

Energy efficiency of a CHP(Combined heat and power) plant integrated with torrefaction

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Currently, biomass is recognized as an important renewable energy source and contributes to approximately 10% of the global energy consumption. Torrefied biomass shows similar characteristics those of coal. Therefore, Torrefied biomass can be co-combusted with coal. This paper aims to integrate torrefaction process with a CHP(Combined Heat and Power) plant and perform a case study to replace 25%, 50%, 75%, 100% of the fossil fuel in boiler. Also, a heat integration is purposed by using the used steam in the CHP plant as a heat source for torrefaction reactor and dryer. From these, we calculate energy efficiency of the integrated process, and determine whether the torrefied biomass can replace fossil fuel 100%.