FCBA – Thermochemical conversions

In the frame of InTechFibres partnership with CTP, FCBA is very well equipped for all type of pulping, bleaching and refining simulation, both at laboratory and pilot scales.

About chemical pulping, InTechFibres facilities allows the simulation of all chemical pulping processes on any lignocellulosic material (wood chips and annual plants). Computerized systems for cooking programmation and digester temperature regulation garantees good reproducibility of industrial conditions. At laboratory, cooking can be performed in autoclaves from different sizes (20 mL to 3.5 L) or in a double-vessel liquor recirculation digester (2x 6.5 L). Two screening systems are available to eliminate knots or shives before bleaching. A unique cooking and pilot plant completes the pulping facilities. Pulping is carried out in two steam heated batch digesters of 1.3m^3 (200 kg wood chips capacity) temperature up to 190 °C, with the possibility to preheat liquors, to recover black liquor and to reuse it for new pulping. Calorific exchanger for liquor heating and cooling, a draining chest and a screening system (slot 0.16mm/ hole 2-3 mm) completes the cooking pilot. The bleaching is performed in a pressurized reactor (capacity 1,7m^3 (100 to 150 kg), 6 bars, temperature up to 120 °C, stirring 30 to 130 rpm), with upflow and downflow towers (capacity 0.3m^3 to 1.8m^3), a rluffer for preparing pulp at high consistency, twin wire press (output at 20 to 35%, production 100 to 1000 kg/h).

