURES

- On-board geometric shapes catalogue allows the creation and storing of custom shapes.
- Production statistics provided for easy user production analysis.
- Storage on PC hard disk of cutting patterns, optimisations, as well as created and imported shapes.
- Automatic while-it-works conversion of measurement units (mm, inches, fract. inches, Taiwan inches)
- Computer selected cutting pressure setting, depending on glass thickness and cutting wheel choice.
- Cutting cycle time and path can be checked and reviewed prior to cutting.
- On-screen input/output status diagnostics gives operator information which ensures smooth running of the machine.
- Choice between complete or simplified software menu for different operator levels.



Software for use with LMT

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Shape Scanner™ software



Shape Scanner™ in action

re-apply the manual sandblasting technique without being limited by the operator's skills or speed.

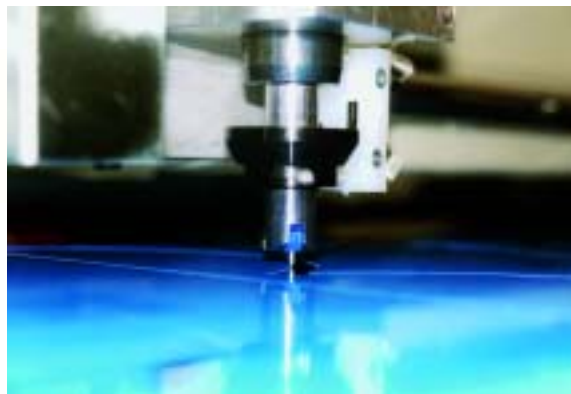
LOOKING TO THE FUTURE

Part of Bottero's success is due to its turnkey equipment. Our engineers are continually updating their knowledge and expertise; this explains the formidable number of trademarks and patents which we have registered across the globe, and is the basis for the development of innovative solutions based on customers' requests. After-sales service is considered very important by Bottero, hence the existence of a highly qualified service network which operates worldwide.

FCO - Film cutting option

The FCO is a plastic film scoring device for sandblasting operations. Any drawing or decorative sketch on the plastic film covering the glass surface can be scored in an extremely accurate fashion. Furthermore, by replacing the standard cutting wheel with a special scoring tool, any pattern can be applied. The pattern is scored on the plastic film in the shape of the sandblasting pattern, then the glass is exposed by removing its film, thus preparing the glass piece for the subsequent sandblasting operation. The required drawing can be imported directly by a DXF file, which uses standard CAD software to create the drawing to be reproduced on the glass piece.

Quality of the finished glass improves, and time is saved because this new option allows the customer to



FCO - Film Cutting Option

**Area manager*
BOTTERO - ITALY

With this special scoring tool, any pattern can be applied

