## This is how Fortum's integrated bio-oil production plant works Fast pyrolysis reactor Close-up A The produced bio-oil is pumped into a storage tank. The pyrolysis gases are condensed into bio-oil. Condenser In the cyclone pyrolysis gases are separated from sand and char. In the process pyrolysis gases Reactor fuel silo Cyclone and char are separator formed. Fludized bed boiler Sand and char back In the pyrolysis to the fluidized bed reactor (500 °C) the Wood chips with the boiler. moisture content of about wood biomass is 10 % is fed to the reactor. distilled in a matter of seconds. 800°C Hot sand (at 800 °C) used at the main boiler is taken to the **@Fortum** pyrolysis reactor. Oxygen-free circulating gas transports the material in the Close-up A reactor forward in the process. Fludized bed boiler Bio-oil storage tank In fluidized bed combustion fine hot sand is fluidized with air that is blown through the fire grate. Drying of crushed wood chips with Pyrolysis reactor Raw material Wood chips from Conveyor Fine milling Fludized bed Power plant Fuel to the boiler for feed forest residues a belt dryer. Hot air is used for drying. of the dried (see Close-up A) boiler power and heat production wood chips. Bio-oil e.g. to heating plants Bio-oil e.g. to heating plants