

Economical Evaluation of Wooden Biomass Energy Utilization System for Producing Liquid Fuel

Akira Yabe, Tetsuhisa Fukuda, Masanori Kuroda, Shinji Fujimoto, Yoshiyuki Sasaki, Kinya Sakanishi, Tomoaki Minowa

Biomass Technology Research Center & AIST CHUGOKU
National Institute of Advanced Industrial Science and Technology (AIST)
JAPAN
yabe-akira@aist.go.jp

Wooden biomass energy conversion system has been analyzed in detail from the material balance and the energy system balance for producing the liquid fuel.

In this report, as the first step of analyzing the liquid fuel production for automobiles, we analyzed the zero-emission type biomass energy conversion system which produced methanol and methyl formate together based on the biomass steam-reforming characteristics of the CO/H₂ ratio 1/(1.1-1.6), and which produced ethanol, lactic acid and propanediol from the cellulose, and which supplied electric power and steam for supplying the internal needs of the system such as the distillation process.

The total input scale of the wooden biomass would be the 420ton/day wood throughput capacity which would be equivalent as the large scale sawmill factory. Economical payback periods were calculated from raw material cost of the wooden biomass and the major equipment cost of the energy plant to be within 9 years, which would be feasible from the economical viewpoints.