

NON-CONVENTIONAL SOURCES OF ENERGY

The Pondicherry Experimental Solar Pond power project is a joint venture of Pondicherry Engineering College and Electricity Department of Government of Pondicherry, funded by the Government of India, under National solar pond development Programme. The aim of the project is to install a power station to generate electric power of the order of 360 KW per day using organic Rankine cycle coupled with salt Gradient solar pond. As per the Memorandum of Understanding, signed with N.A.L. the project was proposed to be executed in three Phases.

After the successful completion of the phase I, the O.R.C. engine was designed successfully and installed in 2002 under Phase II Programme. The system was then operated with a gross output of 12.5 kWe at first in February 2003. The requirement for extraction of designed thermal output of 500 kWh of energy was established and communicated to N.A.L. The N.A.L. team had planned a number of special tests to find out the performance envelope of the system to enable further fine-tuning.

The performance of the system of Solar Pond based Power generation was presented through a live demonstration to the members of the Technical Advisory committee, P.E.S.P.P.P.S. and invited guests on 28th June 2004. The tuning and balancing of the different cycles of the system was under taken by N.A.L. to study the performance of the system then and there by various trial runs of the system. After a meticulous work done by the team of Scientists of N.A.L. and P.E.S.P.P.P.S., the system was continuously operated for a period of one month during May 2005 and the output data was sent to N.A.L. for analysis.

From the output of the system, it was inferred that the performance of the system was generally as per the design expectations. After this, a multiplexer unit and a thermocouple tree were designed and installed to measure instantaneous temperature at various vertical level of the pilot pond. During August 2006, the PESPPPS has taken up studies for possible improvement in the output and successfully achieved a higher level of 13.17 kWe power generation and found further improvement in the output could be obtained. Accordingly, a detailed technical analysis was sent to N.A.L. for their study.

During the inspection of the bed floor of the pond, a minor hairline crack was noticed. It was decided that the repair work of the pond be carried out using modern technique viz.

Ferro Cement concrete technology which offers better chemical, thermal and mechanical properties and durability than conventional reinforced cement concrete technology.

Meanwhile, 'Revised Project Report' of the Project, with inclusion of Phase III Programme was prepared and submitted to Planning Commission, New Delhi. The Planning Commission has conveyed its approval in principle for the Revised Project Report and also recommended for continuance of experimental works by constructing 3 x 2000sqm ponds, vide their letter No.P-11072/08/2006-RE/P&E, Power & Energy Division, New Delhi, dt. 26.10.2006.

ACHIEVEMENTS DURING 2007-11

- Rectification works over the bed area of the 500 sqm. Pilot pond using the Ferro-cement technology.
- Rectification works over the entire side slopes of the 500 sqm. Pilot pond using the Ferro-cement technology.
- Maintenance of the ORC power plant.
- Maintenance of the surrounding bunds of the existing 500 sqm. pond.
- Clearing the bushes, shrubs etc. in the solar pond site campus periodically.

LIKELY ACHIEVEMENTS DURING 2011-12

- Maintenance and Re-establishment of existing 500 Sq Mts pilot solar pond.
- Civil works in rectification of existing pond and chemical coating, maintenance and mechanical works, purchase of salts and chemicals to re establish the existing solar pond
- Purchase of pond machineries and T & P items.

PROPOSED TARGETS FOR 2012-13

- Construction of 1st 2000 sqm pond and maintenance of existing 500 sqm pilot solar pond
- Preliminary works for the erection of truss bridge
- Advance payment to NAL for Phase – III work of Plant
- Purchase of pond machineries and Tools & Plants items, R & D of lab facilities, sinking of new bore well for 2000 sqm ponds, control panel distribution system.

OUTLAY AT A GLANCE

Sector : NON-CONVENTIONAL SOURCES OF ENERGY

No. of Scheme : 1

Department : ELECTRICITY

(₹ in lakh)

Eleventh Five Year Plan 2007-12 Approved Outlay	:	850.02
Annual Plan 2007-10 Actual Expenditure	:	128.34
Annual Plan 2010-11 Actual Expenditure	:	68.97
Annual Plan 2011-12 Approved Outlay	:	65.00
Annual Plan 2011-12 Revised Outlay	:	65.00
Twelfth Five Year Plan 2012-17 Tentative Outlay	:	1543.00
Annual Plan 2012-13 Proposed Outlay	:	351.00

(₹ in lakh)

Sl. No	Name of the Scheme	Annual Plan 2010-11	Annual Plan 2011-12	Twelfth Plan 2012-17 (Tentative Outlay)	Annual Plan 2012-13
		Actual Expdr.	Approved Outlay	Proposed Outlay	Proposed Outlay
(1)	(2)	(3)	(4)	(5)	(6)
1.	Development of Non-Conventional Sources of Energy	68.97	65.00	1543.00	351.00