Main components of the NPC presses are the followings:
- structure
- hydraulic power unit
- pistons
- platens
- heating system
- control board

This NPC presses produced since more than 40 years; contain all the experience we got in the wood pressing field. These machines are worldwide known for their reliability and high technical performances.
STRUCTURE
- Tool machined and all-welded main frame for greater strength
- Double rack and pinion system (both length and crosswise) to grant a perfect platens’ parallelism when the mobile one is moving up/downward.

HYDRAULIC POWER UNIT
- Hydraulic power unit (by Hawe - Germany), composed by a double stage pump and a motor which are submersed in the hydraulic oil for a less noisiness and a better lubrication of the rotating parts.
- Closing stage (high delivery at low pressure)
- Thrusting stage (low delivery at high pressure)

ELECTRIC MOTOR
Unit fitted with the following control and safety valves:
- Relief valve for the closing stage.
  After the platen closing it cuts off the oil delivery;
- Lower absorbed power and less hydraulic oil heating up;
- Relief valve for the thrusting stage.
  It avoids over pressures in the circuit;
- Keeping pressure valve;
- Valve to release the pressure smoothly;
- Solenoid valve to discharge the oil quickly;
- Filters both in the inlet and outlet to prevent the circulation of foreign matters inside the circuit.

1. Coil electric connection.
2. Max pressure valve.
3. Disjunction valve.
4. Cap with dipstick.
5. Manual control push-button.
6. Air suction filter.
7. Electric box.
A remarkable and peculiar detail is the pistons chroming that is carried out by “thickness” (and not by “bath”) to obtain a longer time durability of the chroming, granting a perfect shaft sliding throughout years. Thrusting cylinders are made of steel for mechanical application and according to Ormamacchine design.

The pistons’ locking to the press structure is made by means of bolts to allow a quick maintenance of the piston or its replacement. Even in this case, this solution has been chosen in comparison to less expensive ones (piston welded to the structure) to guarantee an easy use and maintenance.
The presses can be supplied with 3 different types of platens:

**FABRICATED ASSEMBLED STEEL**
- It is the most common type of platen mounted on the hot presses.
- **Main features:**
  - Max. temp. up to 120 °C.
  - Max. working pressure 3-5 kg/cm²
  - Heating medium pressure 2.5 ate
  - A. Aluminium covering for a better surface finishing and a better heat propagation.
  - B. Flat gauged steel sheet.
  - C. Coil of piping for hot water/oil circulation.
  - D. Reinforcement piping
  - E*. Flat gauged steel plate, only for intermediate platen.
  - F. Insulating material.

**SOLID DRILLED STEEL**
- It is the strongest type of platen can be mounted on the hot presses.
- **Main features:**
  - Max. temp. up to 250 °C
  - Max. working pressure 30 kg/cm²
  - Heating medium pressure 10 ate

**ELECTRIC**
- This platen is made a 12 mm aluminum plate in which are inserted the electric resistances, underneath a chipboard support.
- **Main features:**
  - Max. temp. up to 120 °C.
  - Max. working pressure 7 kg/cm²
HEATING SYSTEM
The NPC presses can be equipped with the following type of heating systems:

> ELECTRIC HEATER FOR OIL
It is the most common type of heating system.
It is composed by:
- Circulation pump
- Piping
- Expansion tank
- Max temperature: 120 °C
A thermometer is fitted in the boiler with a double safety function:
- operate in case of remote thermometer breakdown
- operate in case of anomalous temperature inside the boiler
The boiler is provided of the necessary oil for the first plant filling.
Piping insulation excluded.

> ELECTRIC HEATER FOR WATER
It is composed by:
- Circulation Pump
- Piping
- Expansion Tank
- Max Temperature: 90 °C
A thermometer is fitted in the boiler with a double safety function:
- operate in case of remote thermometer breakdown
- operate in case of anomalous temperature inside the boiler
Piping insulation excluded.
> GAS/GASOIL FIRED BOILER

This type of heating plant is advisable in countries where the power cost is high.

The boiler has to be connected to a burner (gas/gasoil).

The heating medium is thermal oil

It is complete of the following devices:

**Oil outlet temperature control:**
- Temperature switch that stops the burner in case of too high oil temperature.
- Switch that adjust high/low burner flame at set temperature;
- Maximum switch that stops the burner at set temperature;
- Safety switch that stops the burner at set temperature; its intervention need manual reset.

**Second safety temperature switch:**
This device, independent from the previous one, stops the burner when the oil temperature reaches the safety set temperature, in case of failure of the a.d. temperature control device.

