

## **VENEER FLATTENING LINES**

The top quality wood is turned into veneer.

The logs are sliced into sheets with thickness 0.4-0.8 up to 1.2 mm.

After having been sliced, the sheets are dried by introducing sheet by sheet in long ovens called driers. They are of different types and technology, the most sophisticated are called **press dryers**.

Before becoming veneer the sliced sheets must be trimmed with veneer saws and then glued with joining wire or adhesive paper to get the sheets for the processing size. The processes of cutting, drying and trimming are performed usually by companies called SAWMILLS, the joining by the end user or by subsuppliers.

The sawmills deliver the material on pallets on which there are veneer packs with a sheet number of 24 or 32 (this is normally due to commercial reasons).

Contrary to the flattening function, the press dryers give a material which is still nervous and with wrinkles, making difficult the process of trimming, joining and even gluing. This created the need to literally flatten or ironing the veneer in order to make the veneer sheets perfect smooth, flat, without wrinkles and with perfect edges.

**2 methods of flattening** : multi-daylight press or single daylight press with fasten hot-cold cycle.

**Multidaylight press**: 12 to 16 sheets (depending on the essence and packs in order to recompose them easily once extracted from the press) are feeded into a multidaylight press at a temperature of 100-120 °C for about 30 min./1h. After the hot phase the working pieces can be cooled down in the press (with good results) or removed and put to cool down under weights or in another cold press.

It 'a very difficult and slow process. The main problem is that the veneer sheets tend to curl because it is not possibile to degas the steam that is formed. The production is then very low.

Also keep in mind that to obtain good results it is better to cool down the sheets under pressure in the same press and then, at each cycle, materials and press platens should cool down together with high energy costs.

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Press dimensions: see NPC, normally 3500 X 1300 mm

Working pressure: from 3 up to 5 Kg/sqcm.

Pressing time: from 30 min. up to some hours

**Hot/Cold quick pressing cycle single daylight press**: The packs of veneer are opened and divided on the loading belt into a number of sheets that allow a good machining, so as to be then recomposed easily at the end of the line.

Automatically they are loaded into a heated press then into a cooled press and then moved to the unloading area.

The pressing cycle time changes according to the type wood essence and to the number of sheets. Normally from 1.5 min up to 3/5 minutes.

During the hot pressing are carried out one or more degassing of steams

The temperature changes from 100°C up to 120°C-130°C. In some case up to 150°C

Press dimension: 3500 x 1400 mm  
4400 x 1400 mm  
5300 x 1400 mm

N.B. The presses' dimension it is **exclusively** due to requested capacity because the plant works in continuous regardless to the veneers' dimension.

pressures: hot press 10 Kg/sqcm  
cold press 5 kg/sqcm

Temperatures: hot press 100-120°C  
Cold press: according to the room temperature

Cycle time: Form 1 up to a 3 minutes

It is not easy to well flattening the veneer but it becomes with the experience and in this field ORMA claims the result of being the first one in ITALY to flattening the veneer in fast hot-cold cycle with research and testing lasted over six months.

We know of foreign competitors that took over 2 years to get to the results that for ORMA were rather the starting point to improve. A material is well flattened when it is smooth as the glued veneer glued and shows no wrinkle that makes it difficult if not impossible its processing. ORMA has been for years, and it is still the company to be copied by its competitors.

Some secrets to flatten hard and well:

Moisture of the veneer: the veneers come out from the dryers with a 8%-10% humidity (max. 12%) to avoid their moldy during storage.

8%- 10% humidity cannot be enough to get a good flattening, so it is necessary to wet the veneers.

Pre-heating of the more "corrugated" veneers to avoid breakages

Flattening in continuous and at high temperature for more productivity

Flattening quality: quick degassing, hot press with high pressure (flattening press), cold press with controller temperature (stabilizing press), quick translation from one press to the other.

Reliability of the pressing plants: the weak point of the plant has always been the hot press belt, the higher the temperature, the lower the lifetime.

Today after having tested the most different and advanced materials such as glass fiber, Kevlar, etc. we have a solution that allows the belt long lifetime even using the press in more the on shift/day. more shifts.

The belt of the hot press is made in a single piece without sewn or glued joints and can be replaced easily by the customer without intervention of the manufacturer specialized personnel. (Same for the cold press).

The Italian market is surely the most difficult because in Italy are processed tropical essences, which are the most nervous and hard, than the northern species (coniferous, resinous).

ORMA has supplied pressing plants in all markets and therefore the customer can find in ORMA both experience and practical support to start its production activity

The presses are built with cut flame iron beams as the LCC presses

Self bearing solid drilled steel platens with chromed surface (due to the high quantity of steam), blowing system on the upper platen to void the sticking of small pieces therefore damaging the material being processed, special profiles at the end of the platens to avoid any possible mark on the material being processed. The hot press platens are insulated with rock wool and galvanized casings

Belts divided between hot and cold press in order to lower maintenance costs,

Hot press belt always in temperature (higher speed in heating up the material)

The belts are controlled by a special electronic system of tension and centring that intervenes in case of sliding to reposition the belts themselves

Pre-filling Hydraulic plant with suitable cylinders (a flattening hot press can make more than 2 millions/year pressing cycles; the same quantity of pressing cycles are carried out by a standard LCC in 5/10 years.

The hot press cylinders are cooled down to keep the seals' lifetime

Electronic system of control and synchronization of the speed of the 4 belts, with system for controlled acceleration and deceleration, working cycles control, possibility of connection to PC or printer for production data

Heating plant: gas/gasoil fired boiler (upon request)

Cooling down system: with closed-circuit cooling unit using ecological gases.

Automatic pressing plants with crosswise loading like NPC / A or PCC may be built, but are not recommended because they do not allow the continuous flattening, they are limited in size, and furthermore they have problem concerning the translation of narrow veneers between the different belts of the plant.