

Tongue & Groove cutting machines

For Ship-Lap and other Profiles

NUOVA IDROPRESS S.p.A has realized and patented an innovative system for the tongue and grooving of 4 sheet sides by means of hot wires.

By being both long and short wires installed on the same rectangular frame which moves up & down (like a down-cutter) and horizontally at 45° it is definitively possible to calibrate properly the squareness and parallelism between the wires.

The 2 sets of long and short wires are as well installed by touching each others in the overlap positions in order to ensure to be almost on the same surface (apart of the thickness of the wire which is the only deviation from a perfect coplanarity within them). This is possible thanks to a patented innovative wire heating system which avoids the short circuit between the short and the long wires even if these touch each others.

Pre-cut sheets (without squaring in width and length) are loaded into the cutting station where thanks to the simultaneous tongue and grooving on the 4 sides without moving the sheets an absolute accuracy in squaring is ensured.



Advantages of this modern technology in front of conventional milling machines

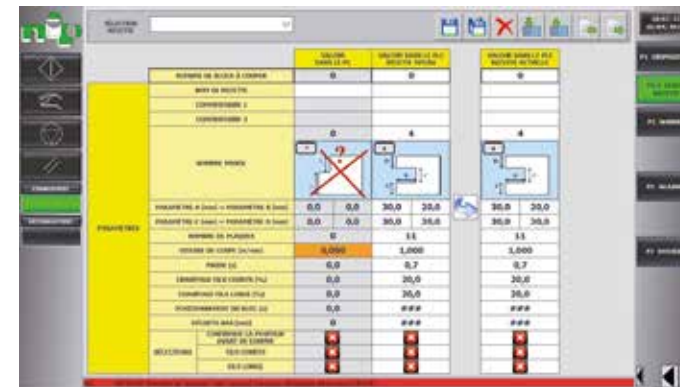
- Minimum space requirement
- Very low noise level
- Complete absence of dust in the scraps that therefore can be much better recycled
- Reduced energy consumption
- Minor investment of capitals for entering in the sector of the tongue and grooved sheets
- Considerable operative flexibility: the profile of the tongue and grooved side and the thickness of the sheet are programmed on the machine PC without changing any tool, so in addition to common Ship-Lap also other shapes can be cut

Modern and Advanced Control System

- Process Control by Recipes
- New WinCC supervision system with 19" touch screen Siemens Industrial PC with SSD
- Fully integrable with customer ERP software for controlling the production
- Remote Control for distance support

Hardware in use

As for the shape cutting machines a standard hardware is used, same type as in all NIP machines: a Siemens PLC, Siemens inverters and AC motors. No need to use custom products such as Numeric Controls, Servodrives or Servomotors. This is useful for reducing the spareparts stock and to make service to the machine easier and cheaper.



How to operate It

Regarding the programming of the profile to do shaped, the operator must only select the type of joint from the list of those available from the supervision software, and then he will be inserting the various dimensions required by the chosen profile (thickness of the sheet, measures of the various sides ...). The machine then will measure the effective height of the stack of sheets just loaded, for then proceeding with the cutting of the figure of the joint that will be repeated on the whole height of the stack taking in consideration the calculated average thickness of the sheets. It is therefore important that the sheet thickness is both uniform in the whole loaded stack as well as that each sheet has a proper planarity. Due to precision reasons, the maximum length of the stack of sheets to be shaped with this type of technology is 4,0 m (158 in).



Are available

- "Manual" simple models in which the operator loads a stack of sheets not squared in length and width and then the machine carries out the tongue and grooving-squaring on the 4 sides simultaneously. In this models even the operations of product unloading and scrap collection must be carried out manually.
- "Semi-Automatic" models where the tongue & groove cutting station is automatically loaded with the sheet stack previously aligned on a buffer conveyor located at the front; in the same way a buffer unloading conveyor will receive the cut sheet by optimizing the machine loading and unloading procedures. A simple horizontal cutting head can be also foreseen at the inlet in order to generate the sheet stack from the loaded block and finally a bottom belt conveyor for scrap collection (manual extraction) in combination with a dedicated pre-crusher can be added to this models too.



- Models "more automated" which can be integrated inside the down-cutter of the automated cutting lines for sheets. These machines can be equipped even with systems for the automatic collection of the scraps on 4 sides (by suction devices) and further pre-crushing along the line, systems for automatic positioning of the cutting wires, etc...