

KITL Capabilities in Bio-Energy

The fast paced growth of technology, industrialization and urbanization has created steeply accelerating requirements for energy in the world today. This demand for energy has been addressed so far by the burning of the fossil based fuels which were seemingly the most abundant as well as most viable sources of energy. Once this source of energy has been identified, all efforts were placed into making it more easily available, to address the energy demand, with no further thought on it's merits or availability.

Today, as a consequence of the rampant consumption of fossil fuels, we are faced with depleted crude oil reserves and an environmental crisis arising from an increased level of CO₂ in the atmosphere and ecological imbalances. In order to address this situation alternate energy solutions that are renewable, sustainable and environment friendly are being investigated. These solutions should have sources that are easily regenerated and the consumption of fuel should generate waste products that do not offset the balance of natural cycles. In addition to this, they need to show economic viability that is competitive with current fossil fuel based fuel solutions, should be easily replaceable in existing technologies and should support and sustain the increasing energy demands. The main source of alternate energy being investigated today can be classified into three broad categories

1. Solutions that harness the mechanical energy of natural dynamic systems like flowing water, tidal water and wind.
2. Chemical solutions like solar and hydrogen based power generation solutions
3. Biomass based solutions like Biogas, Biodiesel and Bio-ethanol that are closest to existing fossil based solutions but are non-polluting and from renewable sources. These fuels are sourced from agricultural produce by releasing the energy trapped from sunlight and atmospheric CO₂, during photosynthesis.

Based on the synergies of the existing business, KITL has prioritised objectives of R&D program as following

1. KITL is working on biomass based energy solutions for biomass to Energy, biomass waste disposal, Biomass to organic fertilizer, biomass to power, biomass to fuel applications.

In order to offer Energy Solutions from Biomass, KITL has extensively worked on various substrates like Agro Waste from crops such as Maize, Jowar, industrial waste such as oiled and de-oiled cake, maize husk, Molasses, Spent wash, press mud, food processing waste; Municipal waste such as Kitchen and Hotel waste, organic waste in MSW.

2. KITL has initiated activities on various technology options available in Solar PV, Solar thermal and Fuel cell for decentralized power generation.

Our R&D laboratory for Bio-energy application is self sufficient with all the latest equipments.

Few photographs of the R&D laboratory is depicted as below



SETUP FOR ACID CULTURE DEVELOPMENT



FUME HOOD



GAS CHROMATOGRPAH



COOLING CENTRIFUGE MACHINE



PILOT DIGESTERS



EXPERIMENTAL SETUP FOR CONTINUOUS GAS GENERATION



FIELD LEVEL BIOGAS DIGESTERS



EXPERIMENTAL SETUP FOR BIOGAS TO FUEL (SCRUBBER, COMPRESSOR, STORAGE, DISPENSING TO USE) AND BIOGAS TO POWER (GENSET)