Details of Consultancy Assignments carried out by EMC

1. Detailed Project Reports (DPR) done by Energy Management Centre				
Name of the Small Hydro Power Scheme	**Installed Capacity (MW)**	**Purchase/ work Order No./date**	**Client**	**Remarks**
1. Barapole SHP	21.00	01/2002 dt.03/05/2002	The Travancore -Cochin Chemicals Ltd (TCC)., Kerala	Including EIA study, Completed,.
2. Palchuram	3.50	W.O date 23.08.2004	Sree Rayalaseema Hi-Strength Hypo Ltd (SRHHL), Kurnool, AP	Completed
3. Mukkuttathodu	3.00			
4. Alamparathodu	3.00			
5. Karuvarai MHP	2.00	Lr.No.EMC/SHP/AHADS/04 dt.16-08-2002	AHADS, Agali, Kerala	Completed
6. Parathodu Small SHP	0.30	EMC/SHP/MBP/Parathodu/1/2000	Mallappally Block Panchayath	Completed
7. Kozhiyilakuthu	1.00	16000695 dtd 21-June-2004	UNIDO, Vienna, Austria	Completed
8. Panamkudantha	0.50			Completed
9. Kilikkalthodu	0.20			Completed
10. Padivathil	0.10			Completed
11. Rasathikuthu	0.50	16001104 dtd May-2006	UNIDO, Vienna, Austria	Completed
12. Rajamudi	0.05			
13. Balanthodu	0.25			
14. Edathanalkuthu	0.50			

2. Detailed Survey & Investigation Reports (DSI) done by Energy Management Centre				
Name of the Small Hydro Power Scheme	**Installed Capacity (MW)**	**Purchase/ work Order No./date**	**Client**	**Remarks**
1. Attle	6.00	TGV/TSR/Kerala Consultancy/ Award to EMC/16.10.2003	Sree Rayalaseema Hi-Strength Hypo Ltd (SRHHL), Kurnool, AP	Completed
2. Tuvallar	4.00			Completed
3. Upper Vattappara	3.00			Completed
4. Lower Vattappara	7.00			Completed
5. Kurumpetty	3.50			Completed
6. Iruttukanam	3.00			Completed
7. Palchuram	3.50			Completed
8. Mukkuttathodu	3.00			Completed
9. Alamparathodu	3.00			Completed
10. Pazhathottam	0.05	EMC/SHP/J2P/PP02/12100	Idukki District Panchayath	Completed
11. Rajamudi	0.05	EMC/SHP/J2P/PP02/12100	Idukki District Panchayath	Completed
12. Mullaringkadu	1.25	EMC/SHP/J2P/PP02/12100	Idukki District Panchayath	Completed
13. Adiyanpara	3.00	SILK/PEED/2002-03/3428	Steel Industriials Kerala Ltd., (SILK)	Completed
14. Pampanal	0.90	SILK/PEED/2002-03/3428	Steel Industriials Kerala Ltd., (SILK)	Completed
15. Melaruvi	0.15	SILK/PEED/2002-03/3428	Steel Industriials Kerala Ltd., (SILK)	Completed

2. Detailed Survey & Investigation Reports (DSI) done by Energy Management Centre				
Name of the Small Hydro Power Scheme	**Installed Capacity (MW)**	**Purchase/ work Order No./date**	**Client**	**Remarks**
16. Kurishadi	0.75	HLL/PROJ/CPG/2003	Hindustan Latex Ltd. (HLL), Trivandrum	Completed
17. Cherupuzha	1.25	EMC/SHP/98/2001 dt.20/01/99	Kerala State Electricity Board (KSEB)	Completed
18. Pottenthodu I	0.80			
19. Pottenthodu-II	0.40			
20. Murikkadavu	1.00			
21. Pallikuzhithodu	0.80			
22. Kalakkayam	1.20			
23. Vellanchery	0.50			
24. Valayanki	0.50			
25. Cheruvakkalchola	0.75			
26. Vengakotta	0.35			
27. Mampilavu	0.80			
28. Pulayamparathodu	0.60			
29. Panamkudantha	0.50			

