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1st LATIN AMERICAN CANDLE MANUFACTURERS FORUM

MACHINERY FOR THE PRODUCTION OF CANDLES

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3 METHODS FOR THE PRODUCTION OF CANDLES

1. Molten (liquid) wax
2. Powdered wax
3. Wax slurry

1. MOLTEN (liquid) WAX

This method is the oldest and most traditional of the three. Work is performed using molten wax which is heated and stored in tanks.

There are different types of machines that employ molten wax:

- Molding machines
- Filling equipment
- Drawing machines
- Dipping machines

MOLDING MACHINES

These machines are capable of producing candles with or without wicks and are available in three types:

- Manual
- Semi-automatic
- Automatic



MANUAL MOLDING MACHINES

These traditional machines do not have any automated features



SEMI-AUTOMATIC MOLDING MACHINES

These types of machines are an improvement of the “traditional” manual molding machine, and usually incorporate these automated systems:

- Automated system for mold extraction of candle.
- Automated system to scrape wax overflow.
- Wax feed tank group – Automated wax filling system.
- Built-in machine temperature control.

These additions assist the worker to operate the equipment in a safe and less physically demanding manner.

SEMI-AUTOMATIC MOLDING MACHINE

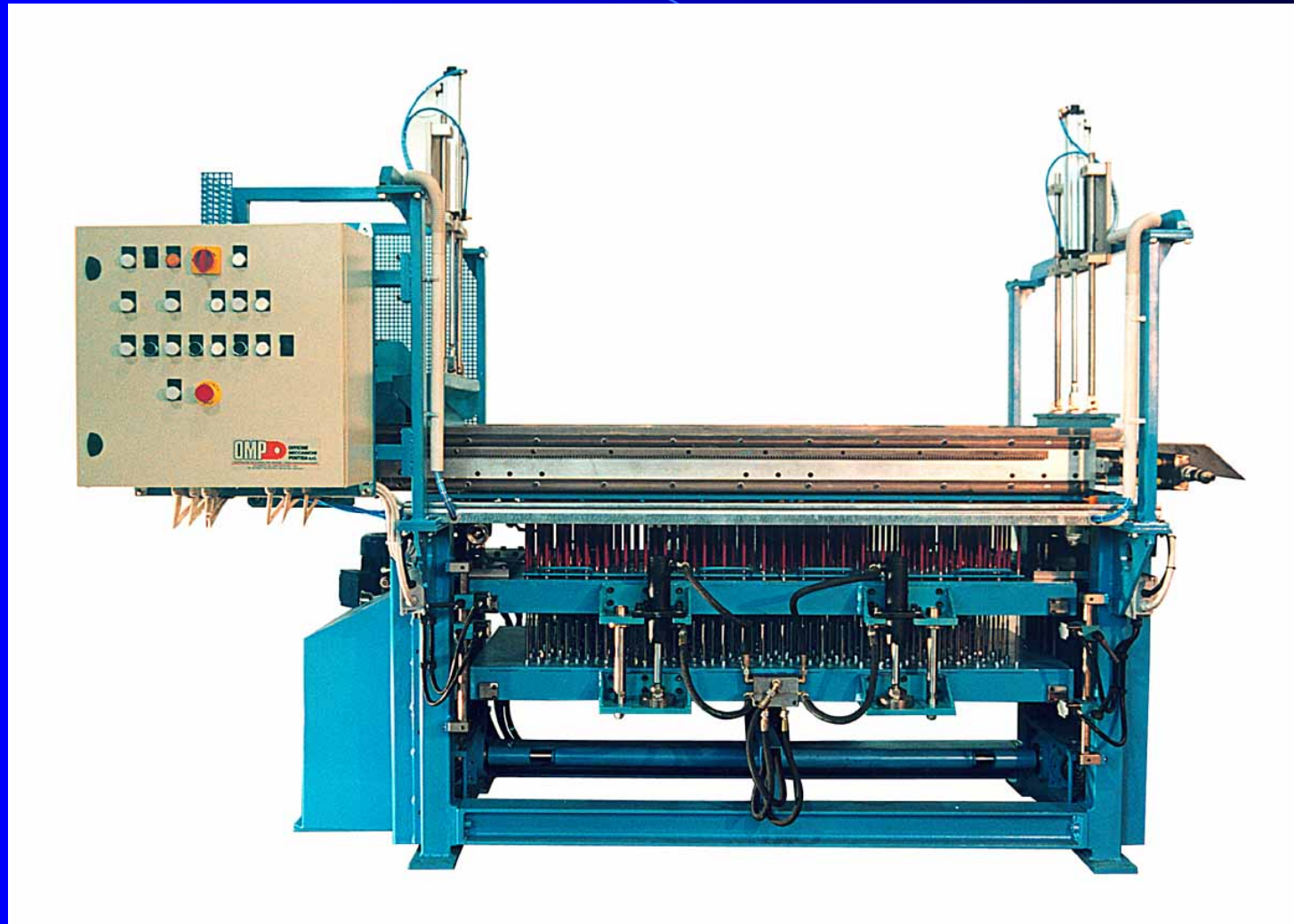


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PILLAR MOLDING MACHINE



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AUTOMATIC MOLDING MACHINE

The automatic molding machine is complemented with accessories that substitute manual machine operations. At the same time, these improvements allow for a more consistent high quality candle production:

- Automated candle removal system.
- Automated scraped overflow wax recuperation system.
- Head and base automatic milling machines.
- Color over dip machines.
- Candle packing equipment.



