

TECHNICAL GLASS PRODUCTION



Ocmi Group

TOP-LEVEL TECHNOLOGY

Thanks to the continuous collaboration and activities with its partner, OCMI has been able to exploit the synergies with MT Forni to supply complete turnkey plants for specialized glass items such as glass insulators and glass bricks. In this article we take a look at how the two companies work together to provide glassworks with top-of-the-range machinery and services.

OCMI GROUP started its activities in the field of production machinery for technical glass production in 1997, together with its partner MT Forni Industriali, an Italian company specialized in the development and supply of glass melting furnaces, annealing and decorating lehrs for diverse types of glass items and volumes. The synergy between the skills of these

two companies enabled them to supply complete turnkey factories for the manufacture of two high-tech products: glass insulators for high tension airlines and glass bricks used for architectural purposes. The turnkey plants supplied, examples of highly prestigious achievements, have been created for business leaders in Italy, Algeria, Iran and China. Lines installed for these types of production go from 30 to 60 tons

per day of pulled glass, since only high production levels can justify such important investments.

GLASS INSULATORS

Machinery for the production of glass insulators has been installed in countries with a high level of availability of raw materials and where the governments decided to be the main investors of these electrification processes. Due to the very delicate function of the items to



be manufactured, this type of production needs maximum attention for each and every detail, starting from the quality of raw materials, percentage of each component in the glass composition, glass temperature in every point of the processing line up to storage method used and time needed. This is the reason why the production process does not terminate with the packing of the products, and, in fact, sophisticated control machines and tests are required before including the item in the final supply. Furthermore, manufacturing is not limited to glass processing, but also includes the preparation, control and assembling of cement caps and pins needed to realize the insulator chains for high tension airlines. For these reasons, OCMI and MT Forni's scope of supply covers a wide range of machinery and, more specifically, the following processes:

For glass shell production:

1. Melting of a batch of suitable composition
2. Forming by means of a special press
3. Temperature homogenising
4. Toughening
5. Thermal, mechanical and dimensional tests.

For insulator assembly and controls:

1. Assembly with cement and metal fittings
2. Routine thermal, mechanical and dimensional tests

For insulator qualification:

1. Type tests and sample tests in accordance with International Standards.

The production line can be purposely developed according to various volumes of glass tons pulled from the melting furnace.

The pressing machines supplied by OCMI perform the forming of glass shells, and can be adapted for the production of the different shapes of suspension-type insulators: standard, fog-type, open profile. The shape is given to the glass gob by means

of a multiple rotating plunger with integrated cooling system.

The thermal treatment performed using a homogenising tunnel, toughening machine, two annealing lehrs and water bath, enables to give the finished insulator the requested characteristics of mechanical resistance. This is a really critical passage in this workflow since the insulator will be exposed to all types of environmental conditions and, despite that, it must keep its intrinsic characteristics. Temperature changes are purposely applied according to the level of thermo-mechanical resistance requested for the items. Regarding post-production operations, OCMI and MT Forni are able to supply the needed know-how or equipment for the development of assembly departments and test laboratories.

GLASS BRICKS

On the other hand, glass bricks do not require such complex thermal treatment and testing operations, but in this case too, the complete workflow involves several steps. First and foremost, glass bricks are produced in two halves using an OCMI pressing machine of 10 or 12 stations, working with hydraulic or pneumatic pressing mechanism. The take-out of the press machine unloads the semi-finished bricks on a conveyor going to the next working phase: hot welding. The welding process is carried out by means of the pre-heating and melting of edges of each half-brick and the consequent coupling of the two parts. OCMI can upgrade traditional glass blocks forming lines in order to double capacity with two presses feeding the welding machine. This type of solution makes the new OCMI "high capacity" glass blocks line much more profitable in terms of both investment and operation costs. This double configuration can achieve a daily production of 25,000 finished glass bricks. After

final cooling, the finished items are unloaded and transferred to the last annealing process using anthropomorphic robots purposely programmed by OCMI specialists. On customers' requests, a painting machine for the colouring of the sides of the glass bricks can be supplied. OCMI manufacturing lines for glass insulators and glass bricks are developed with great attention to details with the primary purpose of maximising efficiency. These arrangements are made possible thanks to skilled glass experts from OCMI and MT Forni with specific knowledge in products with high technical content. For both production lines, OCMI offers maximum technical assistance since, particularly in the first weeks, the support of glass experts and engineers is an absolute priority to ensure and stabilize machine running and final quality. ■



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