PREPARATION OF DATABASE OF KEY INDUSTRIAL INSTALLATIONS OF SOLAR WATER HEATING SYSTEMS (SWHS) ACROSS THE COUNTRY AND SUPPORTING THE DEVELOPMENT AND DISSEMINATION OF CASE STUDIES OF SUCCESSFUL INSTALLATIONS (INCLUDING WEBSITE DEVELOPMENT)

KICK-OFF MEETING AND EXPERT PANEL DISCUSSION:

SOLAR PROCESS HEAT (SOPRO-INDIA) - COMSOLAR PROJECT

INDO-GERMAN ENERGY PROGRAMME (IGEN) – RENEWABLE ENERGY

BENEFITS OF OPTIMIZATION OF SOLAR WATER HEATING SYSTEMS IN INDIAN INDUSTRIES

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Overview of Presentation

- Scope of Work
- Selection of Plants for Case Studies
- Selection of Plants for Monitoring

Scope of the Study

- To develop a list of industrial SWHS installations in India with basic information, which is to be submitted to GIZ in the form of a database.
- A recommendation of which installations should be taken up for showcasing as successful case studies is to be provided.
- Gather detailed information on the 20 selected case studies of SWHS installations, followed by support with the planned awareness building activities.

The activities are to be carried out in two Phases

Phase 1: Study of Solar Water Heating Systems
Phase 2: Assistance during Monitoring of Select Units to Fraunhofer ISE, and Development & Hosting of Web Site

Scope of the Study

Phase 1 activities would involve the following Tasks:

- Identification of 20 SWHS examples and basic data gathering
- Elaboration of selection list of at least 30 SWHS systems in the industries
- To select representative installations for the analysis, a list containing basic data of SWHS in the industry is required.
- APITCO, GIZ and Fraunhofer ISE will agree on the basic information, which is to be gathered, based on a draft template prepared by Fraunhofer ISE
- Develop a methodology for the collection of data. The installations to be targeted should be greater than 5000 litres

Scope of the Study

Phase 1 activities would involve the following Tasks:

Selection of 20 SWHS in the industrial sector as case studies

- Merge the selection list with the information from MNRE about SWHS in industry (provided by GIZ) and will propose a selection of 20 SWHS for the case studies.

- The final list of 20 case study SWHS will be finalized jointly by APITCO, GIZ and Fraunhofer ISE

Scope of the Study

Phase 1 activities would involve the following Tasks:

Gathering detailed information on 20 cases of SWHS based on a template

- Gather detailed information on the 30 SHWS case studies, such as

  1. Solar radiation at the place of installation,
  2. Diagram of the system,
  3. Hot water demand,
  4. Operation concept,
  5. Type of auxiliary heating,
  6. Investment costs,
  7. Picture of the system etc.

- Information will be delivered as a word or excel file and will be presented on the website.

Scope of the Study

Phase 1 activities would involve the following Tasks:

Gathering detailed information on 20 cases of SWHS based on a template

- APITCO, GIZ and Fraunhofer ISE will agree on the type of information which is to be gathered, based on a draft template / questionnaire prepared by Fraunhofer ISE
- Contact manufacturers and industries to collect the data.
- A methodology for data gathering will be developed and discussed with GIZ and Fraunhofer ISE.
- Along-with this information the consultant is to solicit the owner's interest in having the performance of the system showcases, along with an agreement to having the necessary additional monitoring equipment installed.

Scope of the Study

Phase 1 activities would involve the following Tasks:

Refining of data collected on the 20 case study SWHS

- Fraunhofer ISE will revise the data collected on the 20 SHWS case studies to establish the quality, consistency, and reliability
- Based on the feedback of Fraunhofer ISE, the consultant will gather missing data and clarify under information

Selection of SWHS to be monitored

- To recommend 5 SWHs for the monitoring with justification.
- Facilitate the signing of a MoU between the owners of each of the recommended installations and GIZ, outlining the agreement to monitoring the performance of the system and further case study development.
- Out of the 20 case studies SHWS, 3 Systems will be selected to be monitored by Fraunhofer ISE, in order to measure energy performance

Scope of the Study

Phase 2 Activities would involve the following Tasks:

Support the interactions with the stakeholder of selected installations and the monitoring of 3 SWHS

- APITCO will support the interaction of Fraunhofer ISE and GIZ teams with the selected industries and the visit of these teams to the selected installations.
- Fraunhofer ISE will visit about 5 SWHS for monitoring and will select 3 SHWS for monitoring. It will design, install and run the monitoring system. The performance data will be transferred to Fraunhofer ISE for evaluation.
- APITCO will support the monitoring activities of Fraunhofer ISE by supporting the communication and interactions with the systems owner, solar manufacturer and installer.