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FILLING EQUIPMENT

These machines are normally utilized to fill different size containers or candle molds.

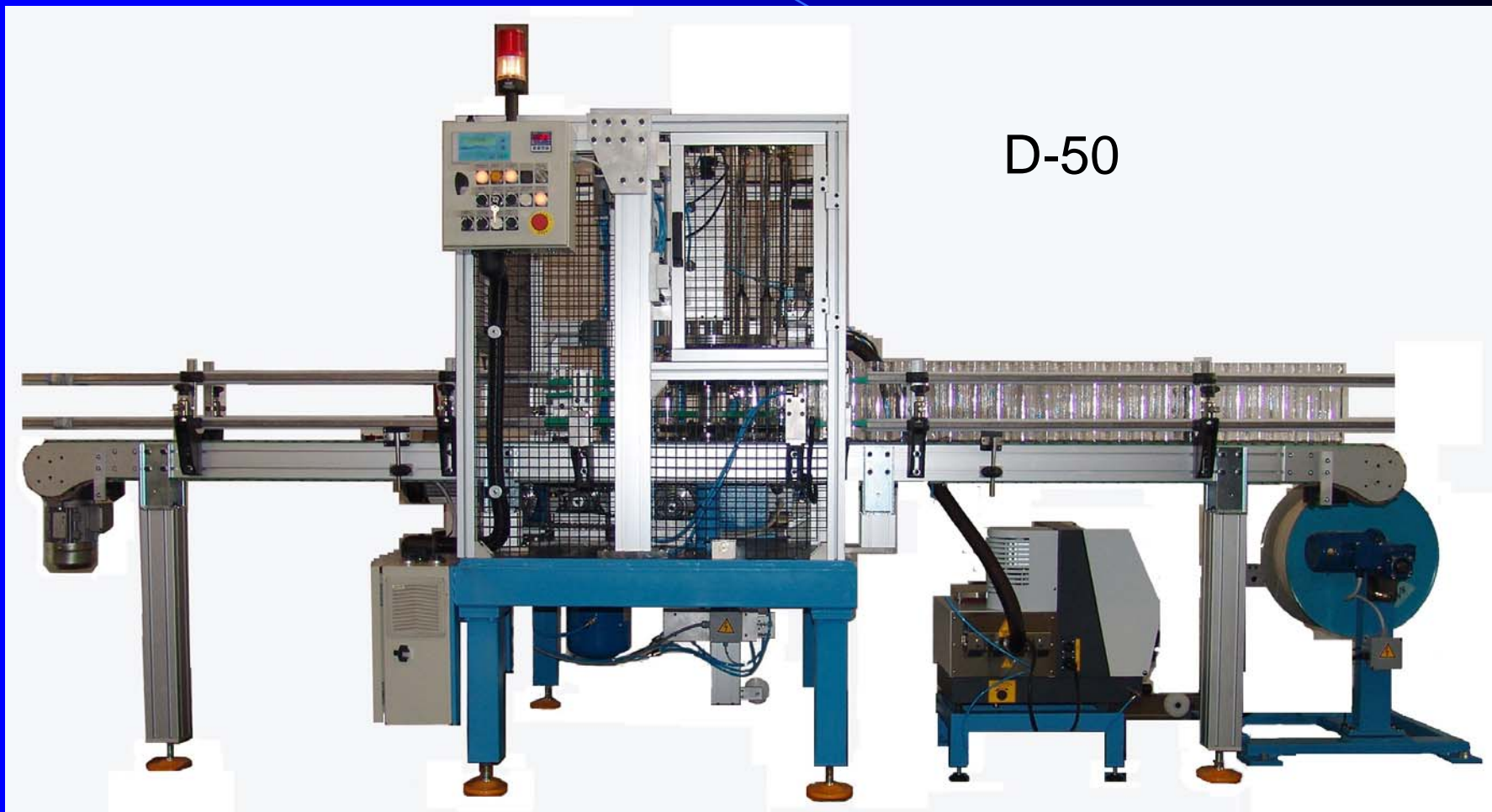


FILLING EQUIPMENT

With this type of equipment, a fully automated production line is possible incorporating individual components such as:

- Semi and fully automatic wick insertion systems
- Conveyers and product transfer stations

AUTOMATIC WICK INSERTER

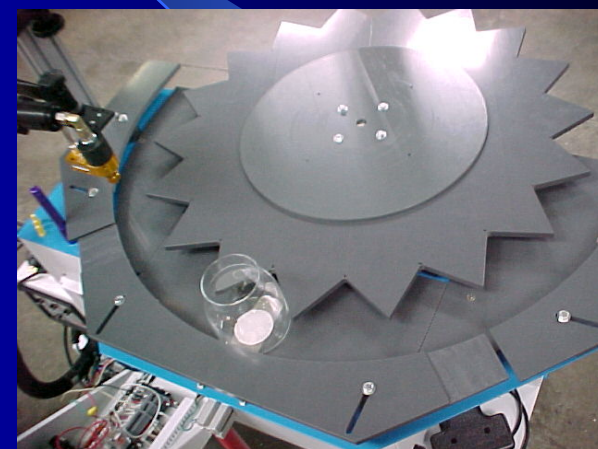


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SEMI-AUTOMATIC WICK INSERTER

