



Pilotplant for Torrefaction of Biomass

Klintehamn, Gotland

This project

Torkapparater cooperated with Sveaskog, Vattenfall and an industrial partner to try out and evaluate a torrefaction process developed by Torkapparater. Several material were used in order to achieve as much data and information regarding the process as possible.

YEAR OF DELIVERY:

2012

TECHNOLOGY:

Indirect tubular reactor Bojner systems.

TREATED MATERIAL:

Saw dust /GROT / Cellulose chips

PRODUCTION CAPACITY:

500 kg/h

DRYNESS IN/OUT (w%):

Approx. 85-95 / 99

HEAT SOURCE:

Flue gases from a biosolids furnace.

HEAT RECOVERY:

The produced torrefaction gas is introduced into the biosolids furnace and contribute with heat to the process.

SCOPE OF DELIVERY:

Material handling with feed, input and discharge, tubular reactor, torrefaction gas handling system, extensive measuring equipment PLC and MCC systems, etc.

Alternative solutions

We offer tailor-made systems for drying of all types of solid biofuels – indirect systems in one or two steps being our specialty. Besides steam, exhaust gases, thermal oil, etc can be applied as heat source. We also offer direct drum drying which is a simple and robust technology, however with less opportunities for heat recovery and elimination of fire hazards. Please get in touch with us and explain your situation!



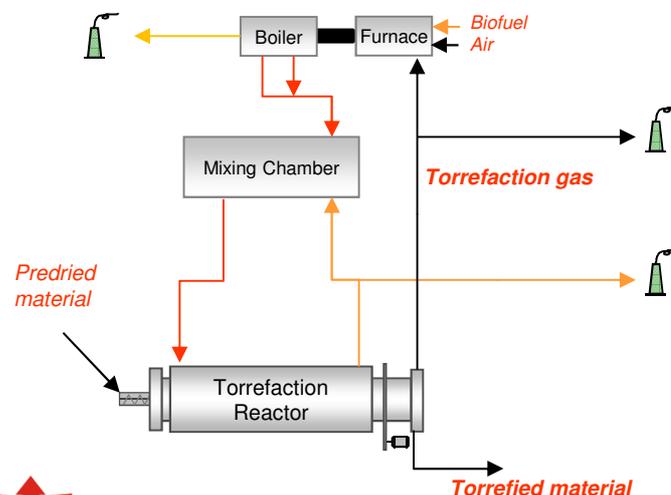
The Torrefaction process takes place in a rotary, tubular reactor which is heated indirectly with flue gases from a biosolids furnace. The flue gas is recovered at two different temperatures, approx. 350 °C and 800 °C. The flue gas is mixed in a mixing chamber with a part of the outgoing flue gases from the reactor in order to reach the required temperature.

The biomass, which is to be torrefied, is therefore heated indirectly to a temperature between 220-290 °C to achieve the desired degree of torrefaction.

While the biomass is heated in the absence of oxygen, a part of the biomass is gasified and torrefaction gas is produced.

The torrefaction gas is led through a heated tube by a fan and is introduced into a biosolids furnace where it is combusted.

The purpose of the torrefaction process is to produce a biofuel with similar properties as coal, which therefore could replace a part of the coal that is used at eg. coal fired power plants.



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