3. Other Consultancy Assignments Undertaken by Energy Management Centre in Renewable Energy & Power Sector				
Project Details	**Capacity (MW)**	**Reference**	**Client**	**Remarks**
Arippara Small SHEP	3.00	P5-4615/98 dt.07/12/2004	District Panchayath Kozhikode	Ongoing
5 MW Ramakkalmmedu Wind farm (Wind Energy Consultancy Project)	5.00	G.O.(MS)27/03/PD	ANERT	Completed as per PO
Liaison for HIC, China, by EMC (HIC Sub-centre Activities) with SILK for possible technical collaboration for manufacture of SHP turbine & Auxiliaries	-	MD/42.0/9.0/140 dt.24/4/2000	Steel Industrials Kerala Ltd., (SILK). Power Engineering Division (Manufacturer of Hydro Turbines)	On going
Revised guidelines for SHP and RFQ & RFP documents for Govt. of Kerala including evaluation, monitoring etc.	30 SHP schemes	GO (Rt) 236/05/PD dtd. 24.6.2005	Govt. of Kerala (allotment To different captive power producers (CPP) & Independent power producers (IPP) on competitive bidding route.	Eleven projects have been allotted.
Second stage bidding is on with RFQ	12 SHP schemes	GO (Rt)236/05/PD dtd. 24.6.2005	Govt. of Kerala	RFQ process is over.
Reconstruction of power sector – Documents (RFQ & RFP) with TOR for selecting consultants		GO:(Rt)43/2003/PD dtd. 24.1.2003	Govt. of Kerala(On competitive bidding route)	Selected the consultant. Further process Kept in abeyance.
Activities in the field of SHP/ RE as part of consultancy/Liaison of EMC for UNIDO Regional Centre	SHP DPRs/ Implementation/Energy Efficiency studies	GO: # (Rt)No.351/ 2003/PD/16.9.03	UNIDO, Vienna, Austria.	On going
Activities in the field of SHP/ RE as part of consultancy/Liaison of EMC for: Sub Centre of IN SHP		GO: # (Rt) No.228 /04/PD/1.6.04	International Network on Small Hydro Power (IN SHP), Hangzhou, P R China.	On going.

4. Activities of the SHP division in connection with the Total Energy Security Mission (TESM)

A flagship project known as Total Energy Security Mission has been launched in the State with the objective of providing all households of Kerala facilities for basic energy need. This novel project will be implemented with the joint participation of EMC, the Sate Planning Board, KSEB, ANERT and Local Self Government Institutions.

This project will be integrated with Rajiv Gandhi Vydyudhikaran Yojana and the non-conventional energy development projects of Central Government. To conduct energy survey and power line mapping in all Local Self Government Institutions, to complete electrification of 5 Lakh houses, to establish 1 Lakh smokeless hearths and to replace 5 Lakh electric bulbs by compact fluorescent lamps are the main objectives this year.

The Programme aims at converging various initiatives of local governments with those of agencies promoting rural electrification and non-conventional energy in the state and with new initiatives in rural electrification and in energy sector launched as a part of the Common Minimum Programme by the Government of India.

There is the need for a mission mode programme to promote in a focused and time bound manner small hydro, biomass based energy generation, as well as for tapping available resources in wind and solar along with strengthening rural electrification initiatives. The focus shall be on working through local governments to achieve these objectives by 2010.

As part of the TESM the SHP division of EMC is fully involving in the preliminary reconnaissance for the identification of the most suitable SHP sites in Kerala. During the current financial year the Engineers of EMC SHP division had been appointed as the Members of the Mission Secretariat of TESM. Various meeting, workshops and brainstorming sessions were conducted in which engineers of EMC played a vital role.

Preliminary database of SHP sites are being worked out and the intensive program to locate micro and Pico Hydel sites in the State with help of participation of various Govt. organisation and Engineering colleges/Polytechnics are planned start by the end of the financial year. The objectives of this first stage of Master plan preparation for SHP will be

- Identify all possible small and mini Hydel sites and catalogue them.
- Collect all necessary data for preparing feasibility reports and DPRs.
- Collate data from available sources such as KSEB, Irrigation Department, Forest Department etc
- Prepare pre-feasibility/feasibility reports for all the identified sites, prioritising based on environment and forest angle, cost, accessibility, gestation period etc.

The reconnaissance survey for identification of the location of the micro Hydel sites is being carried out with the help of satellite imaging and digital map of Kerala with the help of CESS, KSREC & NNRMS, Bangalore. The man power requirement will be met from the students of the poly techniques/ ITIs of the respective Panchayath areas so as to avoid the transportation and shifting of the technical man power through out the State, thereby making the project People's Participative one. An amount of Rs. 5 Crores has been set apart by the Govt. of Kerala to meet the financial requirements of the project.

5. MANKULAM 110 kW POWER PROJECT

The first off-grid 110 kW micro hydel project and connected Community development centers in Mankulam Panchayat (Local Body) in Idukki District in Kerala is Commissioned. The Hon'ble Minister for Power, Government of Kerala Mr. Aryadan Muhammed inaugurated the project on 28th October 2004 at 1600 hrs at Mankulam. Community Development Centre was inaugurated by Mr. A. J. J. Rwenderie (Managing Director, UNIDO, Vienna, Austria).

The UNIDO Regional Centre for Small Hydro Power (UNIDORC) initiated such an endeavour in Mankulam, the only un-electrified Panchayath and an agricultural resource rich village in the Idukki district of Kerala, devoid of communication facilities. This is done in association with the local self Government of this Panchayath.

More than 6 waterfalls are available in this Panchayath, all of them having power generation potential. During 2001, with the objective of generating power for the lighting needs of the local community, the Panchayath initiated implementation of a 110 kW micro hydropower scheme at Pampumkayam, with a catchment area of 8 sq. km. After the construction of the penstock line by around 2002, this project was held up due to various reasons, including want of finance for purchase of turbine sets.