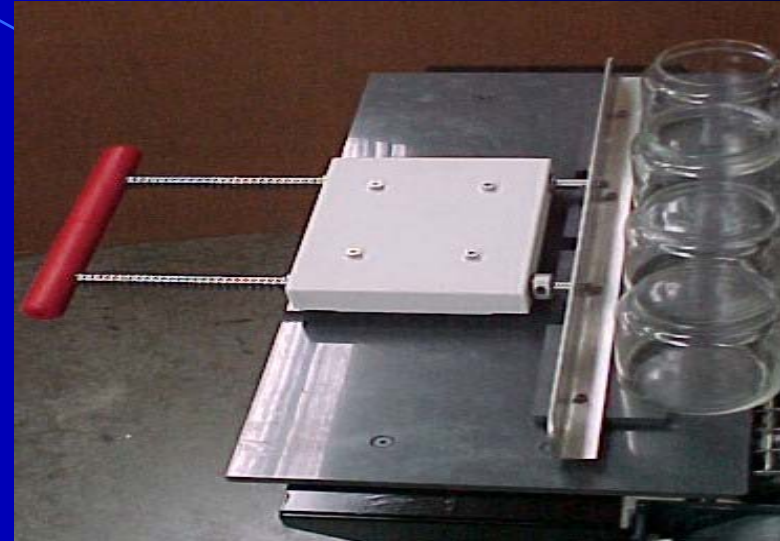
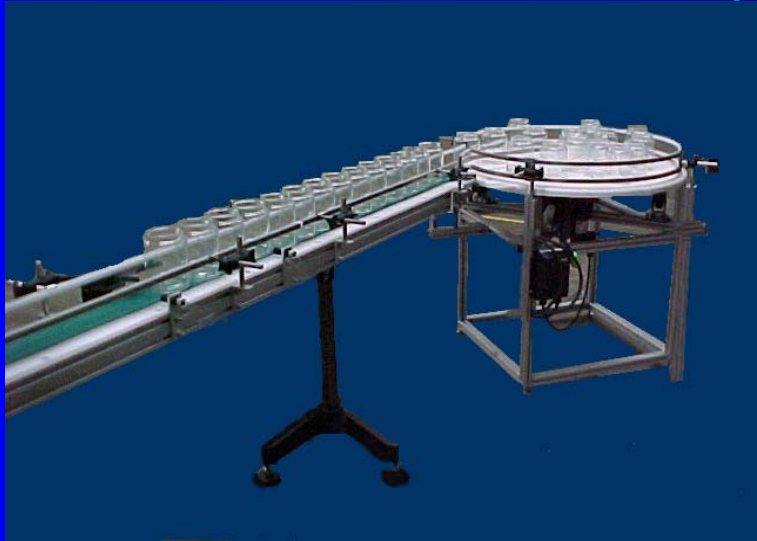


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CONVEYORS & TRANSFER STATIONS



2. POWDERED WAX

This method is highly productive and lends itself to be automated. It consists in transforming liquid (molten) wax into a solid granule form via the process of powder spraying (pulverization). White or color scented or unscented powdered waxes can be produced. Subsequently, this powdered wax is compressed into a candle shape with different types of presses.

One of the great advantages with this type of production is that with a single machine and the adequate tooling, it is possible to produce candles of many different diameters and lengths.

Three different types of presses are available:

- Mechanical presses
- Hydraulic presses
- Extruders

PULVERIZERS

The process of transformation of the raw material is done via the pulverization of molten wax on different models of equipment with capacities that range between 100 to 1200 Kg/hour.



PRESSES

There are 3 types of presses:

- a) Mechanical presses
- b) Hydraulic presses
- c) Extruders

a) MECHANICAL PRESSES

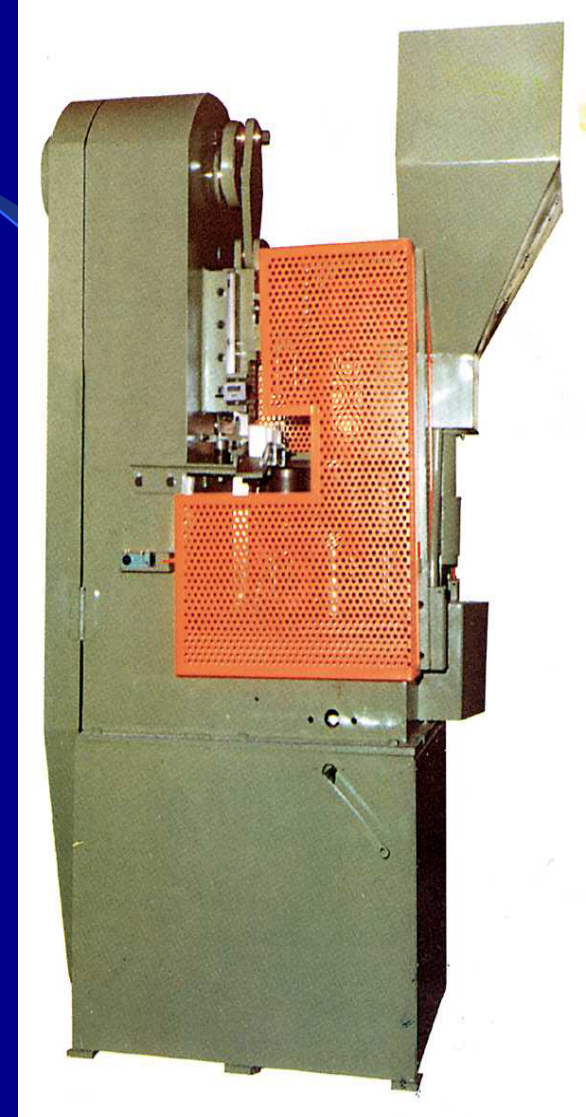
They are used to manufacture small diameter candles with a pre shaped wick hole.

