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Commercial demonstration of biomass production from municipal solid waste employing the hydrothermal treatment

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In developing countries like Indonesia, the problem of MSW management is much more acute in metropolitan cities like Jakarta where land available for landfilling is scarce. Presently, Jakarta generates approximately 7000 tons of MSW every day which is likely to increase day by day. MSW needs to be pre-treated for ease of use as a fuel resource. Pre-treatment of wastes requires crushing, drying and deodorizing, which are normally different processes. But we have developed innovative hydrothermal treatment technology (HTT) which can perform these three pre-treatment functions in one process utilizing high pressure saturated steam. We have been operating a commercial HTT plant with the capacity of 50tons/24hours for one year in Indonesia and found that HTT is a suitable MSW treatment technology for Indonesia due to its acceptance of non-segregated and high moisture content MSW. This is to present a comprehensive data set of MSW and to generate renewable solid fuel from MSW in mega-cities of Tangerang, around Jakarta. Non-segregated MSW are fed into the reactor, and then, 220°C, 2.5MPa saturated steam is supplied into the reactor and the blades installed inside the reactor rotates to mix MSW and steam for about 30 minutes. Then the product is discharged after extracting steam. The product is powder-like substance and the moisture content is almost the same as the raw material, but is easily dried by natural drying. The inert material such as metal, glass and stones can be easily sieved out after drying. There is almost no bad smell in the solid products, and the products can be used as solid fuels which can be mixed with coal for power generation or cement production. Only 10-15% of the product is enough for steam production in a boiler.

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