

# PRODUCTION LINES FOR INSULATION MATERIALS

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3



3

# GAMMA MECCANICA S.p.A.





Gamma Meccanica S.p.A. designs and manufactures specialized industrial plants. Established in 1977, it consists today of three divisions, each one focused on a specific sector:

- the insulation division designs and produces lines for the production of mineral wools,

- the extruded polystyrene division is dedicated to the creation of systems for the production of XPS boards,

- the plastic division specializes in lines for the recycling of plastic materials.

The consolidated experience and core competencies combined with a high level of technical solutions enable the company to meet the growing needs of international markets and to offer customized solutions for each customer.

### Some numbers:

- Total area of Bibbiano's factory: 26,000 sq.m.
- Covered area: 14,500 sq.m.
- Number of employees: 90
- More than 600 customers worldwide
- About one million tons per year of insulation material produced with Gamma Meccanica S.p.A. lines

2

# A 40 years experience in the global market!

Gamma Meccanica S.p.A. has over 100 technological plants for the production of mineral wool worldwide. The company, present in 5 continents thanks to both branch offices and agencies, guarantees effective and timely service in every country of the world.

## Our values

### **Customer service**

Over the years, Gamma Meccanica has maintained its customer oriented approach. Each line is designed after careful analysis of the client's needs. This helps establish a trust based relationship and a mutually beneficial collaboration between the customer and supplier.

### **Human Resource**

Gamma Meccanica is first of all a group of people who share a daily passion and professionalism and this contributes to the company's daily growth and new achievements.

### **Research and development**

To benefit customers, R&D is continually looking for new solutions that will improve the overall performance of the equipment quality, production capacity, and reliability, and is developing environmentally sustainable processes and applications.

### Sustainability and energy efficiency

Gamma Meccanica is attentive to environmental problems, to the development of alternative energies sources, to a technology respectful of the environment. One of the company's priorities has been the construction of plants that help to preserve the planet and prevent damaging it.



# MINERAL WOOL production lines



Boards and felts in stone wool, glass wool, pipe sections, fiber ceramic products

Gamma Meccanica is one of the world's leading companies specialized in the production of both complete plants and individual machines for the production of mineral wools (such as stone wool and glass wool) that are world's most proven and widely used insulation materials.

Gamma Meccanica designs and manufactures also a wide range of special equipment for the production of pipe sections, uncured felt, lamella mat, stitched mattresses, hydroponic materials and ceramic fiber.

Each line is designed after careful analysis of the client's needs.

4

### We offer:

- Stone wool production lines
- Glass wool production lines
- Pipe sections production lines
- Special production lines (uncured felt, lamellas, stitched mattresses, hydroponic materials and ceramic fiber)

## **Quality: from design to construction**



### Finite Element (FEM) Analysis

Gamma Meccanica uses structural simulations FEM (finite element method) to improve the mechanical efficiency and the productivity of existing machines, mainly, in the research and development of new technological solutions.

The FEM analysis allows us to calculate the structural behavior of mechanical details of the different machines and to replicate virtually a real complex process (e.g. aerodynamic flow within a chamber), and to modulate some key stages of the production process (e.g. formation of the fiber starting from the melt).



# STONE WOOL production lines





GM equipment ensures a maximum efficiency of the production process.

A complete stone wool production line consists of several machines that process the material, from melting to packaging.

The "hot" part is located at the beginning of the line where the machines melt the basalt stone and transform it into fibre, followed by the polymerization and processing of the fiber, when the product acquires the final shape (rigid boards, stitched mats or felts). The packaging system is located at the end of the line and consists of machines that package the product and prepare it for warehousing or shipment.

### Features of production lines:

Indicative production capacity: 1.5 to 12 t/h (finished product)

Type of melting furnace: cupola furnace (for all capacities) or electric oven (for small and medium lines). Nominal line width: from 1,200 to 2,400 mm

Type of finished product: Felts, Boards, Stitched mattresses

Product features: Density 28 – 220 kg / m3 Thickness 15 – 250 mm Width 400 – 2500 mm

All stone wool products can be faced with different materials like aluminium, kraft paper, glass veil.

# GLASS WOOL production lines



A complete line for the production of glass wool consists of machines that transform the mixture of siliceous sand into boards and felts of glass wool. The first phase of this process consists of the storage and mixing of the raw materials. The next step is melting and fiberizing. The polymerization process is obtained with systems with low energy consumption, able to guarantee excellent results in the formation and polymerization of the product. Upon exit from the curing oven the product is trimmed: then the trims are automatically collected and returned to the production process. The line can be integrated with a system of in-line facing to obtain faced glass wool products with aluminum, kraft paper, glass veil.