This type of equipment can be designed and built in different models and sizes, depending on the candle size and the production capacity required.

- Single stroke mechanical press
- Continuous mechanical rotary press

The pressing process is achieved within the mold cavity itself via the movement of a superior and inferior pistons. The powdered wax is fed by a hopper that is located above the mold cavity.

MECANICAL PRESSES



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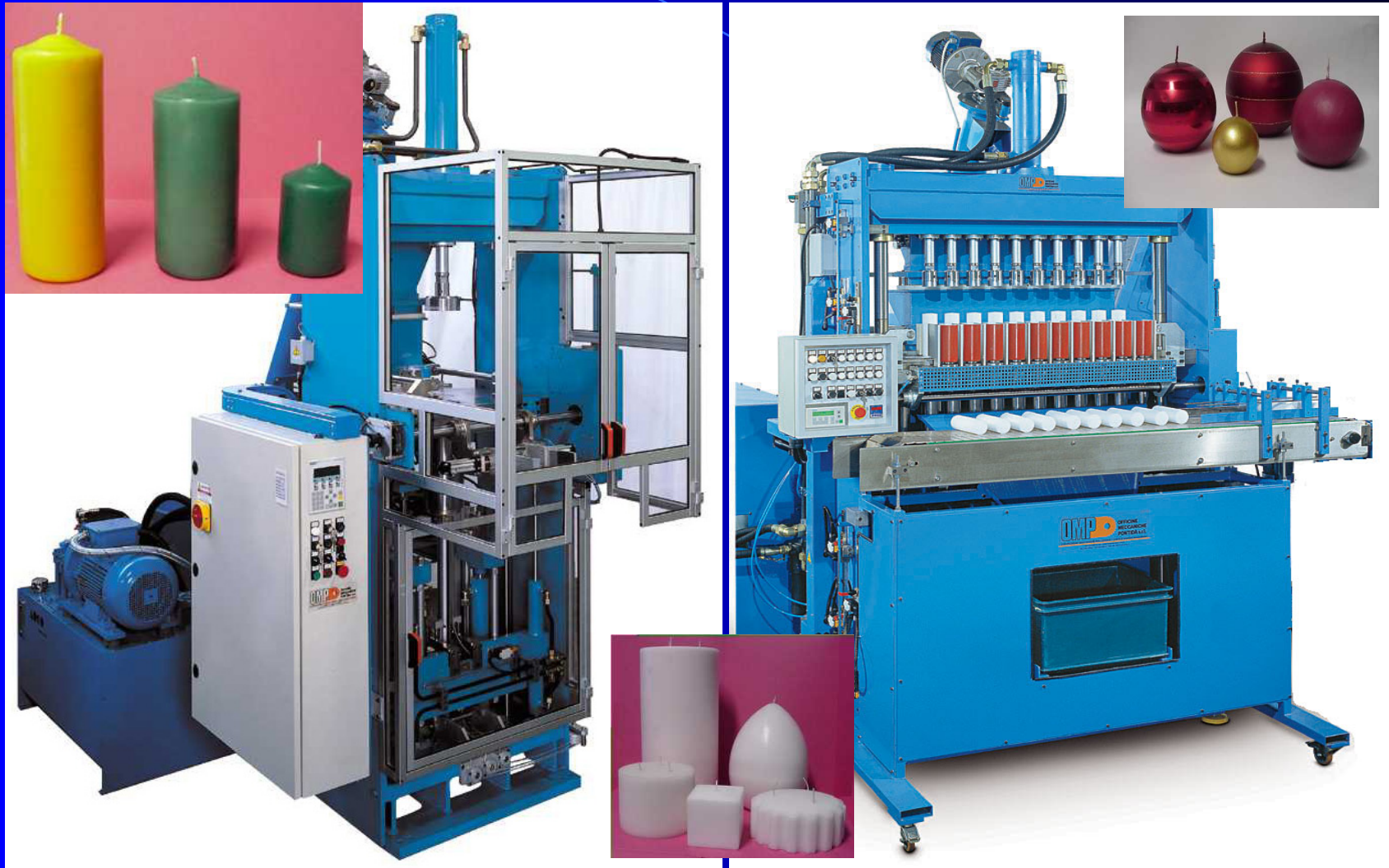
b) HYDRAULIC PRESSES

This type of machine produces candles with pre inserted wick or a pre shaped wick hole for use with a tabbed wick assembly (1-3-5). Hydraulic presses can be built with different amounts and sizes of molds (cavities) based on candle diameter and production volume requirements.

