

Brief report on the 1000 hours of continuous operation of the Gasifier Plant at Kabbigere

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Based on the decision to undertake the 1000 hours of operation, IISc took the responsibility to operate the power plant. Using the local man power, the system was successfully operated for 1000 hours with very few interruptions, mainly arising out of the grid failure. It has been shown that the plant can operate continuously to generate electricity. All the elements of the system package have performed well to meet the overall goal of long duration operation. The overall performance was good and the operations found satisfactory. The following points summarize the operations. It is also important to record that this was possible due to excellent coordination and support by BERI team to the operational team at the site. *The key has been a disciplined work of the operating team.*

- Gasifier plant was started on 26th May 2010 at 1530 hours
- The Gasifier plant operation was stopped on 8th July 2010 after 1035 hours of continuous operation
- The engine was operated for 1022 hours with a grid synchronized run of 951 hours
- The total biomass consumption for 1035 hours of operation is 111 tonnes at an average 107 kg/hr consumption
- Total energy generated is 80.6 MWh
- Total energy exported to the grid is 56.5 MWh
- The plant had a trouble free run except for some short duration stops due to grid problem and other minor maintenance work (maintenance about 4 hours for engine oil change etc, and grid failure about 70 hours)
- Biomass used are mainly Eucalyptus wood and some mix of jungle wood
- The water treatment plant was operated in a systematic manner and all through the operational period the water quality remained extremely good (even without any odour).
- Gas composition was measured once during the period of Gasifier operation.

Figures 1, 2 and 3 show the performance data. The average load as seen from figure 1 is around 85 kW and touching a peak of about 105 kW. Biomass consumption has been in the range of 100 kg/hr as indicated in figure 2. Some of the variations are due to the load variation in the engine. The gas composition has been found good and the cold gasification efficiency is about 77 %.

After the 1000 hours, critical parts of the engine were inspected for any deposition. The turbo charger and the after cooler which is very critical were found clean reflecting the gas quality generated.

