

## **Biomass pellet – An Alternate Fuel**

Alarming price rise of fossil fuel both gas and liquid and necessity to stop threatening level of green gas generation has forced energy planners to look for an alternate fuel. It should be environmentally benign and if possible cost effective. Biomass pellets meets 1<sup>st</sup> requirement adequately and 2<sup>nd</sup> in many applications. In developing and underdeveloped countries use of gaseous and liquid fossil fuels has become unaffordable for thermal applications. Densified biomass has become an alternate fuel for direct combustion application or through gasification to replace use of liquid fossil fuel.

Few hundred briquetting plants having capacity of 500 – 1000 MT per year have not met the huge requirement of densified fuel, but has given some avenue for gainful utilization of biomass. A problem of developing countries to some extent and underdeveloped countries to large extent is that no infrastructure can be established where large quantity of biomass is adequately available. Loose biomass having low bulk density cannot be transported over long distances and remain unutilized most of the times.

In developing countries where electric power is available in the rural areas the installation of the biomass densification unit has resulted in the following: -

- Employment to lakhs of people in rural areas
- Value addition to waste material
- Reduction in the emission of green house gases
- Reducing import of fossil fuel

Even with all these advantages utilization potential has remained very low. In India hardly 5 Million tons of biomass is densified against the availability of 400-500 Million Tons. China has also not significantly better.

High manpower cost in Europe and North America without the grant has made the densification of biomass unaffordable. In many countries liberal grant is being given to demonstrate whether large scale densification is viable.

## **Issues With Large Scale Densification Project**

In North America and Europe, minimum capacity of animal feed plant is 18-20 MT/Hr. Most of the incoming material is put in silos and withdrawal is automated for proper proportioning and mixing. High capacity pellet press working at 7-8 meter/sec produce pellet consuming about 15-20 HP per ton produce. Cooling and packing is automated and robots do the bagging. One operator and one helper can handle the entire operation. Manpower cost per ton of produce is hardly 5 USD.

In contrast to this biomass pelletising requires chopping/grinding of incoming material. Biomass material has to be conditioned and pelletising is at very low speed of 2-3 meter/sec.

It has not been possible to demonstrate mobile unit to do more than 100 MT per day and cost economy due to high manpower cost and diesel power do not work well. If biomass pellet has to become competitive then upfront subsidy is a must. Even with densified biomass advantage delivered price of USD 60 per MT looks impossible.

Delivered cost of coal with a calorific value of 6000 Kcal/kg is USD 60, biomass pellet with calorific value of 4000Kcal/kg if delivered even at 60 USD is not a competitive fuel. In above mentioned circumstances it is desirable that coal users are mandated to use biomass fuel to the extent of 10% at preferred price.

US Department of Agriculture or Energy has to declare preferred treatment of biomass fuel, otherwise biomass will remain in the field and will never move as an alternate fuel in industry.