These machines can be delivered with different molds and piston heads to produce candles in different sizes and shapes. The pressing process occurs inside the molds by the movement of the superior and inferior pistons. The powdered wax is gravity fed by a hopper that sit above the molds.

The machine comes equipped with a complete hydraulic pack and proportional valves. The electric control panel contains a non volatile memory unit where cycle parameters can be programmed for each type of candle produced, eliminating the need and time to re-program the machine for every change.

HYDRAULIC PRESES



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AUTOMATED PRODUCTION LINES



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c) EXTRUDERS

This machine produces pre wicked candles using powdered wax. The compression of the wax takes place inside the cylindrical chamber with a coned shaped exit by the forward movement of a hydraulic piston.

The machine “extrudes” a solid strand which is cut to desired length. It is finished and packaged by machines installed downstream of the extruder. Extrusion allows for very high production volumes of candles with a similar consistency (density) of those obtained via molding of molten molded wax, without having to wait for the cooling time.

Within the machine’s design range, it is possible to produce different diameter candles by simply exchanging the extrusion dies located at the head of the extruder.

CANDLE EXTRUDERS

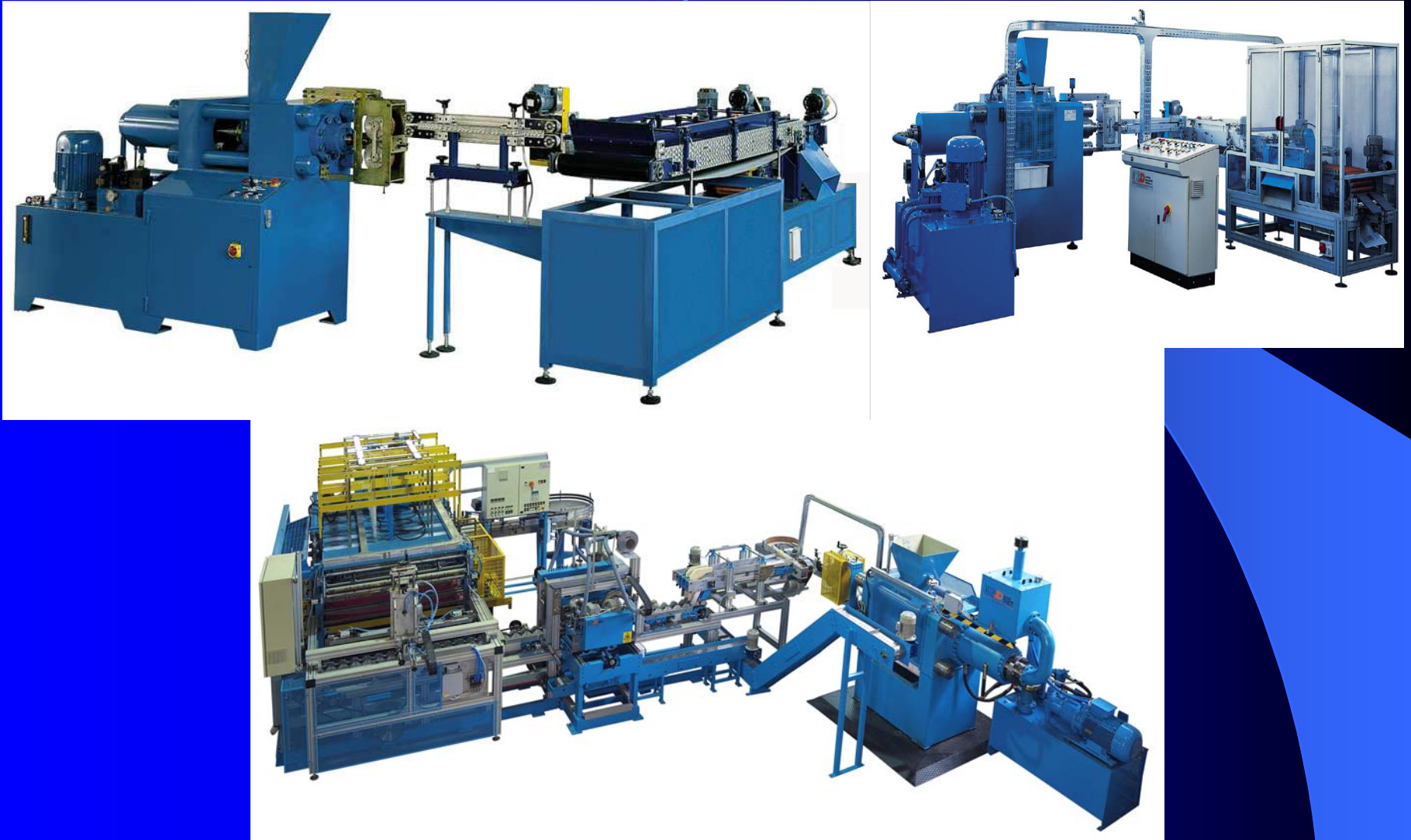


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AUTOMATED PRODUCTION LINES



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3. WAX “SLURRY”