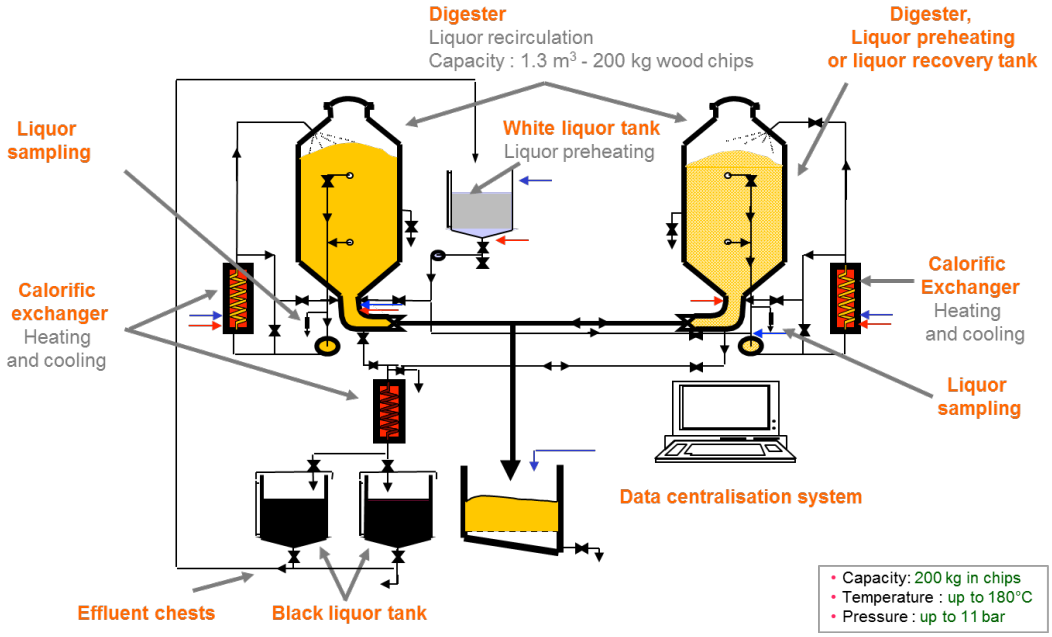

Figure 10. **Cooking pilot plant at InTechFibres facilities.**

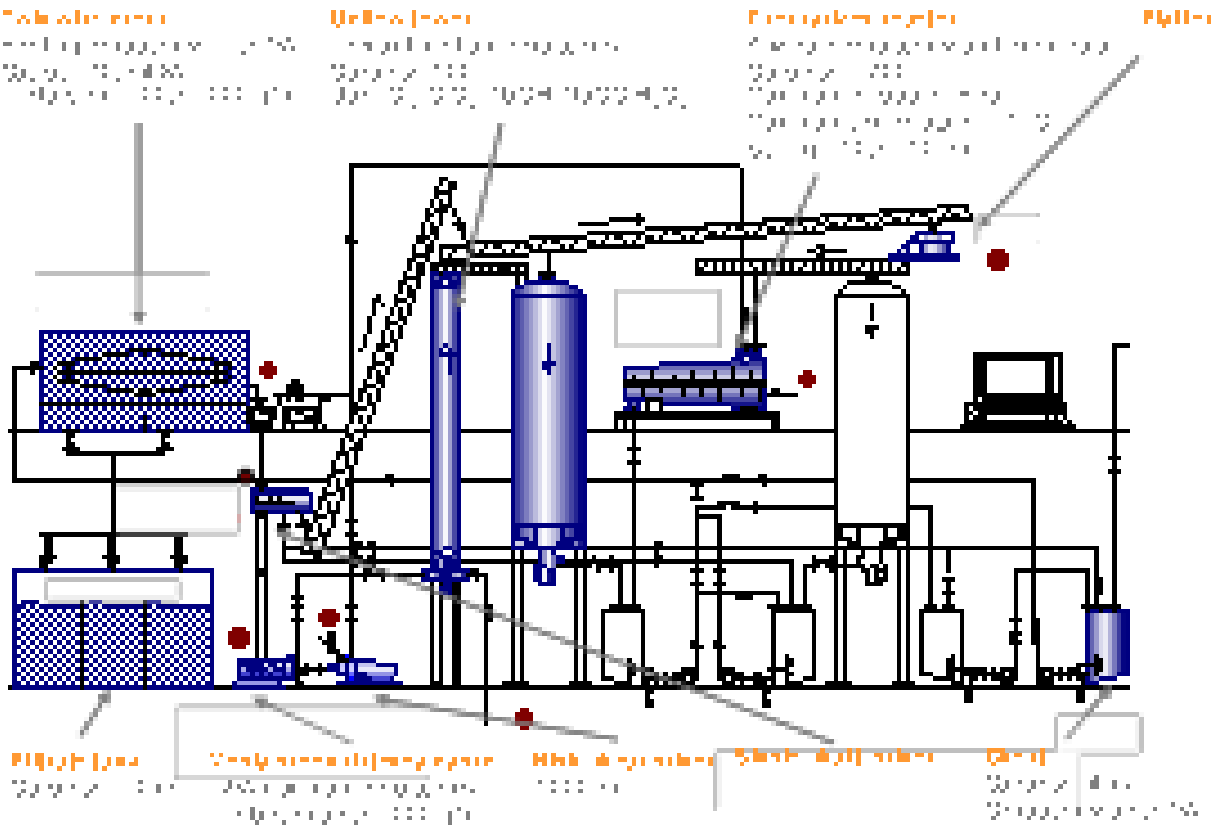

Figure 11. **Bleaching and fiber modification pilot plant at InTechFibres facilities.**

For high yield pulping, InTechFibres is equipped with a two pilots. The smaller is an ANDRITZ pilot which allows to study wood samples in small quantities (~5 kg per batch) in order to analyse refining ability.Refining conditions (single disc refiner, diameter 300 mm, refining speed 500 – 3000 rpm, pressurized or atmospheric conditions) are highly controlled by a totally computerized system; hence, tests are repeatable and reproducible. Acquisition of process conditions allows a complete analysis of refining, including energy consumption, pressure and temperature conditions, refining speed, refining couple. This pilot equipment is very flexible and can also be adapted either to the refining of chemical pulps or to the production of fibers for panel boards (MDF).

