Summary of Outcome of R&D Projects
Ministry of New and Renewable Energy, New Delhi

1. 0 Project Title : **Design and Development of Dual Operating pilot Scale Bio Reactor System for Comparative Simulations studies On Algal Cultivation**

2.0 Project sanction no. & date : F.No 7/173/2011-BF Dated 30/09/2011

3.0 Project time frame : October 2011 – September 2012 (12 months)

4.0 Executing Institution : Abellon CleanEnergy Limited, Old Premchandnagar Road, Opp. Satyagrah Chhavani, Bodakdev, Ahmedabad-380015, Gujarat

5.0 Project Outlay :Rs.21.38 Lacs

6.0 Key Objective :

Designing of efficient, cost effective, easily adaptable, operatable and up-scalable cultivation system that integrates with PLC and SCADA system for monitoring of algal biomass.

7.0 Project Outcome :

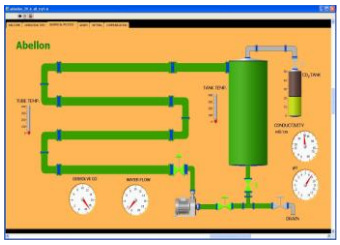
Fabrication and demonstration of a pilot scale automated, closed photobioreactor system of 650 liter capacity is first of its kind in India for cultivation of both mono and consortia culture of microalgae.

8.0 Significant achievements summarizing technology development and commercialization

- Successful design, development and operation of 650 liter glass photo-bioreactor for marine micro algae cultivation in continuous as well as batch system which can be used as seed culture for inoculation of large scale open raceway ponds.
- The reactor can also be used for continuous harvesting of algae on daily basis with optimum daily input and output of cultivation medium monitored for growth parameters on SCADA system.
- The semi-automatic system is unique in design and concept with multiple research focus on algae cultivation in various waste water streams by purging CO_2.
- The material of construction used for reactor development can withstand and resist all types of waste water stream extreme conditions including pH, conductivity, working pressure, etc.

9.0 Human Resource Development

Man power trained : 2 Scientists and
1 Plant Manager



Microalgae cultivation in automated photo-bioreactor monitored by SCADA

10.0 Future direction for Research:

Short term goals (next two years):

- The reactor would further be integrated for down stream harvesting technology that can be monitored and integrated with photo-bioreactor PLC and SCADA system.

Long term goals (Next five years):

- The reactor along with harvesting technology would be useful for large scale application at out door. The reactor can be useful to develop seed algae culture to inoculate large scale open algae raceway ponds integrated with large scale industry waste water treatment/recycling and industrial CO_2 sequestration.
- Scaling up the algae cultivation on longest costal region of Gujarat as well as costal line of India, co-location with industry to avail opportunity of CO_2 sequestration and water recycling.

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