This is the “newest” of the 3 basic methods of production. It was introduced to the international candle industry back in 1995. This method consists of transforming liquid (molten) wax into a semi-solid wax slurry before filling a candle container or mold. The principal advantages of this methods are:

- Possibility of utilizing any type of raw material such as paraffin wax, hydrogenated oils and other waxes by themselves or in blends.
- Possibility of manufacturing “lite” pillars.
- Reduction of candle “cooling” time.
- Reduction of manufacturing floor space.
- Automatic wick centering without operator intervention.
- Possibility of immediately packaging product as it exits the production line.

This equipment is designed and built with different layouts based on the type of candle container or mold to be filled, the level of automation requested, the daily production volume needs and efficient use of the available floor space.

GLASS & PLASTIC FILLING LINE



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VT TRANSFORMATION TANK

Description of Operation

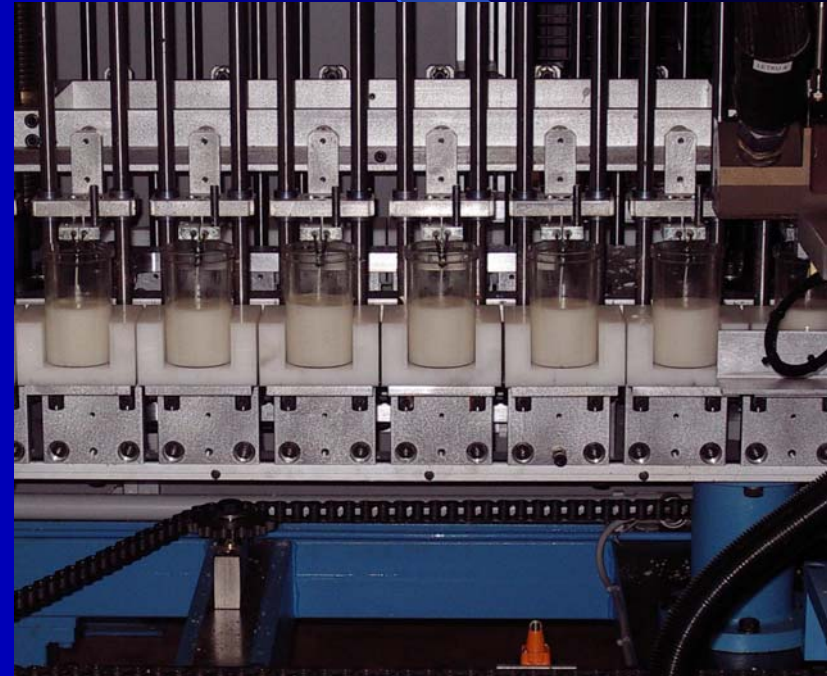
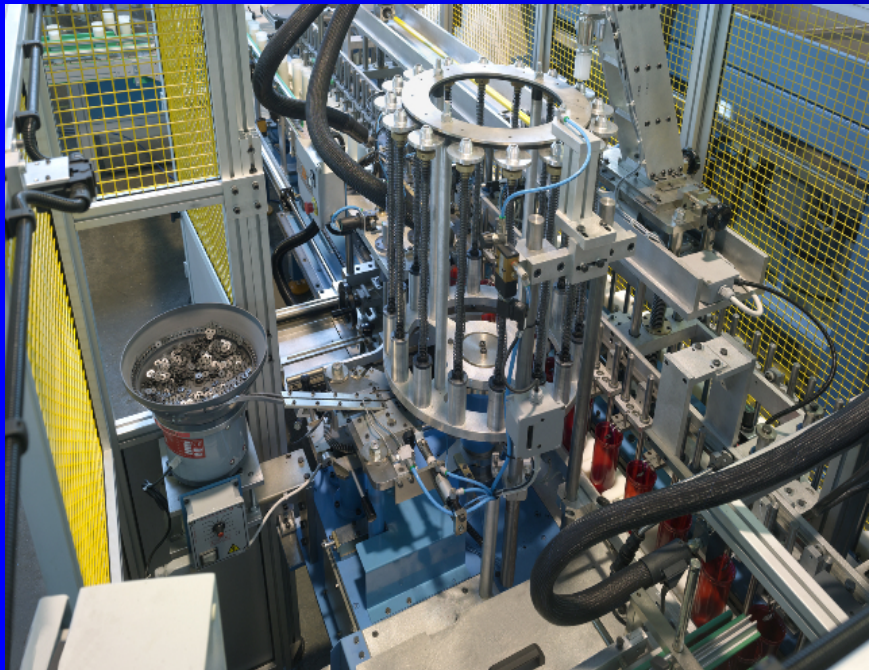
The raw material is transformed in the interior of the tank from a liquid (molten) state to a semi-solid slurry by the reduction of temperature and mixed by a group of scrapper blades that homogenate the wax.

As it reaches this state, the wax slurry is fed to the filling equipment via specialized pumps.



