# News for the month of April 2016

## India set to become global renewable energy leader


Hon'ble Minister of State (Independent Charge) for Power, Coal and New & Renewable Energy Shri Piyush Goyal, felicitated 102 awardees to recognize their achievements made in the high temperature solar process heat and cooking. The National Workshop on Concentrated Solar Technologies (CST) and Solar Cookers award distribution function - 2016 was held at a glittering function on 29th April 2016 organised by Ministry of New and Renewable Energy (MNRE), government of India and the GEF-UNDP concentrated solar thermal programme. It was for the first time in the history of solar thermal in India such large awardees were felicitated. Besides 37 projects were also issued sanction letter for applications made under the MNRE capital subsidy and GEF-UNDP support scheme. These projects will come up at various locations in the country.

The awardees chosen were among state nodal agencies, religious institutions, hospitality sector, promotional agencies, successful beneficiaries, and over and above the manufacturers. While community cooking has become a popular application in both educational and religious organizations, CST technologies are being adopted to meet the process heat requirements in dairy, pharmaceuticals, chemicals, textiles and many other industrial sectors.

Shri Goyal commended the efforts of the solar thermal industry that has brought India on the map of the global leaders. India ranks amongst the top 5 manufacturers in low temperature solar thermal like solar water heaters and is now the leader in high temperature solar thermal cooking. He articulated such individual projects have a vital role to play in achieving holistic solar targets. He further delightedly said India is all set to become the global renewable energy leader, with the PV targets already crossing by 116% during 2015-16 in comparison to last year. MNRE is also preparing a roadmap to install 100 MW of CSTs by the year 2022.

Shri Goyal called upon the manufacturers to share their innovative ideas so as to make India a unique place for demonstrating process heating. Recognising the efforts of the solar water heater manufacturers who are now self-sufficient after demanding removal of subsidy, he said the high temperature solar thermal manufacturers equally have the potential to be self-sufficient.

Upendra Tripathy (IAS), Secretary, MNRE informed that India has over 482 installations covering 53,000 m2 of installed high temperature solar thermal installations all unique in them. He called on the manufacturers to enlarge their efforts by eight times in the next year and reduce India's dependence on fuel oil.

He further mentioned that India has received US$ 1 billion lines of credits from ADB and kfW for developing PV rooftop markets and appealed the industry body to come out with a proposal so that MNRE also develops its efforts for similar line of credit for solar thermal industry and take care of capital financing of projects.

On the occasion nine knowledge documents collated by several experts to provide information on Concentrated Solar Thermal Technology (CST) were released by the Hon'ble Minister, Secretary, MNRE; Joint Secretary (Solar), MNRE; Jaco Cilliers, Country Director, UNDP and Ms Ayumi Fujino, UNIDO Representative & Regional Director.

The GEF-UNDP and GEF-UNIDO programmes target 45,000 $m^2$ of high temperature solar thermal systems each within 5 years that will avoid 80,000 tons of $CO_2$ and reduce fuel oil burden of over 6 million litres.

http://www.mnre.gov.in
http://www.cshindia.in

## Patented solar thermal turmeric curing unit developed

*Photo courtesy: Greenera Energy India Private Limited*

Seasonal crops grown in India have to be stored for perennial availability. Drying is an essential process for storing these crops safely. Typically firewood or other available biomass is used for such drying processes. Stricter environmental laws inhibit the use of wood or coal for burning hence solar thermal crop drying has emerged as a potential alternative technology.

Indian Institute of Spices Research (IISR), Peruvanamuzhi in Tamil Nadu, established under Indian Council of Agricultural Research (ICAR) has installed a concentrated solar thermal (CST) turmeric curing unit supplied by Tamil Nadu based Greenera Energy India Private Limited**.** Barring the reflectors the entire design and components are indigenously made. The reflectors used are anodised aluminium with weather proof PVD coating with 93% reflectivity. The unique Collector design, tracking actuators, integration technique are indigenous and Grrenera has applied for patent.

The project is installed at a cost close to ₹ 10 lakh and has benefitted with the MNRE capital subsidy scheme besides the fiscal incentive offered under the UNDP programme. There are 16 fully enclosed parabolic trough collectors (2 x 1) metres dimension with a total aperture area of 32 $m^2$ that generate steam @ 150°C/ 3.5 bar. The unit has a cooking vessel of capacity 50 kg/ batch. The system generates 15kg /hour of steam with a rated output of 11.5 kWthermal @ 700 Direct Normal Incidence (DNI). The system offers thermal efficiency of 63% at 100°C. The initial trial indicated that complete cooking of turmeric can be achieved in 45 min. On regular use the system will save 100kg of wood.