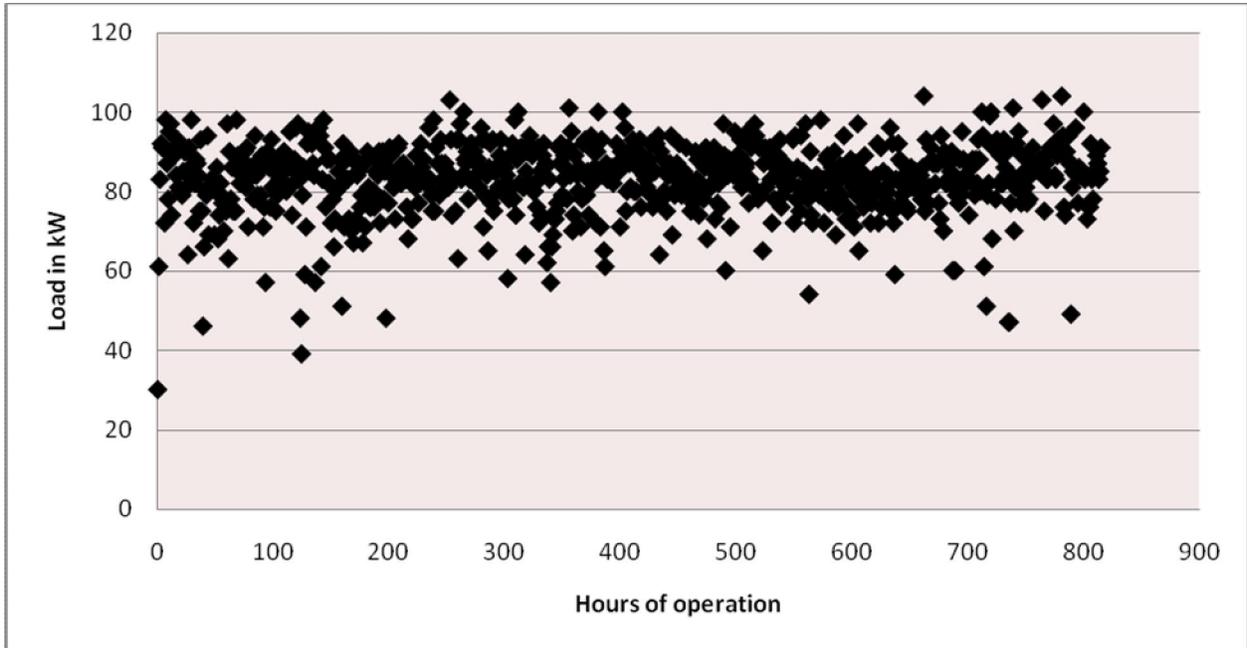


Figure 1: Hours of operation vs the electricity generated

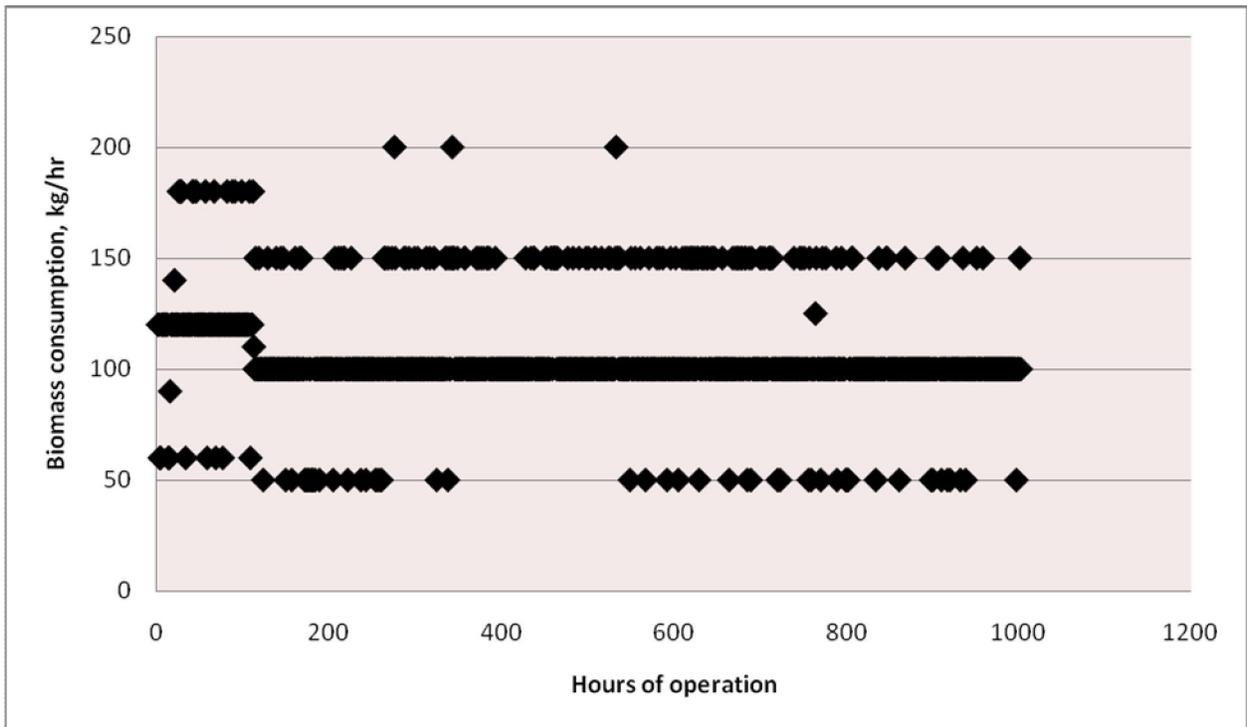


Figure 2: Hours of operation vs the biomass consumed

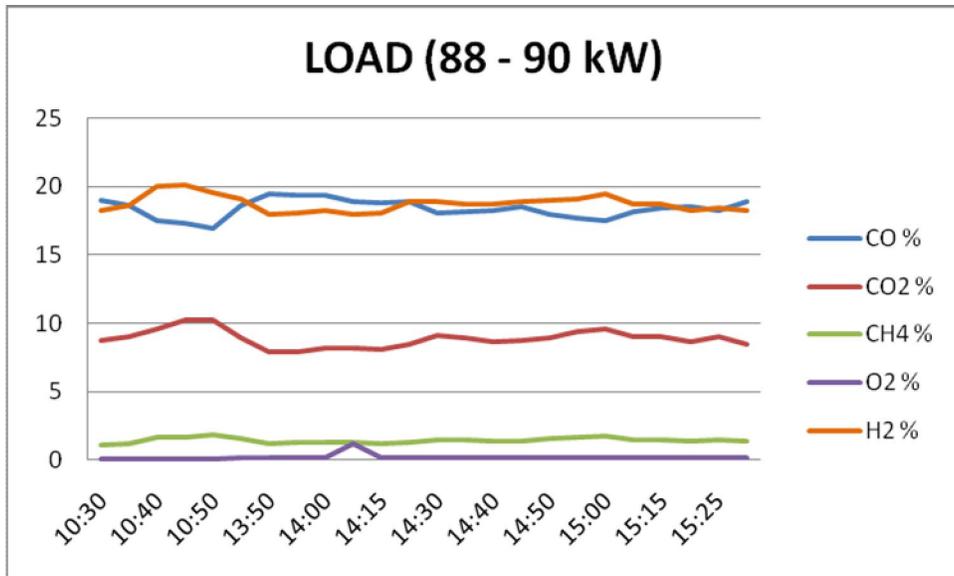


Figure 3: Gas composition