



The warehouse and workshop at Mornaglass

total management for all-round savings in production and personnel

The new system of glass transportation and storage by Officine Mistrello is so innovative and important is that it can be adapted to suit any kind of glassworks. This storage and transport system - the *GLT 6000* - was custom-built for *Mornaglass*, based in Mornago, Varese, northern Italy, and is presently being installed in two other Italian glassworks: *Baù*, near Como, northern Italy, and *Santelli*, in the area of Florence, central Italy. The same system will also be on show at this year's edition of *Vitrum*.

In fact, custom-built is the exact description of this system, as it was in the planning phases for almost a year before the project was defined and approved. It has now been up and running for a year and *Glass-Technology International* went to speak to the Owner of Mornaglass, Walter Cantaluppi, to get an inside view on this new way of applying total management.

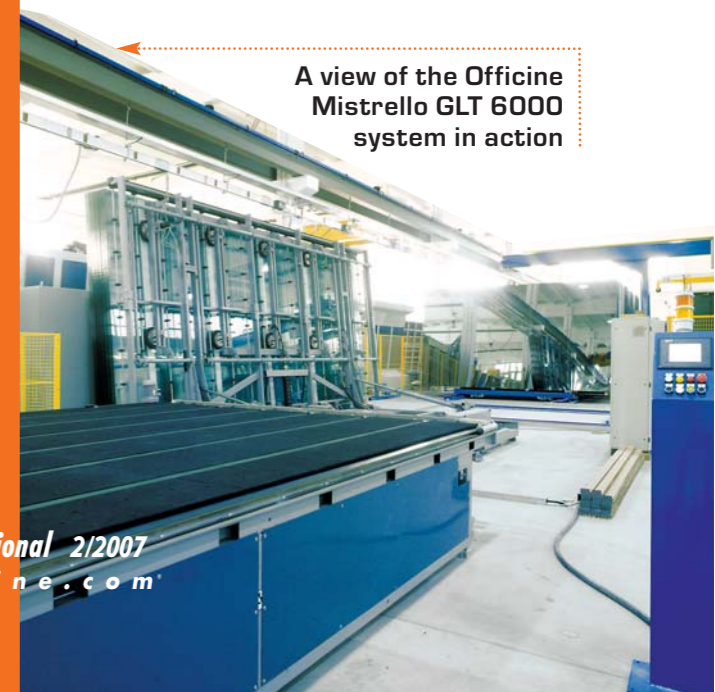
MORNAGOGLASS

Mornaglass was established 25 years ago with a company philosophy that has been maintained over the years - total quality. The company was one of the first in Italy to obtain UNI certification on its insulating glass and is the official licensee of the *Climalit* brand of *Saint-Gobain Glass*.

The first and foremost ideal of Cantaluppi is that of total management, especially with regards to production processes. In fact, the numerous investments made also include a software system from *Lisec*, thanks to which it is possible to handle all activities in the company directly from the offices.

One of the best ways to give an idea and to demonstrate in full the potential of equipment and machinery is on-site, in real working conditions. After having installed a completely innovative and automated system of glass storage and transportation in a glassworks in northern Italy, Officine Mistrello invited Glass-Technology International to see for itself how the system works and to speak with the owner of the glassworks to get his impressions first hand.

A view of the Officine Mistrello GLT 6000 system in action



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Mornaglass, near Varese, northern Italy

INVESTMENTS

Cantaluppi informed us that other investments include the enlarging of its premises, expanding the workshop and covered environment to 5,200 square metres, and of course the equipment from Officine Mistrello presented in this article, as well as a vertical cutting line for laminated glass from For.El., an Intermac work centre and the completion of the insulating glass line which includes For.El. machinery for arissing and edging.

In the intention of expanding its activities, Mornaglass has also entered a collaboration and partnership with nine other companies, which has led to the establishing of *Isotemptra*, where activities such as tempering, laminating, HST (Heat Soak Test) of glass of 2,600 x 4,500 millimetres are carried out using machinery and equipment from *Bovone* and *Tamglass*.

AUTOMATION

The idea to reduce working times also included the storage and movement of the glass in the warehouse. In fact, the first idea that Cantaluppi had was to automate the storage of the glass sheets. Mornaglass bought its first manual and semi-automatic classifiers from Officine Mistrello six or seven years ago, and this recent important "made-to-measure" system has revolutionized the entire glass storage warehouse.

When Cantaluppi decided to update his storage and movement equipment, the choice was



Optimized use of a terrace with solar control glass

between three different companies. After deciding on Officine Mistrello, the two companies got together and studied exactly how the machinery needed to be. After considerable planning and designing, the GLT 6000 plant has now been up and running for a year to the satisfaction of Cantaluppi and the entire Mornaglass staff.

All-glass partions by Mornaglass



Optimization of processing time and operators

For the first time, a classifier and bridge stock selector have automatic movement and two shuttles, which supply glass to three different cutting lines: two horizontal (Lisec) and one vertical (For.El.). The equipment also involves the automatic selection and unloading of the frames from the truck without operator intervention and, more

The warehouse at Mornaglass



A glass facade with special glass



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important, without downtime for production and storage of the same glass sheets to the classifiers as per type and size.

