Oil & Gas Research

Abstract

Reinventing Small-Scale Decentralised Biomass Energy Generation

Gin Keat ONG

[1]*Agriculture, Food & Policy Development Department, University of Reading, UK.*
[2]*The F.A Bartlett Tree Experts Company, Charlotte NC, USA.*
[3]*The R.A. Bartlett Tree Research Laboratory, Reading, UK.*

Abstract:

Energy is basic for all human activities. Biomass is the most common form of raw material available over many parts of the world. Human activities generate forms of biomass wastes including food wastes, as a result of industrial, commercial and consumer activities. In many countries, these wastes are not disposed or treated properly resulting in land, air and water pollution.

Uniflow Power Australia has invented and developed a unique small-scale biomass waste to energy generation platform that combust low value biomass or organic wastes/materials into useful energy. From 30kg/hr of biomass at 30% moisture content, 4.5kWh of 240Volt electricity is generated, 20kW of steam/heat and rotary power. All this is a closed loop system, essentially a mini power station.

With two core patents granted globally, it is designed and built for the Base of Pyramid of 4 billion people, filling an energy generation gap with a machine that can be set up, run and maintained by a local workforce. For the BOP market, this machine is fully mechanical, does not require any batteries to start or store electricity and has no electronics.

This mini CHP product with an external combustion engine at technology realisation level 7.5 has been tested and run in Australia and India and will be installed in a public building in Canberra in July 2020. Its future uses include been part of solar minigrids/farms replacing diesel gen sets as backup power.

The CHP will power rural and urban communities using local sourced biomass materials, creating local employment and village industries. The technology will reinvent small scale distributed energy generation, disrupt poverty and uplift communities.

Biography:

GK is an experienced lead in sustainable businesses in regional projects & business development including design, planning, implementation. His expertise covers sustainability/environmental, industrial, marine/oil & gas sectors.

His experiences include the conversion of industrial solid waste to value added resources, biomass waste conversion to energy, municipal waste management, wind/solar hybrid applications, desalination systems and heat transfer equipment. He advises foreign organizations in Singapore and the ASEAN region on advancing sustainability issues including on the ground solutions for urban and rural environments.

Recent Publications:

1: For instance, see 20th Meeting, 17 Oct. 1921, General Council 1867-1927, p. 30; 21st Meeting, 16 Oct. 1924, General Council 1867-1927,p. 32; and, 22nd Meeting, 17 Oct. 1927, General Council 1867-1927, pp. 34, 35.

2: Swidden hill-rice cultivation as practised by the Dayaks and other indigenous people came under criticism for "wasteful" land use and low yields. For instance, see SG, 2 Jan. 1920, pp. 2-4; SG, 1 Mar. 1921, p. 30; and, SG, 1 Oct.

3: SG, 16 Apr. 1918, p. 92; and, SG, 16 Jul. 1918, pp. 176-77. The padi variety, known as agit, was normally planted by the Kayans.

4: Bean, J.S.W., Annual Report Department of Agriculture, Sarawak, for 1928 (Kuching: Government Printing Office, 1929Google Scholar), quoted in Dunsmore, J.R., "A Review of Agricultural Research in Sarawak", Sarawak Museum Journal 16, 32-33 (Jul.-Dec. 1968): 309Google Scholar; SAR 1934, p. 4; and, SAR 1935, p. 4.

5: Ibid. Dissenting voices argued that rice control had more disadvantages than benefits for the country. For the argument that control in 1921 was "unjustifiable", see SG, 1 Sep. 1921, pp. 173-74; and, for a rebuttal of this position, see SG, 1 Oct. 1921, p. 197.

Citation: Gin Keat ONG; Reinventing Small-Scale Decentralised Biomass Energy Generation; Bioenergy & Biomass 2020; June 24-25, 2020 | Kuala Lumpur, Malaysia.