**Oil inlet temperature control device**

**Thermometer (shows oil inlet temperature):**

Stops the oil circulation pump only when the oil temperature reaches 100 °C, to dissipate remaining heat in the heater after burner stop, to prevent oil damage.
Heating system
Electric heater flow diagram

LEGENDA
1 Electric boiler
2 Circulation pump
3 Flexible inox pipe -lower output
4 Flexible inox pipe -lower input
5 Press lower platen
6 Press upper platen
7 Flexible inox pipe -upper input
8 Flexible inox pipe -upper output
9 Expansion tank
10 Air bleed valve
11 Safety flexible inox pipe: water feeding and installation bleed
12 Flexible inox pipe: boiler-collectors connection
13 Flexible inox pipe: pump-boiler connection
14 Temperature adjustment telethermometer
19 Possible upper input flexible inox pipe for intermediate platen
20 Possible upper output flexible inox pipe for intermediate platen
21 Possible intermediate platen
22 Installation delivery hose
23 Installation return hose
24 Valve for fluid bleed from installation
The NPC DIGIT has a new designed control board with a touchscreen keyboard PLC controlled (By Siemens)

Along with the keyboard on the control board there are:
- Opening and closing push-buttons
- Main on/off switch
- Tension lamp
- Emergency push button

By means of the keyboard, the operator can set and check all the press functions such as:
- Specific working pressure
- Working temperature
  (presses with electric heater or electric platens)
- Pressing time with automatic opening of the platens
- Automatic switching ON of the heating system
- One set of pistons shut OFF
  (presses with 8 and 10 pistons)
- Possibility of using only 50% of the heater
  (heaters over 20 kW)

By setting the specific working pressure the machine will set the needed Tons
In case of shutting off of one or more set of pistons, the machine automatically will calculate again the working pressure, according to the new pressing area
NPC DIGIT

ADVAISED PARAMETERS TO WORK WITH A PRESS

<table>
<thead>
<tr>
<th>To Glue</th>
<th>On To</th>
<th>Pressure kg/cm²</th>
<th>Temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formica / laminate</td>
<td>wood frame / polystyrene</td>
<td>1</td>
<td>60</td>
</tr>
<tr>
<td>Formica / laminate</td>
<td>chipboard / plywood / multi-ply / hollow core*</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>1 mm thick veneer</td>
<td>chipboard / plywood / multi-ply / hollow core*</td>
<td>2.5 / 4</td>
<td>120</td>
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<tr>
<td>3 mm thick veneer</td>
<td>plywood</td>
<td>18</td>
<td>120</td>
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<tr>
<td>Plywood</td>
<td>multy-ply</td>
<td>6 / 7</td>
<td>120</td>
</tr>
<tr>
<td>Standard paper</td>
<td>chipboard / plywood / multi-ply</td>
<td>3 / 5</td>
<td>8</td>
</tr>
<tr>
<td>Glued melamine</td>
<td>chipboard / plywood / multi-ply</td>
<td>10 / 12</td>
<td>120</td>
</tr>
<tr>
<td>Pre glued melamine</td>
<td>chipboard / plywood / multi-ply</td>
<td>25</td>
<td>180</td>
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</table>

TOTAL THRUST OF A PRESS: HOW TO CALCULATE IT?

R x R x π x 350 x NP = Kg
Ex.: 300 x 130 = 39,000 cm²
π = 3.14
350 = max. pressure of hydraulic unit in bar
NP = number of pistons
I.E.: press platen dimension
3000 x 1300 mm, 6 pistons ø 85 mm:
4.25 x 4.25 x 3.14 x 350 x 6 = ~ 120,000 kg
120,000 Kg / 1000 = 120 Tons

SPECIFIC PRESSURE OF A PRESS: HOW TO CALCULATE IT?

Calculate the total surface of the pressing platens in cm²
R = Piston radius in cm
Divide the total thrust by the surface
Ex.: 120,000 : 39,000 = 3.07 kg/cm²
# TECHNICAL FEATURES

<table>
<thead>
<tr>
<th>Tipo Type</th>
<th>Tipo Type</th>
<th>Dimensione piani Platen size</th>
<th>Spinta totale Total Thrust</th>
<th>Pressione Pression</th>
<th>Motore Motor</th>
<th>Caldaia Woodboiler</th>
<th>Boiler Boiler</th>
<th>Piani elettrici Electric Platens</th>
<th>Ingombro Overall</th>
<th>Peso Netto Net weight</th>
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<tbody>
<tr>
<td>NPC/DIGIT 4/40</td>
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</table>

- They differ according to the type of platen and possible intermediate platens
- Heating system excluded