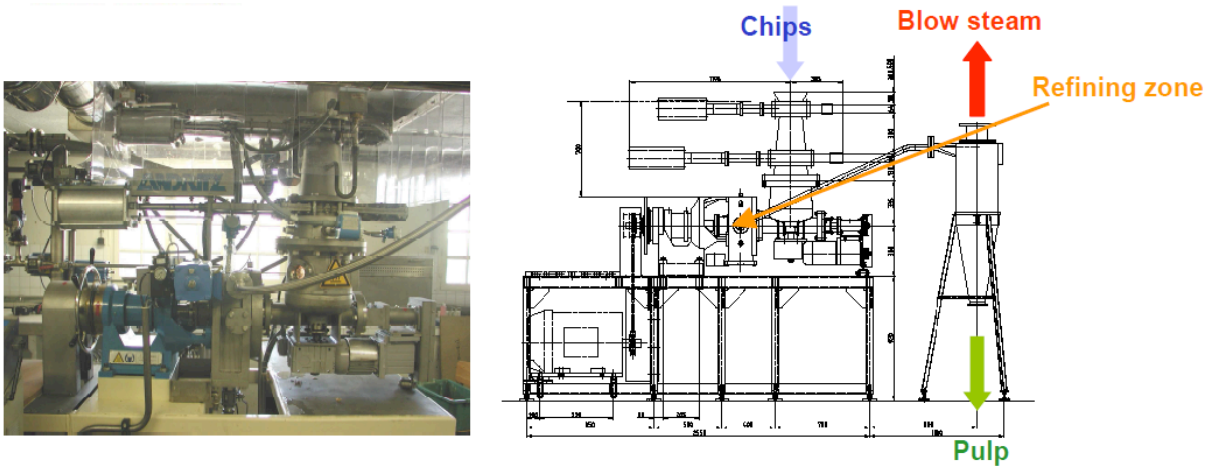

Figure 12. **Small scale thermomechanical pulping pilot at InTechFibres facilities.**

The second pilot equipment allows the simulation of all refiner mechanical pulping processes in industrial conditions (RMP, TMP, CTMP, APP processes) for any lignocellulosic raw material, including the possibility of raw material impregnation in a plug screw feeder/ the MSD 6" Pressafiner Modular Screw Device Pressafiner. A digester allows up to 4 bars, 5 to 30 min, up to 150 °C for pre-treatment. Primary refiner is carried out using , 12" diameter discs which speed varyies between 1500 to 5000 rpm.

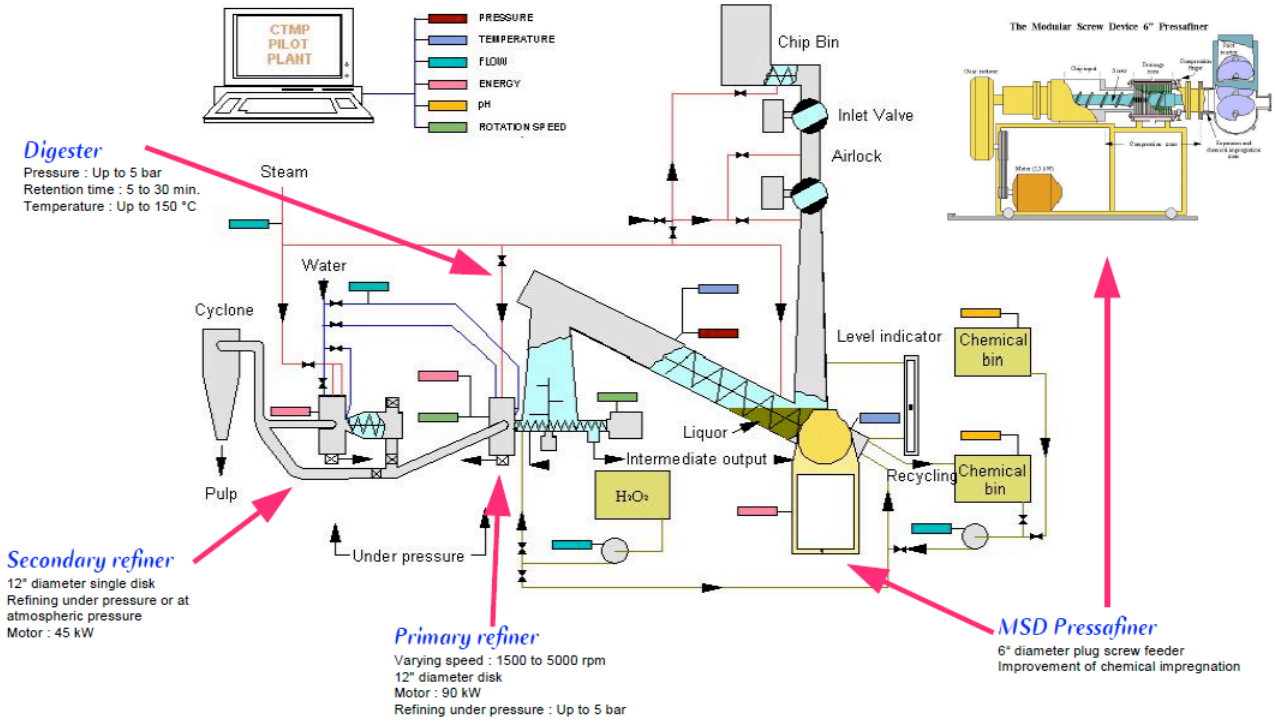

Figure 13. **Large scale thermomechanical pulping pilot at InTechFibres facilities.**