



INVESTIGATION OF BIOMASS GASIFIER TO PRODUCE HEAT AND ELECTRICITY FOR INDUSTRIAL APPLICATIONS IN UKRAINE

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ABSTRACT

The high cost of natural gas and the deteriorating environmental condition calls for an urgent replacement of alternative fuels in Ukraine. Hydropower, solar, wind, biomass, etc. are the top renewable energy sources in Ukraine. Suffice to say that Ukraine's biomass industry constitutes over two-thirds of the country's potential on the market of renewables. Currently, under 0,5 percent of energy is produced from biomass but the estimated potential is ten times larger. Ukraine is using biomass to generate heat and electricity. From the experience gained, it has been observed that gasification certainly appears to be a better option than combustion in terms of energy efficiency. Produced gas obtained from gasification can be used as gaseous fuel for combustion in boilers and industrial furnaces for heat energy. It can also be used as fuel for diesel piston engines to generate electricity. Gas-generators with designed capacity ranging from 0,5 to 3 MW_{Th}, are currently under investigation at Gas Institute of National Academy of Sciences of Ukraine, together with private companies. So, in consideration of their potential use as an alternative fuel for water heating and industrial applications, biomass conversion technologies under investigation at Gas Institute of National Academy of Sciences, gas cleaning system, use of some software for designing a gasifier along with important results obtained both theoretical and experimental, will be discussed.

Keywords: renewable energy, biomass, gasification, gas-generator (gasifier)