

News for the month of June 2015...

Surya Bhawan comes up at National Institute of Solar Energy



Photo courtesy: Ministry of New and Renewable Energy

Shri Piyush Goyal, Union Minister of State (IC) for Power, Coal and New and Renewable Energy, inaugurated “Surya Bhawan” the new solar passive building of the National Institute of Solar Energy (NISE) situated in Gurgaon, Haryana. The NISE is the apex national centre of research and development in solar energy under administrative control of the Ministry of New & Renewable Energy, Government of India. It coordinates solar energy research & technology related work in the country and is aiming towards becoming a NET ZERO electricity centre.

Following the inauguration of the New Building, the Minister visited various solar projects in the Campus. The campus of National Institute of Solar Energy would soon meet all its electrical requirements from the Solar Power Projects setup in the campus with Solar Thermal and Solar Photovoltaic Technologies. Concurrently adjacent to “Surya Bhawan” has a residential facility has also come up that houses a 3,200 litres of solar water heating system using 16 individual It will meet the hot water needs for day to day use.

Lauding the role and contribution of all officers and students of NISE in establishing this Institute, Shri Goyal said “in coming days, role of the NISE will take quantum growth particularly when energy security of the country is intrinsically linked with success of Renewable Energy mission.”

The Minister also announced establishment of International Solar Policy and Applications Agency which would be a coalition of solar resource rich countries for the development of solar energy and solar technology applications. This would help in addressing special energy needs of these countries and in the long run reduce reliance on fossil fuels by increasing the share of solar energy in the energy mix. Hon’ble Prime Minister Shri Narendra Modi, during his address in the RE-INVEST 2015 had given the idea to bring solar resource rich nations together to jointly address their challenges of energy security. The Minister also announced preparation of establishing World Renewable Museum in the NISE campus.

NISE had recently commissioned a concentrated solar thermal testing centre. The broad tests that would be carried out will be surface reflectivity of reflectors, absorptivity and emissivity of receivers, optical and thermal efficiencies of the CST technology under test. The test output will help a user to estimate the performance of the technology under the local environment.

<http://mnre.gov.in/centers/about-sec-2/>

<https://www.youtube.com/watch?v=FTKsmzOEU50>

Sweet processing at Almond House using solar thermal energy



Hyderabad based 'Almond House' a popular sweets vendor since 25 years have gone green by using solar thermal systems for its centralized cooking. A 255 m² parabolic trough system using 150 troughs indigenously manufactured by Oorja Energy Engineering Services is catering to the heating needs of processing milk based products, largely 'khova', a common dairy product used to make Indian sweets. Commissioned at a total cost of Rs. 54 lakh (without subsidy) it is expected to save 50 litres of diesel every day on a normal sunlight day. The system is self financed.

Owing to its expansion of outlets it created the need for increase in heating load. The processing involves continuously boiling milk to remove the water in it till only the milk solids are left. This is an energy intensive process and they are using a steam boiler operating on diesel in their existing kitchen. The temperature required for this process is 140 °C. A new kitchen has been established to use concentrated solar thermal (CST) system for the same process. The location of the new kitchen is in the dairy owned by the same firm. According to M. Nagarjuna, the proprietor of Almond House - "We want to have a farm integrated system so that milk produced at the dairy farm can be processed at the same place using solar energy and the final product can be shipped to our outlets in the city".

Madhusudhan Rao of Oorja Energy stated that 3 years ago Almond House had done study on use of solar thermal heating for its process and had already tried to implement it, but for various reasons that project could not take off. "In order to convince them about the technology, we installed a small working demo at their site" informs Madhusudhan. Thermic fluid heating system was chosen instead of direct steam system since items that require frying can also be processed and it avoids maintenance of a large Reverse Osmosis (RO) system. RO is essential at high temperatures when the salts in the water precipitates and scaling can be prevented. The cost of regular descaling of the system is avoided by using thermic fluid.