D-58 PLASTIC & GLASS FILLING MACHINE

This machine places and centers the wick inside the candle container and fills it with paste wax.



FILLING LINE (VIDEO)

PRODUCTION LINES

The machines described up to now, are normally used in fully automated production lines in order to fully exploit the reduction of the cost of labor.

The entire production line is planned and constructed considering factors such as:

- type of candles
- type of production
- available floor space
- required production volumes

PRODUCTION LINE COMPLIMENTARY EQUIPMENT

This is some of the equipment used to compliment automated production lines:

- automatic container and lid feeders
- over dipping machines
- milling machines
- wicking equipment
- production line accessories
- melt tanks
- conveyers and packaging units

AUTOMATIC FEEDERS



This equipment is used to automatically orient and feed plastic or metal containers into the production line.

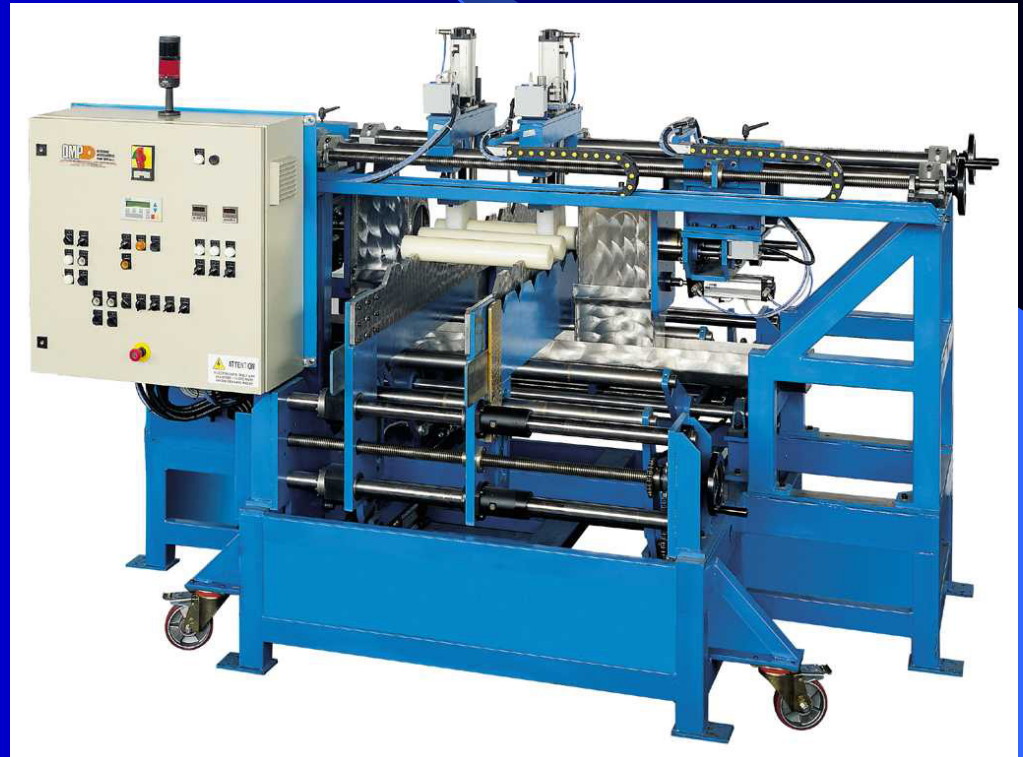
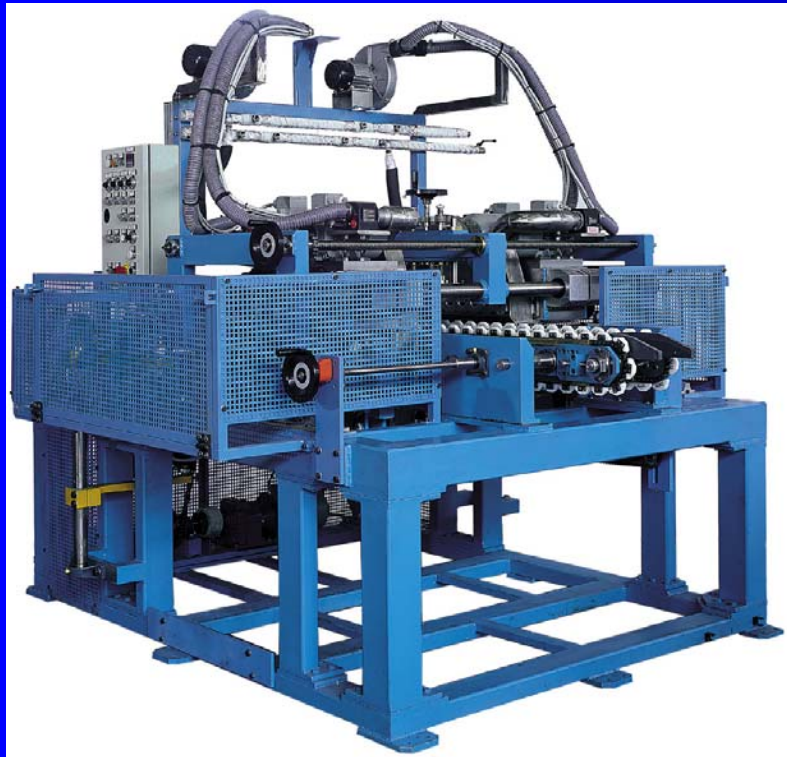
COLOR OVERDIPPING MACHINES

These machines are used to color over dip candles produced with the traditional molding or various powder pressed methods.