Scope of the Study

Phase 2 Activities would involve the following Tasks:

Support the development of the case studies and checklists

- Fraunhofer ISE will assess the technical and economic performance of the systems based on the monitored data and develop the case studies and checklists for solar water hot systems.

- The consultant is to facilitate Fraunhofer ISE in this by providing their inputs on local expertise and market knowledge and their interaction with the industries.

Scope of the Study

Phase 2 Activities would involve the following Tasks:

Website Development & Transfer

- APITCO will support GIZ and Fraunhofer ISE in the development of a structure and website functionalities to present the monitoring results.
- The development of the Framework delineating the structure and website functionalities will be in Phase I. After finalizing the same with inputs from GIZ and Fraunhofer ISE, the web development would be initiated in Phase 2.
- APITCO will sub-contract a website developer with whom they will transfer the content developed on to the site. This will include programming the database and its front-end. The consultant will test all the functionalities of the website and carry out a pre-launch with the developer. Feedback will be incorporated in to the website by the consultant and it will then be launched.
- APITCO and developer will transfer the instructions and know-how of operating the website to the host entity which will be identified by the project.

Scope of the Study

Data collected is to enable the determination of the technical and financial performance of the system as well as identify the installation of the system.

Sr. No.	Type of data
1	Place of Installation
2	Type of industrial sector
3	Solar radiation at the site (with source of information)
4	System data : collector area, storage volume, other components
5	System diagram including SHWS & the conventional heating scheme
6	Operation concept of the system, control strategy
7	Type of heat demanding process and demand profile (daily heat requirements, operation schedule, required temperature, point of use etc.)

Scope of the Study

Sr. No.	Type of data
8	Investment costs for the solar thermal system and received subsidies
9	Year of commissioning
10	Information on data collected on site (available data, how is it measured)
11	Auxiliary heater: how is the auxiliary heat generated, which heating system is replaced by the solar thermal system
12	Available data on fuel and relevant resource savings on account of SWHS installation, to support financial analysis (e.g. data on previous and present fuel consumption and trends etc.)
13	Background information (motivation for installation, initiator, the development and decision making process followed, stakeholders involved, financial considerations challenges faced etc.
14	Supplier/ manufacturer of the SWHS with contact details
15	System Owner with contact details
16	Picture of SHWS

Plants for Database

No.	Place of Installation	Location	Sector	Temp	Basic Fuel	ETC/ FPC	Area Sq. M	Volume (LPD)	DOC	Supplier
1	Sona Koyo Steering Systems Ltd	Sri-perumbpudur Tamil Nadu	Auto-mobile	75	Furnace oil	ETC	455	35000	2012	Solar Hitech Geysers, Bangalore
2	Wheels India Ltd,	Padi, Chennai, Tamil Nadu	Auto-mobile	88	Diesel	ETC	1377.6	105000	2013	Solar Hitech Geysers, Bangalore
3	Anchal Dairy	Adhoiwala, Dehradun, Uttarakhand	Dairy	80	Diesel	ETC	144.3	13000	2013	SLT Energy, Gandhinagar
4	L M Glasfiber (India) Pvt. Ltd	Dobaspet, Bangalore, Karnataka	Wind Turbine Parts	75	Diesel	FPC	160	10000	2008	Kotak Urja, Bangalore
5	Asian Paints	Rohtak, Haryana	Paints	78	Furnace Oil	FPC	524.8	40000	2010	Kotak Urja, Bangalore
6	HP State Cooperative Milk Production Federation	Rampur, Shimla, Himachal Pradesh	Dairy	70	Furnace Oil	FPC	120	6000	2013	Kotak Urja, Bangalore

