NON-CONVENTIONAL SOURCES OF ENERGY

The Pondicherry Experimental Solar Pond power project is a joint venture of Pondicherry Engineering College and Electricity Department 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 KV per day using organic Rankine cycle coupled with salt Gradient solar pond.

Ever since the establishment of the Project in the year 1986 and consequent to the establishment of the pond in the year 1996, the grant in aid is being obtained from Government of Puducherry through fund allocation under Energy Sector through Electricity department, Puducherry. As per the Memorandum of Understanding, signed with N.A.L the project was proposed to the 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 kv 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.

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 the trial runs of the engine, at the end of August, 2006, loss of level in the pond was suspected while scrutinizing the profile drawn out. This was also corroborated with salt inventory calculations. During the above period, Prof. Dr. C.L.Gupta, Solar Agni International, Sri Aurobindo Ashram, Puducherry has made number of visits to the site and has concluded that the level loss was probably due to micro leak either at the junction of the bottom and the slope wall or at the bottom itself. The pond was therefore emptied in the mid of September, 2006, under the advice of Dr.C.L. Gupta. 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 who have conveyed their approval in principle for the Revised Project Report and also recommended for continuance of experimental works by constructing 3 x 2000 sqm ponds, vide their letter no.P.11072/08/2006-RE/P&E. Power & Energy Division, New Delhi, dt.26.10.2006 and recommended for the inclusion in the XI Plan.

ACHIEVEMENTS DURING 2008-09

- Due to the minor leakage detection in 500 sqm pilot pond the floor area was repaired viz. unique and innovative method called Ferro cement technology by M/s Auroville Building Centre, Auroville, which is pioneer recognized organization by the Ministry of Science and Technology, Government of India. To rule out any possible micro leakage along the side slope walls of the pilot pond, using the same methodology the slopes were repaired through the same firm.

LIKELY ACHIEVEMENTS DURING 2009-10

- 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, advance payment to NAL, Bangalore, purchase of salts and chemicals to re-establish the existing solar pond and purchase of pond machineries and T&P items.

PROPOSED TARGETS FOR 2010-11:

- Preliminary works and construction of first 2000 sq.m pond, maintenance of existing 500 sq.m. pilot solar pond.
- Preliminary works for the erection of truss bridge, advance payment to NAL, Bangalore, for the phase III work(I instalment).
- Purchase of pond machineries and T& P items, provision of R & D facilities to the Lab, sinking of new bore well for 2000 sq.m. pond, design and installation of control panel and distribution system and modification of the ORC control panel.

OUTLAY AT A GLANCE

Sector : NON-CONVENTIONAL SOURCES OF ENERGY No. of Scheme : 1

Department : ELECTRICITY

(Rs. in lakh)

Eleventh Five Year Plan 2007-12 Outlay	:	850.02
Annual Plan 2007-08 Actual Expenditure	:	34.98
Annual Plan 2008-09 Actual Expenditure	:	44.99
Annual Plan 2009-10 Approved Outlay	:	37.90
Annual Plan 2009-10 Revised Outlay	:	48.40
Annual Plan 2010-11 Proposed Outlay	:	211.20

(Rs. in lakh)

Sl. No.	Name of the Scheme	Eleventh Five Year Plan 2007-12	Annual Plan 2007-08	Annual Plan 2008-09	Annual Plan 2009-10		Annual Plan 2010-11
		Outlay	Actual Expdr.	Actual Expdr.	Approved Outlay	Revised Outlay	Proposed Outlay
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Development of Non-Conventional Sources of Energy	850.02	34.98	44.99	37.90	48.40	211.20