The decision for this kind of equipment was made in order to eliminate the "dead" times in production, while ensuring safety for the operators. There was also the need to reduce costs and not to be tied to having special qualified operators for the machinery. With this type of system from Officine Mistrello this is possible. There is no need to take operators from the production line to unload the trucks, which used to take up almost two operators for about two hours per day. This is obviously a considerable saving in production costs. The same is valid for the automatic selection and movement of the glass sheets to the cutting tables, which takes place quickly and safely.

Moreover, with the Officine Mistrello system, there is no need to stop work at the cutting table to choose and transport the next sheet of glass to be processed - the system does it all thanks to the information that it receives directly from the offices.

Today's glassworks have the most sophisticated, high-tech and high-speed machinery on the market but a considerable amount of time is lost in the transport of the glass from the classifiers to the cutting tables, and often these high-



Detail of the rack and screw mechanism of the bridge crane



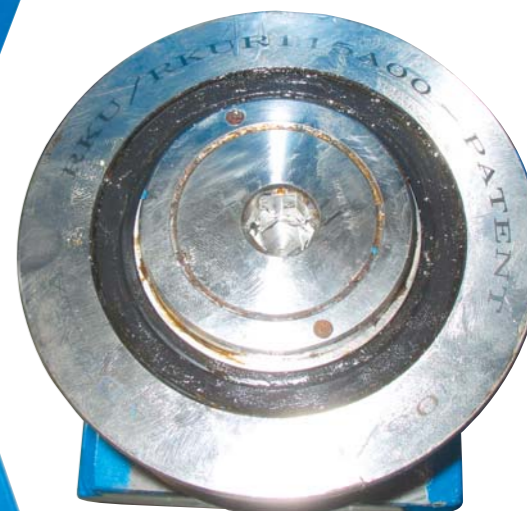
The GLT 6000 transporting glass

tech machines are left idle because they have to wait for the glass.

"It is because of this problem that I needed this kind of system, developed together with Officine Mistrello, further expanded and improved compared to the initial idea," said Walter Cantaluppi. "However, I would now like to make other modifications so that the system can work at night without human intervention in the unloading of the frames." This is the next development that Officine Mistrello will be carrying out.

A detail of the Officine Mistrello transport system mechanism

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well as from and to different positions and heights. The same is valid for the positioning of the classifiers - these can be placed diagonally or further forward or back (not in a fixed position).

"This is what I wanted from the system, and Officine Mistrello has satisfied to the full these requests," said Cantaluppi. "Other features are that when the three cutting tables do not need glass, the machine automatically goes to remove the glass from the frames of the truck and positions it on the correct classifier - recognizing glass type and size. The machine never stops - it is always active which means that there is no production loss of any kind for the company."

Another feature that is made-to-measure for Mornagolass is the high speed of transport of the glass - obviously in complete safety - with glass moving from the most distant position in the company to the cutting tables in only three minutes.

"We have worked hard on company organization and management. We are now certain that the office that controls this system is the heart of the company where everything is controlled via computer. We have been using this type of total management system for about four or five years now. This means that our production management ranges from the arrival of the glass sheets from the glassworks right up to the positioning of the processed glass sheet on the frames ready to go to the client. It means that each operator who works here, in any position, knows exactly what to do, where the glass is and what is happening to it."

Cutting optimization becomes easier with the Officine Mistrello system, as the machine receives information regarding the shape and

DIFFERENT SIZES AND DIFFERENT SHAPES DO NOT MEAN DIFFERENT SYSTEMS!

An important fact to be taken into consideration when designing, planning and constructing a machine is that of the size and type of glass to be processed.

In fact, Officine Mistrello's standard machine deals with glass sizes of 6 x 3.21 metres, but can also handle 1.60 x 1.80-metre sizes thanks to the special management of the suction cups that can be activated and/or de-activated as the need arises. The system automatically recognizes the different sizes and shapes of the glass sheets so that there is no down time when going from one size and shape to another, all without any intervention at all from operators. This is also valid for different thicknesses - from 3 to 19/20 millimetres - (and very different weights as per the thicknesses), which are automatically placed in the correct classifiers.

This is made possible because the position of the glass sheet has already been decided directly from the office, providing the system with information regarding the classifier, the number of glass sheets to be put there, and the type of glass it has to contain. The system can even identify where and when a particular sheet of glass has been manufactured.

"Another feature that we requested," continued Cantaluppi, "is that the machine not only supplies horizontal cutting tables but also vertical ones." In fact, the system can store the glass on "A" shaped frames and from classifiers, as

A detail of the transport system of the GLT 6000

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size of the smaller piece of glass to be cut, goes into the storage area, and looks for the sheet of glass "left over" from previous smaller cuts. This is just one of the innovative features of this Officine Mistrello system.

INVESTMENTS THAT PAY OFF

With regards to the choice made by Mornagoglass, the aim was to cut costs and to have more possibility to invest in different and

more high-tech glass types, which are seeing increasing demand from the market.

While we were visiting Mornagoglass and the Officine Mistrello plant, Cantaluppi also showed us how these investments are paying off, even in terms of personnel. In fact, said Cantaluppi, because of the automatic machinery the company now has, there are employees who can concentrate on developing new products.

In the special showroom of the company, there were many of these special types of glass on display, such as heated glass, used in situations where a normal radiator would not be acceptable due to the historical or cultural environment, or anti-misting glass used in bathroom mirrors. Electro-chromic glass was also on show, as well as different pastel-coloured glass that could also light up when and if required. The company is also starting to look into photovoltaic glass. ■

Another example of
special glass processed
by Mornagoglass



Mornagoglass ...

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