The length and the width of the finished product is achieved using various saws and cutters installed on the line. The packaging system for rolls and boards have been studied to optimize the compression of the product and preserve the integrity, providing a compact package for easy and more economical transportation to ensure the quality of the original product to the end customer.

### Features of production lines:

Indicative production capacity: from 10 to 120 ton/day Working width of glass wool production lines: 1.200 – 2.400 mm

Glass wool products: Felts, Boards, Pipe sections

Product features: Density 8 – 130 kg/m3 Thickness 10 – 300 mm Finished product width 400 – 2400 mm

The glass wool products can be faced with different materials like aluminium, kraft paper, glass veil.

# PIPE SECTION production lines





Gamma Meccanica pipe sections production lines allow the production of finished products for special applications, using the products derived from main process lines. These lines are characterized by high efficiency and productivity, they canwork both with glass wool and rock wool.

The pipe section production lines for glass wool can be installed whether in line or out of line, while the lines for rockwool are installed exclusively out of line.

Gamma Meccanica offers two solutions for the production of pipe sections:

Split Mandrel Technology and Multi mandrel Technology.

#### Split Mandrel Technology

This technology for the production of glass wool and stone wool pipe sections has high efficiency and productivity. The product can be cured in a traditional gas oven or microwave oven. The lines are designed to produce pipe sections of various lengths: 914 (North and South America) 1000 (Europe), 1200 mm (Middle and Far East) to meet the requirements of each single market.

#### Multi Mandrel Technology

The main feature of this technology is the presence of the mandrel that remains inside the pipe section until the end of the process. The Multi mandrel technology allows the production of perfectly concentric stone wool and glass wool pipe sections, and it is possible to produce other shapes, such as square and rectangular pipe sections.

The grind (correction) of the pipe section with the mandrel still inside allows to control the inner / outer diameter of the pipe section and to obtain tolerances on the outer diameter less than 1 mm.

Advantages of Gamma Meccanica pipe section production lines: - respect of dimensional and geometric tollerances

- optimal curing
- low energy consumption
- low line man power
- quick changeover

In addition to pipe section production lines, Gamma Meccanica can also supply a fully automatic, on-line or off-line facing units for glass wool and stone wool.

# SPECIAL production lines



Gamma Meccanica designs and manufactures also a wide range of special equipment for the production of uncured felt, lamellas, stitched mattresses, hydroponic materials and ceramic fiber.

Each line is designed after careful analysis of the client's needs.

An important feature of Gamma Meccanica is the production process: the design, construction, assembly and testing of each machine are performed internally, so the company can directly control, in all their stages, both the development and the production ensuring that the equipment made is of the highest quality.

### Special production lines:

Stitched mattresses production lines
Ceramic fiber production lines
Hydroponic production lines
Lamellas production lines
Uncured felt production lines

# XPS BOARDS production lines





The extruded polystyrene called also XPS is a plastic material combined with other components and expanded by means of a blowing agent in order to create a continuous foamed structure.

Extruded polystyrene is used as an insulating material, it has several properties, such as simple installation (it's very light but very strong), high resistant to temperature changes, physical and dimensional stability, good resistance to compression, this is an inorganic product (therefore it prevents the development of micro organisms such as fungus and moulds), it is water-resistant and it is not dangerous for people or environment. Features of production lines:

The capacity of XPS production lines can vary from 300 to 1500 kg/h, equivalent to 70000-300000 m<sup>3</sup> / year.

Characteristics of extruded polystyrene boards: Density 30 – 45 kg / m3 Width 600 – 1.200 mm Length 1.200 – 3.000 mm Thickness 20 – 120 mm

Other sizes or specifications available on request.

# Great flexibility, compatibility, and thermal efficiency



## The production cycle goes through the following steps:

- 1 raw material dosing and feeding
- 2 extrusion tandem unit
- 3 blowing agent injection
- 4 boards forming
- 5 boards cutting
- 6 boards cooling
- 7 lengthwise trimming
- 8 short side trimming and stacker

### Blowing agents

The blowing agents mixes are composed depending on the price and quality of the final product to obtain. Gamma Meccanica S.p.A. lines are able to use all blowing agents present on the market:

- CO2 - Ethanol
- Ethanol - Butane
- Dutane
- HFA
- Other blowing agents

The percentages of use is based on customer request.

Gamma Meccanica S.p.A. can also provide the equipment, the accessories and the assistance to pass from one blowing agent to another on existing line.

## **GAMMA MECCANICA**

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Pursuant to continuous technical development, the company reserves the right to change the data and information available in.

Exclusive sales agency

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