



POLTORR – Biomass Thermal Processing



From Green to Black Sustainable Technology for Biofuels

Torrefied biomass – high-quality BioCoal – resource saving – economically feasible

The POLTORR system has been developed for **drying and torrefying biomass** in order to replace fossil fuels with **high-quality bio-coal**. The torrefaction of biomass places high demands on a controlled thermal treatment of different feedstock. The multiple hearth furnace (MHF) technology, which has been used many decades for high-temperature applications in the minerals sector, can advantageously meet this challenge. thyssenkrupp Industrial Solutions has therefore redesigned its MHF technology to make it suitable for the thermal treatment of biomass.

Rising energy costs and the regulations on sustainable use of energy resources have forced owners of energy-intensive plants to rethink. The use of biogenic fuels has become more and more important with regard to power generation and thermal processes.

The properties of available biomass differ significantly; direct use is, in many cases, not possible. Bio-coal is an appropriate solution for the provision of biogenic fuels with a high energy content. Bio-coal is the product of thermal treatment of biomass in low-oxygen conditions at temperatures between 220 °C

and 320 °C. Bio-coal has a calorific value of 20 to 25 MJ/kg; it can easily be ground and is suitable for a wide range of different thermal processes.

With regard to uniform temperature distribution, efficiency and, last but not least, product quality, the two-stage process of POLTORR is a preferred method for the production of bio-coal. An initial moisture content of up to 60% is permissible. Under favourable conditions, the internal heat recuperation between the drying and the torrefaction zone can result in an almost autothermal process.



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Fields of application

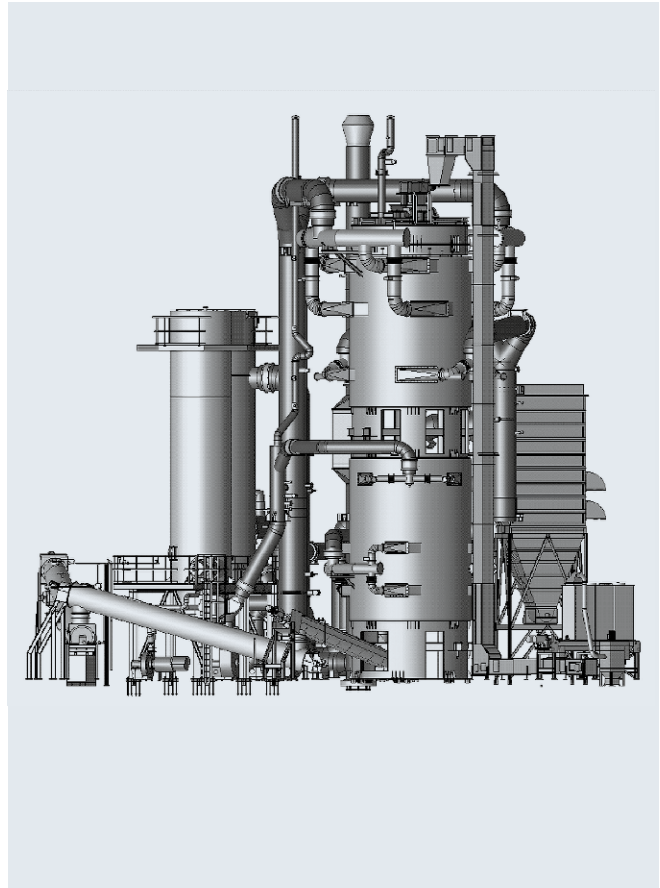
- Second-generation biomass (non food crops)
- Hard and soft wood
- Grasses and stalks (straw, miscanthus grass, etc.)
- Biogenic wastes and production residues
- Highly efficient production of bio-coal for thermal processes in cement, minerals and power plants and for refinery applications

Main features

- Controlled process conditions: precisely adjustable temperatures, oxygen poor operation, direct heat transfer
- Internal heat recuperation / quasi-autothermal process
- Homogeneous product quality / variable bio-coal properties
- Compact design
- Low wear and low maintenance requirement

Design parameters

- 2-stage process
- 5 to 20 hearths
- Diameter: 4 to 8 m
- Capacity: 2.5 to 25 t/h



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