The CST system is a standalone unit, capable of running independently without any supplementary power. "Usually trackers are powered with electric supply, which in this case was around 400 meters away from the installation, so we decided to save the cost of wiring by using a 10 watt PV module and suitable battery for storage. This collector has to continuously track the sun to make the focus of the concentrated solar radiation to fall on the receivers. A micro controller based single axis tracking system with GPS is employed to achieve continuous and automatic tracking" informs V.K. Valiapppan of Greenera.

*http://www.spices.res.in/*

**Manufacturers to aid from NITI Aayog-coordinated solar energy policy push**

*Photo courtesy: Gujarat Borosil Ltd.*

The NITI (National Institute of Transforming India) Aayog-coordinated solar power policy backed by Hon'ble Prime Minister Shri Narendra Modi India is readying to aid manufacturing of equipment that's going to be in great demand if the government's plans fructify. The policy is being designed based on the recommendations of a high level, inter-ministerial panel that was set up by the department of industrial policy and promotion. According to a senior government official "The new framework is almost ready... It is expected to be taken up by the cabinet soon,"

Most of the policies in solar energy were largely focussed to end-users providing incentives and seldom manufacturers had the option to borrow funds at lower cost of financing thus inhibiting manufacturing.

The proposed policy aims to create enabling conditions for solar generation capacity and could include off-take guarantees, 100% payment guarantees, an institutional hedging mechanism for foreign currency funds and a stringent offset.

The National Clean Energy Fund's corpus could be used to provide capital subsidies to domestic manufacturers, reeling under financial stress, for technological upgradation. This fund could also be used to for providing hedging support. Viability gap funding could be offered to developers as part of the package.

This mandatory sourcing from domestic manufacturers faces a challenge at the World Trade Organisation after India lost a case filed by the US on the issue. The government is now keen on devising a policy that would encourage overseas companies to set up manufacturing facilities in the country as part of the Make in India initiative to avoid a confrontation at World Trade Oranisation.

Commenting on this development Mahesh Biyani of Thermosol Glass mentions" Learning from PV revolution, if we do not aid Indian manufactures who have invested sizable equity, largely we are encouraging the practices making country a trading paradise, where foreign manufactures will enjoy the real fruit of the efforts initiated by governing agencies and startups in meeting the renewable targets. Of course this will also be affecting the soul of 'Make In India' drive somewhere."

Geetanjali Choori of Energy Guru mentions" Considering immense potential of CST to change the energy mix of India and to reduce nation's energy bill, we would like NITI Aayog to consider "RE" as "Renewable Energy" and not just "Renewable Electricity". CST manufacturers have shown bottoms up innovations in India and can lead the world in CST manufacturing just like the way China did in PV. This would also support government's "Make in India" campaign as majority of CST suppliers are manufacture their components in India."

*http://www.niti.gov.in*

**Training cum awareness programme successfully completed**

*Photo courtesy: World Renewal Spiritual Trust*

World Renewal Spiritual Trust (WRST) has successfully completed a two day awareness cum training seminar on concentrated solar thermal (CST) system from 6-7 the February 2016. 25 entrepreneurs, consultants, academician, scholars and industrialists interested in applying CST solutions in their field. The CST Center is located at "India One" Solar Thermal Power Plan at Brahma Kumaris, Abu Road, Rajasthan.

It lasted for two days, during which UNDP-GEF policies and support were presented, case studies and available CST solutions for medium and high temperature applications were shared, there were an interactive sessions and workshop for where end users requirements were discussed and relevant CST based systems presented.

During the two days, guests had also a chance to visit number of CST based applications in Abu Road and Mt Abu, where solar heat is being generated and used for various institutional applications such as cooking, laundry, sterilization of instruments in the hospital, water pasteurization.

Aneta Loj coordinator of the training programme at WRST informs that the training schedule included concept design of Scheffler dish; its history and development; layout of installation for various latitudes; determining the exact E-W line; setting frame to Equinox; mirror cutting, edge grinding and mirror fixing; erection of rotating support; output calculation and output testing; concept and design of electrical tracking mechanism, manufacturing aspects etc.

Dr. Anagha Pathak, Senior Technical Officer from UNDP-GEF assisted CSH project of MNRE was present to discuss policies and support available from MNRE and UNDP-GEF project.

All the participants expressed satisfaction at the event conducted. Some of the testimonials of the participants were as below:

"We learnt very minute details regarding fabrication, design, installation. A great service to humanity."