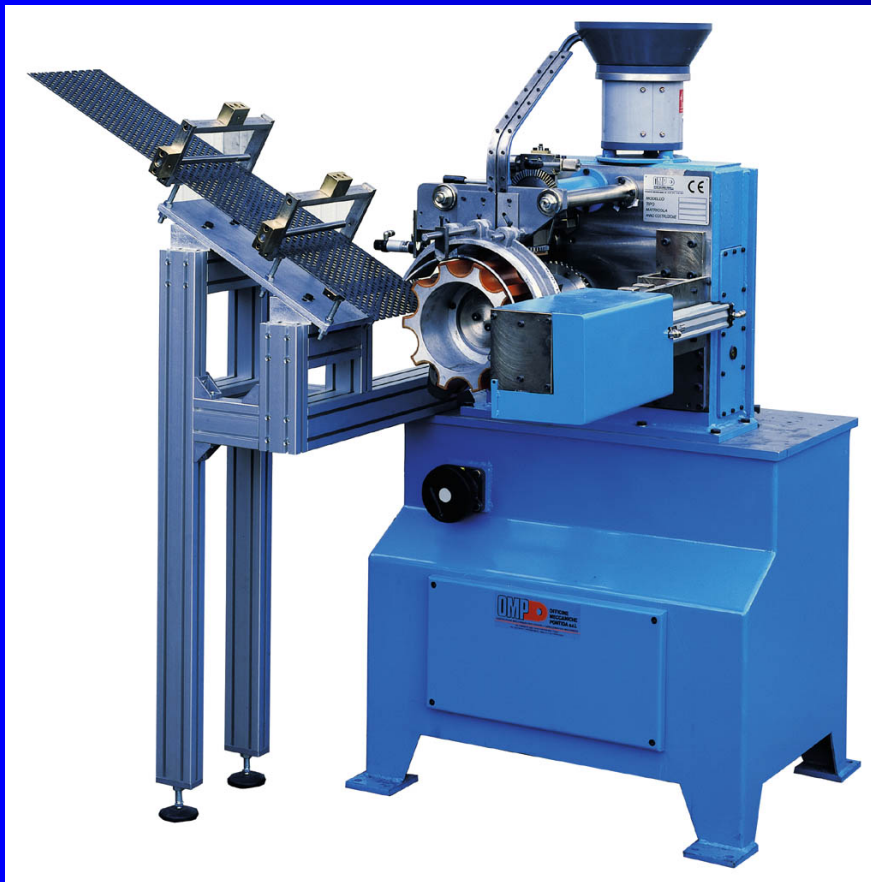
MILLING MACHINES

This machine mills the head and base of candles produced by molding, over dipping or extrusion.



WICKING MACHINES

These machines are used to automatically insert the wick in a candle or pillar produced on the traditional molding machine or powder press.



PRODUCTION LINE ACCESSORIES

These machines are designed to transform plain cylindrical pillars into “designer” candles.



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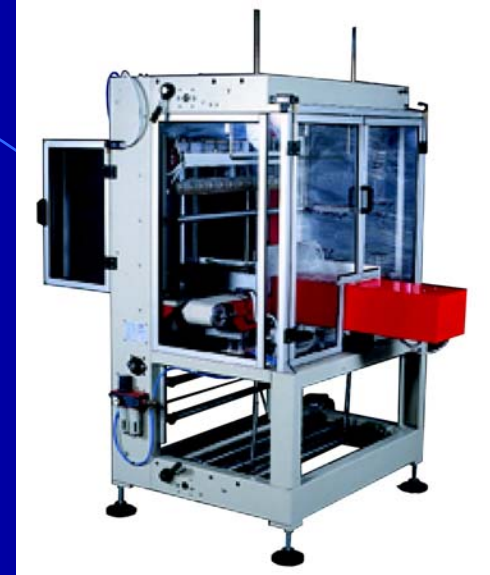
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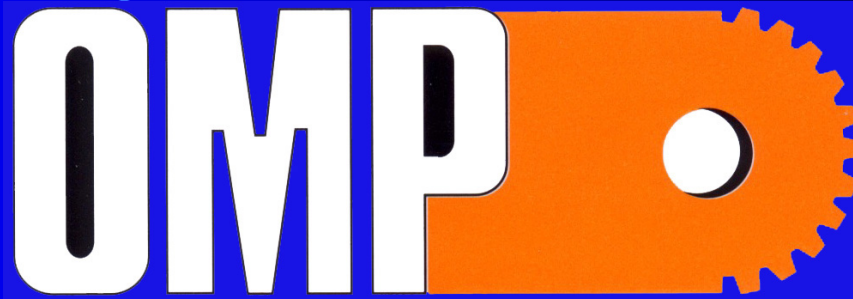
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CONVEYER BELTS ...



... AND PACKAGING EQUIPMENT





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THANK YOU FOR YOUR ATTENTION

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