Oorja Energy is currently maintaining the system and at the same time training Almond House staff to operate it. The mirrors carry a 10 year warranty. The project is supported by Ministry of New and Renewable Energy, Govt. of India MNRE and UNDP-GEF CSH project by extending subsidies of provided 30% and 15% respectively. It is anticipated to pay back in less than 4 years and provide annual savings of Rs. 10 lakh in form of fuel oil savings.

<http://www.almondhouse.com/>

Concentrator dryer brings cheer for agro drying



Giving a new dimension to concentrated solar system Leverage Net Solutions Pvt. Ltd. have commissioned a Concentrating solar dish Veggie dryer at Alpine Fruit Processing Pvt. Ltd. near Pune that also serves the purpose of cooking when situation demands. Realizing the might of a solar thermal system they decided to use the concentrating solar technology to accelerate drying process to that maximum moisture is removed from veggies and gives them a better rate to the dried veggies.

Drying of vegetable is old fashioned way of storing veggies in India and the women folk in villages are largely involved in this kind of business activity. Since solar dish is also light in weight hence can be easily used by the women and can perform the drying of veggies.

There are two dishes installed each of 3 m² commissioned at a cost of Rs. 90,000/- that would be used to dry vegetables like beetroot, Okra, carrots, capsicum etc. and the supplier claims nearly 95% of moisture is removed. When there are not sufficient veggies for drying the system will also be used for cooking afternoon lunch. Owing to high administrative cost Alpine decided to do away with capital subsidy claim and invested the complete capital cost.

The system will on an average dry up to 20kg of raw veggies and taking into consideration the high price a dried veggie fetches the system pays back for itself within a year's time. The dilemma of availability of electricity or fuel for drying is also overcome. Hygienically agro dried products are in fact fetching premium price in markets now considering the fact that most of the packed foods are under scanner for their contamination.

Although the project size is small but considering the huge demand for agro drying in India the magnitude of volumes can be massive and can bring cheer to farmers and self help groups for their business. Geetanjali Choori of Leverage Net Solutions claims "There has been high interest shown by self-help groups and farmers to use this idea to dry vegetables faster."

India is the second largest global agro producer. Almost 25% of vegetables are lost due to bad harvesting practices. Also interesting to note that only 2% of agro production is processed in India compared to 70% in USA.

<http://www.energy-guru.com>

Capacity building events announced



To enhance the capacity building of concentrated solar thermal (CST) manufacturers/ entrepreneurs World Renewal Spiritual Trust (WRST) will be organizing series of awareness and technical training programmes during 2015 at CST centre, Brahmakumaris' Ashram, Abu Road under the support from UNDP-GEF CSH Project of Ministry of New & Renewable Energy, Government of India. The two-day awareness programmes will be held on 1st August, 21st November and 19th December. The three-day technology trainings will be held on 28th August and 23rd October.

The awareness seminar will target potential beneficiaries from industries, institutions & commercial establishments with 20-30 participants in each seminar. In addition, training programmes on skill development for the employees/ officials of manufacturers and entrepreneurs with at least 20 participants. These events will help improving the capacity building of CST manufacturers/ entrepreneurs in the area of CST quality especially of mirror reliability/ durability, performance improvements, manufacturing skills, customization off end user products/systems etc.

The programmes are being supported by requisite course material including video films, case studies, manuals demonstration units, audio/ video presentations, training kits, visits to installations at Abu Road and Mount Abu etc for the benefit of participants.

According to officials at WRST the response has been tremendous. The previous training had witnessed excess participation and those who could not attend will be accommodated in these events.