Plants for Database

No.	Place of Installation	Location	Sector	Temp	Basic Fuel	ETC/ FPC	Area Sq. M	Volume (LPD)	DOC	Supplier
7	Excel Crop Care Limited	Ruwapari Rd, Bhavnagar, Gujarat	Pesticides	75	Biomass	FPC	138	7000	2005	Kotak Urja, Bangalore
8	Amul Dairy Cattle Feed Factory	Anand, Gujarat	Dairy	70	Biomass	FPC	708.6	54000	2008	URMI Solar, Ahmedabad
9	Plethico Pharma	Pologround, Industrial Estate, Indore, MP	Herbal Drugs	70	Diesel	FPC	175.6	12750	2008	URMI Solar, Ahmedabad
10	Dudhsagar Dairy	Mehasana, Gujarat	Dairy	70	Furnace Oil	FPC	275.48	20000	2008	URMI Solar, Ahmedabad
11	Uttam Dairy	Gomtipur, Ahmedabad, Gujarat	Dairy	70	Diesel	FPC	289.25	21000	2008	URMI Solar, Ahmedabad
12	Milma Dairy	Kozhikode, Pallakad, Kerala	Dairy	70	Biomass	FPC	160	10000	2008	TATA BP Banaglore

Plants for Database

Sr. No.	Place of Installation	Location	Sector	Temp	Basic Fuel	ETC/ FPC	Area Sq. M	Volume (LPD)	DOC	Supplier
12	Milma Dairy	Kozhikode, Pallakad, Kerala	Dairy	70	Biomass	FPC	160	10000		TATA BP Bangalore
13	Aavin Diary	Tirunelveli, Tamil Nadu	Dairy	75	Furnace oil	FPC	300	15000	2011	Photon Energy Hyderabad
14	Synthokem Labs	Sanath Nagar, Hyderabad	Pharma	80	Furnace Oil	ETC	384	32000	2010	Photon Energy Hyderabad
15	Divis Labs	Choutuppal Hyderabad, Andhra Pradesh	Pharma	80	Furnace oil	FPC	160	10000	2007	Photon Energy Hyderabad
16	OCV Reinforced Systems	Timmapur Highway, Hyderabad, Andhra Pradesh	Glass Fiber	70	Thermic Fluid	ETC	72	6000	2011	Photon Energy Hyderabad
17	Parle Products Limited	Neemrana, Alwar, Rajasthan	Biscuit	80	Furnace Oil	FPC	140	7000	2010	Photon Energy Hyderabad

Plants for Database

Sr. No.	Place of Installation	Location	Sector	Temp	Basic Fuel	ETC/ FPC	Area Sq. M	Volume (LPD)	DOC	Supplier
18	Rajasthan Electronics & Instruments Limited	Sirsi Road, Jaipur, Rajasthan	Dairy	80	Diesel	FPC	413.2	30000	2011	Photon Energy Hyderabad
21	Ramky Effluent Evaporation	Jeedimetla, Hyderabad, Andhra Pradesh	Effluent Evaporation	75	Diesel	ETC	132	11000	2011	Photon Energy Hyderabad
22	Bharat Containers Pvt Ltd	Hingna Nagpur, Maharastra	Aluminium Extrusion	65	LPG & Electricity	FPC	144	10000	2006	Akson Solar, Pune
23	Bharat Containers Pvt Ltd	Hingna Nagpur, Maharastra	Aluminium Extrusion	65	LPG & Electricity	FPC	145	10000	2012	Akson Solar, Pune
24	Godrej & Boyce	Mohali, Punjab	Refrig-erators	65	Electricity	FPC	72	5000	2012	Akson Solar, Pune

Plants for Database

No.	Place of Installation	Location	Sector	Temp	Basic Fuel	ETC/ FPC	Area Sq. M	Volume (LPD)	DOC	Supplier
25	Kangaro Industries Ltd.	Ludhiana, Punjab	Plastic products	55	Electricity	FPC	790	60000	2005	Inter Solar, Chandigarh
26	Chelsea Mills	Manesar, Gurgaon, Haryana	Textiles	70	Furnace oil	FPC	660	50000	2005	Inter Solar, Chandigarh
27	Ranbaxy Labortories Ltd	Toansa, Punjab	Pharma	70	Furnace oil	FPC	200	15000	2010	Inter Solar, Chandigarh
28	Sunil Healthcare Ltd	Alwar, Rajasthan	Health Care Products	60	Furnace oil	FPC	92	7000	2012	Inter Solar, Chandigarh

Thank You