

STANDARD APPLICATION: MANUFACTURE OF GLASS

An ultramodern follow-up for a secular process with COOX platform



With 110 million tons of glasses produced per year, the industry of glass employs some 400.000 persons in the world. The requirements for quality and the rationalization of the production are considerably facilitated with the installation of the COOX platform. The software package of ORDINAL allows the follow-up of manufacture: from charging the raw materials, up to stacking the glass leafs on the racks.

APPLICATIONS

Universal and noble material, glass is present in many industries: food and beverages (bottles and pots), car (windscreen and panes), building (doors and windows), optics (spectacle trade, microscopy), and optical fibers of telecommunication ... without counting the numerous applications of special glasses.

If the appearance of the first glasses on earth is of these stories as old as our planet, its industrial development was strongly mechanized since the industrial revolution of the nineteenth century. Regarded a long time as irreplaceable, glass had to compete with plastics these last decades. To guarantee its technical specificities, the follow-up of manufacture, the quality controls as well as an optimization of the production are essential, to face a context of maximum productivity and the elasticity of the request. It is in this context that effective software of MES (Manufacturing Execution System) takes all its interest.

The process of manufacture of glass "float"



Sand, soda, limestone, dolomite and the groisil are weighed and mixed before being poured in the hopper. The mixture obtained is molten at 1.550°C, in fuel or gas furnaces. It is necessary to carry out the refining of glass, to eliminate the bubbles of gas, by maintaining it at a very high temperature for several hours.

Then, one carries out the floatation of glass on a bath of liquid tin while reducing the temperature from 1.100 °C to 600°C. Thanks to the "top rollers" one mechanically stretches glass to give the appropriate dimensions. The, one can carry out a deposit of layers of metallic oxides. At the exit of the tin bath, a conveyer with rollers drives the ribbon of glass in a tunnel of annealing where it is gradually cooled down to the ambient temperature. It is at this stage that one proceeds to laser control and glass cutting in large-sized sheets that one piles up on racks before forwarding.



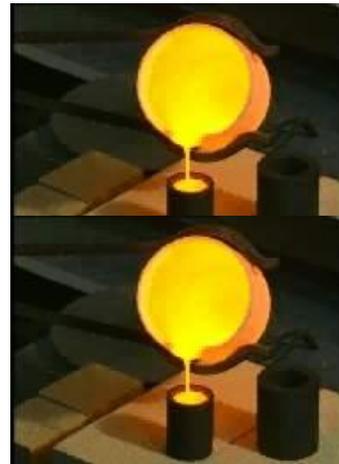
Take control of change !

Thanks to its high level dedicated components, **COOX platform** is easily integrated in the customer's installations and allows the ordering of the machines and the exchange of information.

The productivity and the reduction of the costs depend on the flexibility of the equipment used for the production, a great automation of the various sequences and of an improvement of logistics.

Process control

Thanks to the components process and batch of the library **PMT (Process Management & Traceability) of COOX platform**, the "recipe" of manufacture of glass is perfectly controlled and carried out. The choice of the raw materials for a given composition: chemical nature, rate of incorporation, aggressiveness of the cast iron, etc and the choice of the heat treatments: digestion of the raw materials, refining, glass or crystallization, annealing or hardening, volatilization... will give to the ribbon of glass its flatness and its final characteristics. These various treatments are orchestrated and controlled, in direct connection with the automatism via the OPC protocol, which standardizes the access to the protocols of the various manufacturers of automat.

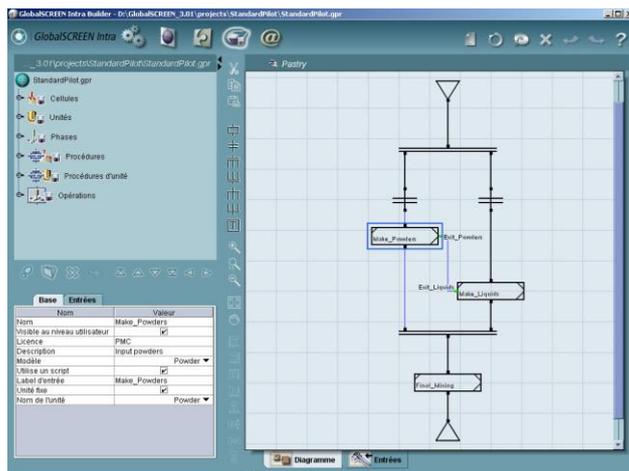


The control of the process of manufacture allows the optimization of the temperatures and the durations of heating and leads to a reduction in the use of the energy and consequently of the nitrogen emissions.

This also applies to the recycling of water in the production of hollow glass. Thus, **COOX platform** plays an active part in the

environmental protection. In addition, the software package makes it possible to guarantee the quality of the products while ensuring a high productivity and a great flexibility for a fast execution of the very various orders.

The components module "**Performance Indicators & Analysis**" allows a quality approach (frequency of the breakdowns, addition of time of stops) and a help to maintenance (automatic calculation of the working times of the equipment, comparison to the thresholds of revisions and replacement). It is at the same time a valuable help for the teams of maintenance (control of the failure rates, replacement of the equipment), and a powerful tool of improvement of the productivity.



The sequence of these operations is managed by the components "process" of **COOX platform**, as well as the control of their execution. Thanks to the recordings of weight and temperature, the "identification sheet" of the batch of glass manufactured follows it throughout the process.

For the production of technical glasses, such as glasses anti-solar, glasses anti-dazzling, or conducting glasses, the recipes of manufacture can be very varied. We use all the resources of the S88 standard, which makes it possible to manage a master recipe and control recipes adjusted according to the conditions of production (temperature, time...)

Rationalization need and quality requirement

A multisite solution

For a company, which has several manufacturing units, the choice of COOX platform appears even more attractive.

A unified tool of manufacture, traceability and follow-up quality could federate the various sites, interconnected by the Intranet of the company. From the recipes of manufacture to the follow-up of production, information can be connected from the central site or the headquarters of the firm, by integrating the connection to company ERP solution.

APPLICATIONS

ORDINAL Software
 8, avenue Léon Harmel
 92160 ANTONY
 Tél : +33 1 46 74 11 50
 Fax : +33 1 46 74 01 25
 E.mail : info@ordinal.fr
 Site web : www.ordinal.fr