

## VTT – Pulping technologies

VTT has an excellent infrastructure for pulping studies. The reactors at the cooking and bleaching laboratories enable the study of all existing industrial processes. The technical work on pretreatment and pulping processes is mainly carried out by the Biomass processing team, which consists of about 20 researchers/technicians.

Various types of cooking reactors exist: Autoclave (air heating, electrical heating), forced liquor circulation and water jacketed. The main features are:

- charge of raw material 20 g to 5 kg
- temperature up to 200 °C
- pressure up to 40 bar

The most advanced and versatile equipment is the VTT Fiber line pulping system (Figure 7). Because of the possibility to fast temperature changes and change of liquors during the process, it can be used for example for the simulation of industrial kraft cooking modifications (SB, LoSolids, CC).



Figure 7. VTT FiberLine pulping system

All industrial bleaching chemicals can be used in the bleaching laboratory reactors. For example ozone treatment/bleaching can be carried out at various scales. Bleaching can be done in water bath or autoclave types of reactors (rocking or equipped with blade type mixers). The scale is 5 g to 3 kg o.d. pulp.

A selection of grinders and refiners in laboratory and semipilot scale are used for mechanical fractionation of biomass into fibrous and fibrillar particles or fines to be used in fibre products or composites.

The cooking and bleaching laboratories will move to the new VTT Bioruukki - Biomass Centre during 2017.