Technology, Equipment and Policy: Status Quo and Future for Biomass Heat, Power and Ethanol Industrial Development in China

Huiyong Zhuang
Research Professor
National Energy Research Center of Liquid Biofuel
National Energy R&D Center for Biomass
Energy Research Center of the Investment Association of China
National Bio Energy Group

2014.7.23 Bangkok
Background Policy and status quo of biomass resources utilized in industrial scale in China
Biomass energy potential is 0.5 billion tons coe, and can reach up to 1 billion tons in the future.

China is abundant in biomass resources, and also has relatively low cost labor force and transportation vehicles. However, biomass resources types, plantation structure and distribution differ greatly; geographical, climatic, humanity, economic factors are quite different in south and north, east and west.
Exploration and experience for biomass industrial scale use
NBE Shanxian 1×30 MW biomass power generation project ran 8200 hours in 2007, generated power 220 GWh, and has been running smoothly.

This project is the first national biomass power generation project approved by NDRC, and has been put into operation on Dec. 1, 2006. It has found a new way to utilize renewable energy, and is a milestone in the history of biomass direct-fired power generation in China.
By the end of March 2014, NBE has about 40 biomass direct-fired power generation plants, with the total installed capacity of about 1000 MW. NBE has offered green power about 15000 GWh to our society, and consumed agro-forestry biomass about 20 million tons, and paid 6 billion Yuan for feedstock purchase from farmers, and reduced CO2 emission about 20 million tons. It is quite obvious that NBE has played an important role in environment protection, green energy and solving three problems of agriculture, countryside and farmers.
Energy plant demonstration
Sandy land restoration-energy plant-cellulosic ethanol-biomass power-green heat and power
Comprehensive utilization of ash in BPG power plant
Pellets production machinery and boiler
Key technology and equipments development and application for agricultural and forestry biomass collection, storage and transportation
Key technology for biomass collection, processing and transportation is an important cut-point to low cost, standardized and industrial utilization of biomass.
◆ Biomass Collecting in China

- Wood chips and similar biomass resources: cotton straws, soybean straws, branches, wastes of lignum and other high density wood plants, which should be cut into pieces before being fed into combustion hearth.
◆ Biomass Collecting

- Yellow straws: maize straws, wheat straws, rice straws and other herbage crop straws, big bulk, light weight and low density, must be baled to the ideal size of bulks with certain weight before feeding in hearth burning in order to meet the need of the combustion heat and feeding quantity within certain period of time.
Pulverizer

Small fixed square baler (36×46×90cm)

Hydraulic baler (150×110×80cm)
◆ Biomass gathering and storage

➢ Collecting equipments for gray straws- Cotton Stalk Combine Harvester
We have developed pick-up large-square-baler and medium-square-baler. Have constructed demonstration base for wheat straw collection technology and equipments in Henan, Hebei and Shandong Province.
Demonstration base for biomass resources collection
Research and Cooperation Opportunities

1. NON-food liquid fuel: technology, investment, feedstock
2. Biomass CHP, Solar energy + biomass
3. Energy plant
4. Biomass logistics equipments
5. Biomass pellets technology and equipments
6. Capability construction
Thank you!
Huiyong Zhuang
Research Professor
Tel: +86 13910883668
Email: hyzhuang@163.com

Standing Deputy Diretor of Energy Research Center, The Investment Association of China
S&T Director of NBE Energy Group
National Energy R&D Center for Biomass
National Energy Research Center of Liquid-Biofuels