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(54) Title: TORREFACTION UNIT AND METHOD

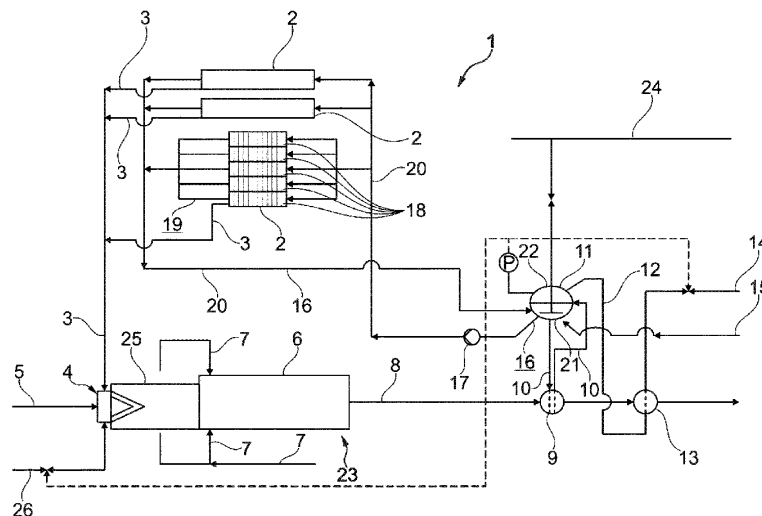


Fig. 1

(57) Abstract: The torrefaction unit (1) comprises at least one multiple hearth furnace (2) which is heated by a heat transfer fluid (16) comprising hot water taken from a water space (21) of a steam drum (11). The heat transfer fluid (16) is guided through a water circuit (20) to a heating system (19) of the at least one multiple hearth furnace (2). This means the multiple hearth furnace (2) is heated to a torrefaction temperature indirectly by the use of hot water as heat transfer fluid (16). This is environmentally advantageous. The torrefaction gas (3) created by the torrefaction of material comprising biomass such as municipal solid waste is preferably partially oxidized in a partial oxidation reactor (23) for creating syngas. Preferably, a part of the thermal energy of the syngas is used in an evaporator (9) and/or a superheater (3) to heat water and/or steam and/or to evaporate water. The evaporated water is preferably guided to a steam space (22) of the steam drum (11) and can, thus, be used to heat the heat transfer fluid (16). The partial oxidation reactor

[Continued on next page]

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(23) and the temperature of the heat transfer fluid (16) can be controlled independently allowing to one single partial oxidation reactor (23) for at least two multiple hearth furnaces (2).