"Thanks a lot. Truly speaking I had a great learning experience during 3 day stay at CST Centre. Further sharing the presentations is definitely going to help us in better understanding of the Design and concept of CST Technologies and finally contributing in the growth of CST."

"The training program is one of its kind the technology transfer is tremendous. No institute would have done this level of technology transfer. It is a commendable job. "

In 2014 the World Renewal Spiritual Trust was awarded with an assignment of Development of Awareness Cum Training Centre on Concentrating Solar Thermal Technologies (CSTs) under UNDP-GEF Concentrated Heat Technologies Project, the Ministry of New and Renewable Energy, Government of India.

*http://www.india-one.net*

## Industry chiefs call for immense demand creation

Solar Thermal Federation of India carried a study with the manufacturers of concentrated solar thermal (CST) systems on identifying the best ideas that would accelerate the market growth of solar thermal process heat. One of the common demands where the industry converged was creation of immense demand within large scale industries requiring process heat up to 150 $^{O}$C.

Ministry of New and Renewable Energy (MNRE) to begin with can pursue Public Sector Undertakings (PSU's) to meet anywhere 10-15% of their process heat requirements. As the technology matures this figure of mandate can be subsequently enhanced until the costs reach a comercialisation level. Basically if demand is created then this will drive the manufacturers to bring down the system costs.

Madhusudhan Rao of Oorja Energy states MNRE can fund bigger sized project as pilot and showcase the success so as to set the ball rolling so that related industries follow suit. He quoted examples of similar policy followed by Chinese & Spanish governments by spending heavily on CST heating projects using several pilots. He further adds if these countries success to achieve economies of scale then they will find easy route to start exploring exports to potential countries like India and make domestic manufacturing tough

Dr. R. Sonde of Thermax said "One way to create demand is to float tenders in identified potential sectors requiring process heat. A certain target say 1 lakh m2 can be fixed for 5 years. This will motivate the manufacturers to become competitive so as to seize maximum business and bring in momentum."

While the present incentive do make CST heating systems pay back within five years but lack of awareness and an atmosphere of demand is lacking which is not attracting industries to consider. More capacity building workshops must be conducted on a continuous basis in identified potential clusters like food processing industries, dairies, textiles, automobiles, etc. Further site visits can also be arranged for potential industrial clusters that can find solar thermal heat useful in their processes.

Plethora of events in solar energy are happening but the focus always remains photovoltaics and seldom does solar thermal figure. Giving equal admiration to solar thermal and presenting successful case studies will create a greater sense of awareness. This will also increase the confidence.

*http://www.stfi.org.in*

## European Commission releases its first-ever heating and cooling strategy

Heating and cooling sector accounts for half of the European Union's annual energy as per the Commission. A strategy to decarbonize heating and cooling by 2050 would save around €40 billion in gas imports and €4.9 billion in oil imports per year, it said. According to their research, almost half of EU buildings feature boilers installed before 1992, with an efficiency rating below 60% - while 22% of installed gas boilers, 34% of direct electric heaters, 47% of oil boilers and 58% of coal boilers are beyond their recommended service life.

It found that the amount of wasted heat from industrial processes could cover the EU's entire building sector heating needs.

The new strategy aims to address five key areas: making it easier to renovate buildings; integrating electricity systems with heating and cooling systems; increasing the share of renewables used in heating and cooling; recovering wasted energy from industry; and getting consumers and industry involved in the process.

Under the 'easier renovation' rubric, the strategy aims to promote energy efficiency and strengthen the reliability of energy performance certificates. To address the issue of wasted energy, it proposes district heating networks fuelled by industrial waste and cogeneration plants; cooling through cogeneration and absorption chillers; and analysis of waste heat potential at national and local levels. The Commission further said many of these proposals are 'non-legislative', meaning they will be up to Member States to implement. On the legislative side, it noted that the Europe-wide Energy Efficiency Directive, the Energy Performance of Buildings Directive, the Smart Financing for Smart Buildings Initiative, the new Electricity Market Design and the proposal for a Renewable Energy Framework will all be reviewed this year.

Coalition of trade groups including the European Biomass Association (AEBIOM), the European Solar Thermal Industry Federation (ESTIF), the European Biogas Association (EBA) and the European Heat Pump Association (EHPA) issued a joint statement welcoming the move. The groups focused on the upcoming legislative reviews, recommending 'a new governance system enabling local authorities to participate as equal partners in the decision-making process'; equality for renewables and energy efficiency in financing initiatives; the allocation of structural funds to cities to enable mapping and use of their heat potential; and phasing out fossil fuel subsidies.

*http://www.estif.org/fileadmin/estif/content/press/Joint_statement_Heating_and_Cooling_Strategy.pdf*