It was in this context that, the EMC/UNIDO-RC identified this scheme as the potential power source for its Community Development Initiatives to be made in this Panchayat. The RC stepped in and brought two turbine generators of 55 kW each from China through UNIDO's International Centre – the ICSHP. The Panchayat raised resources and created a 4 km stretch of 11 kV line and the RC completed the distribution network to provide power to about 250 families and other 50 establishments including the upcoming telephone exchange, in the first phase. Limit switches are provided to help optimize the power usage within 150 Watts to 175 Watts, which is sufficient enough to provide the basic lighting and entertainment service to the local community. The total cost of this project is about Rs 6.7 million and the power generation cost works out to be Rs 1.63 per unit without transmission and distribution network. In addition, the RC has provided 10 computers, VSAT internet link and computer publications to help create a computer education centre as part of the CDC programme. UNIDO supported the establishment of 5 CDCs in the Panchayath. The RC will also be involved in facilitating creation of cottage/tiny industrial units in this Panchayath as its second phase, followed by further expansion of the electrical system.

In fact this symbiotic association between a worldwide organization and a local self-government made possible through the RC has given a great model to the developing world. Also this CDC program driven by environmentally benign power utilizing local resources has rekindled the once forgotten but still relevant concept of self-sustenance of our rural villages, as envisioned by our Father of the Nation.

6. Ongoing Consultancy Works

a. Total consultation works for Arippara SHP project of Kozhikode District Panchayath

District Panchayath, Kozhikode, had requested EMC act as consultants for kick starting the implementation of Arippara SHP, by providing technical advise & interacting with financial institutions, KSEB, KERC etc. The Panchayath had given the consultancy order for the project.

Subsequently the Panchayath had requested EMC to give total consultancy work for the project.

The Team of engineers from EMC had started the Topographical investigation works of the project. Detailed Design of the project features is being carried out and the finalisation of the project appurtenances are being carried out in full swing. The Land acquisition drawings are already submitted to the Panchayath and the process is now under way for acquisitions.

EMC is also carrying out the various activities in connection with the formation of a Power Generation company under the District Panchayath

b. PROJECTS for D.P.R preparation from KSEB

Name of the Small Hydro Power Scheme	Installed Capacity (MW)	Purchase/ work Order No./date	Client	Remarks
1. Maniyar Tail Race	4.0	No. TC4/SH/3 /99/481 dated 25.10.2007	KSEB	This work has been entrusted with EMC for cost effective design of the sites.
2. Poozhithodu	4.8			
3. Velangad	7.5			
4. Chathankottunada	6.0			
5. Perumthenaruvi	6.0			
6. Anakkampoil	7.5			
7. Kandappanachal	4.5			
8. Pathankayam	4.5			
9. Kakkadampoil- I	20.0			
10. Kakkadampoil- II	5.0			
11. Marmala	3.9			
12. Poovaramthodu	2.0			
13. Olikkal	4.0			
14. Pasukkadavu	2.0			

Laboratory Facilities & Equipment lists

The Laboratory facilities at the Centre are being gradually built up over the years to make it capable of conducting R&D and testing work related to energy management and conservation. Various instruments currently available and extensively used for its R&D and Consultancy works are:

Sl No.	Name of the instrument	Make & Model
	ELECTRICAL	
1	Portable Load Management System	Krykard - ALM3
2	Handheld Load Analyser	Krykard-Nanovip
3	Datalogger	RCC Interlogger
4	Auto LCR-Q Tester	Systronics-928
5	Harmonic Analyser	Fluke-41B
6	Digital Multimeter	Fluke-76
7	Digital Energy Meters	Unilec
8	Clamp on Harmonic Analyser	AEMC Instruments
9	Oscillosopes	Philips – OS 9100 P, 100 MHzTektronix – TDS 220
10	Multi meter	Chauvinarnoux, F11
11	Lux meter	Chauvinarnoux ,CA 810
	MECHANICAL & THERMAL & CIVIL	
1	Heat flux Meter	Heat Probe - HB 100
2	Digital Thermometer	Fluke 51
3	Non-contact Tachometer	Lutron TM 909
4	Bomb Calorimeter	Arico-Deluxe
5	Digital Lux Meter	Lutron, LX-101
6	Humidity Tester	TFA
7	Sound Level Meter	Lutron, SL 4001
8	Pitot Tube	IEICOS
9	Pressure Monitor	EMCON
10	Infrared Thermometer	Lutron TM 909
11	Digital Thermometers	K- Type, Chromal - AlumalRTD, PT-100
12	Digital Manometer	MAESTER, M3000
13	Prismatic Compass	G/H
14	Air velocity Flow meter	AIR FLOW, UK, TA4
15	Flow meter (stream discharge)	EMCON
16	GPS Instument	Garmin GPS map 76 CSX
17	Auto Level	SETL
18	Altimeter	Barigo 41

EMC has also procured many other misc. instruments like Voltmeters, Ammeters, Watt meters, Millimeters, Auto Transformers, Function Generators, Pressure Gauges, Mercury Thermometers etc. for field work and other experimental purposes.