Interested participants in respective programme of their choice may contact Ms. AnetaLoj, Programme In-charge at e-mail: infocshcenter@gmail.com

Mixed reactions to subsidy programme



The National Solar Mission extends 30% subsidy for projects executed using concentrated solar thermal heating systems. Besides this additional financial incentives are available under the UNDP-GEF CSH project up to 15% of the project cost. For repair and maintenance

Majority of the manufacturers were of the opinion that timely disbursement of subsidies can become one of the drivers of market development. Since any typical concentrated solar thermal system for process heat is capital intensive in nature hence considerable amount of funds get blocked and becomes a stumbling block for manufacturers to seek more enquiries.

However officials of Ministry of New and Renewable Energy (MNRE) claim that there is no shortage of funds for subsidy. According to MNRE Rs. 68 crore has already been sanctioned and committed under NCEF for period till March 2017. So far only Rs.10 crore has been utilized and the rest will be available during the current financial year. They have urged the manufacturers to keep generating the proposals for submission to MNRE and also take advantage of the UNDP-GEF CSHP programme that provides additional incentive.

According to Dr. A.K. Singhal National Project Manager of UNDP-GEF CSH there are sufficient additional funds available for supporting the demonstration and replication projects

Siddharth Malik said “the mandatory administrative issues make it time consuming and if can be straightened can expedite the process”.

Shivanand Nashi of Unisun technologies however differs in his opinion on subsidy and informs that most of the recent projects they have executed have been without subsidy. “We usually select clients that opt out of subsidy as there are other incentives available which offer financial feasibility”.

http://mnre.gov.in/file-manager/UserFiles/subsidies_solar_thermal_systems_devices.pdf

<http://www.cshindia.in/images/MNRE%20&%20UNDP%20Support/Available%20UNDP-GEF%20support%202015.pdf>

Ritter XL Solar in award winning CPC collector



(Photo courtesy: Sun & Wind Energy, Germany)

Ritter XL Solar, Germany was awarded the OTTI Innovation Prize for solar thermal energy for a research project that uses compound parabolic concentrating (CPC) vacuum tube collectors in Germany to create process steam to drive a steam jet ejector chiller. The system was installed at the end of 2013 and consists of 80 vacuum tube collectors with an area of 400 m². The collectors are equipped with plasma technology, which is basically an anti-reflective coating on the vacuum tubes increasing the yield by approximately 20%. In addition, CPC mirrors ensure that even diffuse light is concentrated on the tubes, for example when the sky is cloudy. An outstanding feature of our solar collectors is their long operational lifetime. Only materials of the highest quality, such as aluminium, borosilicate glass, stainless steel, and copper, are used in their construction. When in use, the collectors function with almost no wear and tear.

The collectors use pure water as the heat medium, which is turned into steam between 100 °C and 140 °C at a pressure of 3 to 4 bar. Because of the high temperatures in the system, the insulation had to be improved to reduce energy losses.

The distance between the collector array and the chiller is also relatively long, at least at the test facility in Kassel. Despite the high temperatures and the long distance that the steam has to travel, an annual collector yield of approximately 460 kWh / m² is achievable. Generally speaking, it would also be viable to use significantly higher temperatures. The stagnation temperature of the collector is 360 °C. The control technology, which Ritter developed itself, automatically increases or decreases the flow rate to maintain stable temperatures, even when there is less sunlight. An overall daily utilization rate of approximately 40% can be achieved, according to Ritter.

The heat that is produced is stored in a latent heat storage system based on polyethylene that was developed at the University of Karlsruhe. The polyethylene melts at temperatures between 125 °C and 135 °C, enabling it to store heat. The cooling water is also stored using latent heat. A paraffin-water medium is used for this purpose. It provides a higher storage capacity than conventional water storage systems can achieve.

Up till now, solar thermal process heat has only played a minor role in central Europe. One reason for this is that industry often uses steam as a heat carrier, and solar thermal energy cannot provide it, at least not in northern and central Europe. The amount of solar radiation in the region is usually insufficient to make concentrating collectors a viable solution. Ritter was thus able to address this glitch.

<http://www.ritter-gruppe.com/>

(News courtesy: www.solarthermalworld.org)