

News for the month of May 2016

Solar systems reaps benefit at Navkar Textiles



Navkar Textiles is reaping benefits from the Scheffler type solar concentrators dish system. The 12 dishes each with 16 m² aperture area are meeting their steam requirements. These dishes are connected in a series and parallel combination and generate steam at 150°C and three bar pressure. The generated heat converts the water flowing through the receiver into steam. K-Energy suppliers of the system have specially designed the cavity receiver to enhance the efficiency so as to get high quality steam.

The system is equipped with a single axis auto tracking mechanism for improved efficiency capable of tracking the movements of the sun automatically throughout the day. Each module of a 16 m² has a total shadow free area requirement of 35 m² and a weight of 400 kg. each module has an output capacity of up to 6 kWth.

The grey material (cloths) post stitching and bleaching is passed through a closed chamber where it is passed through the steam to clean various chemical agents while bleaching process.

Against a total project invest of Rs. 36,00,000.00 they have availed of 30% capital subsidy from Ministry of New and Renewable Energy on applicable components and additional 15% under the GEF-UNDP programme. Being a commercial organisation they have also availed of accelerated 80% depreciation benefit. This payback is under 3 years. Prior to using solar thermal annually 660 tones of firewood was used for meeting the heating needs, emitting almost 1,320 tons of CO₂. With the solar system operational it has already resulted in 75% savings of firewood.

According to K-Energy the system has already proven the benefits of use of solar thermal heating for a typical textile industry and will be helpful to explore in related unis in other regions of the country.

More details at www.prakashsancheti.info or email prakashsancheti99#gmail.com

Lakaki Drycleaners gaining benefits from solar thermal system



Photo: Solar Thermal System at Lakaki Drycleaners

Lakaki Dry Cleaners & Art Dyers, Goa have are gaining benefits from the 25 m² paraboloid dual axis solar concentrator dish system installed in February 2015. Venkatesh Naik Dalal owner of the laundry wanted to explore a sustainable technology for meeting the steam requirements to offset the mounting costs of diesel and electricity, hence decided to go for solar thermal heating in hybrid mode. The investment then made was around Rs. 12,50,000 and also benefitted with central grant from Ministry of New and Renewable Energy. The systems is yielding an average 72,000 kcal daily during sunlight rich days.

Cleaning and drying of around 1,000 clothes per day takes place in the laundry with eight hours of work every day. There are five tables for steam pressing, four tables for electric ironing, and about two lengthy tables for the sarees all handled by over 20 workers. Generally, the laundry operates for eight hours and steam is required for all eight hours of the day. On the basis of this schedule, the installed solar system completely replaces diesel and 50 per cent of electrical energy.

The steam generated at 5 bars is sent to the laundry application points through a common steam header. So this solar system caters hot water for washing clothes and starch preparation, and steam for ironing process at 2–4 bar pressure. The steam requirement at peak hours is 100 kg/hour and hot water requirement is around 400 litres/day. Earlier the fuel used for boilers was diesel and electrical energy was required for ironing. The daily fuel consumption was 20 litres/ day and 80 kWh/day of electricity catering to average 1,000 clothes per day.

Since its installation the system has already generated savings of Rs. 3.5 lakh and is likely to payback in less than 4 years.

They recently won the CST & Solar Cooker Excellence Award 2016 from Ministry of New and Renewable Energy for effectively using CST (Concentrated Solar Thermal) system for Process Heat Application in their industrial establishment. They can be reached on phone +(91)-(832)-2732455.

Quadsun solar bags innovation award



Photo: Rafael Anson, CTO receiving the Innovation Award from Hon'ble Shri Piyush Goyal

Quadsun Solar Pvt. Ltd. has bagged the Innovation award from *Ministry* of New and Renewable Energy for their unique design of concentrated solar thermal system. The system is designed to provide lowest cost of heat at minimum footprint space. The company is headed by technocrats with expertise and experience in solar Field.

The QuadSun concentrator is 4.4m² area dish receiver using extremely precise shape and curve of solar grade glass based reflector that allows very high levels of concentration. The precise mirrors allow achieving 800x concentrations. The system operates through dual axis tracking.

Quadsun comes with high precision parabolic mirror which provide optical efficiency of more than 80%. They embody efficient thermodynamics which provide high concentration at receiver, keeping losses to minimum even at high temperatures.

The company claims its high efficiency system need only 50% of space required to generate same amount of energy as compared to other technologies. The high concentration ratio leads to lower cost/kWh_{th} for heat generation and lesser conduction and convection losses at high temperatures. They have got their systems tested at National Institute of Solar Energy. Besides they also have their own proprietary field monitoring and control system.

By carefully selecting high-efficiency, high-performance materials and implementing reliable tracking solutions, Quadsun had reduced system costs, while increasing capacity factors and system output which has made it the ideal choice for innovation award.

<http://www.quadsunsolar.com>

Industrial Solar looks to gain in India



The prize winners of the German Innovation Prize for Climate and the Environment 2015. © Kruppa/IKU

Tobias Schwind, Managing Director of Industrial Solar looks forward to gain in India through more awareness following their award winning Fresnel collector system for industrial process heat applications. "Our business approach is to source considerable components locally and do the assembly and installation after training of local skilled and unskilled worker" informs Schwind.

The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and the Federation of German Industries (BDI) recently jointly awarded the German Innovation Prize for Climate and Environment (IKU) to Industrial Solar in the category "Technology Transfer". The prizes nominated for IKU are German companies and research institutions for outstanding innovations in the field of climate and environment protection.

The solar thermal Fresnel collector developed by Industrial Solar is a linear concentrating, solar thermal collector optimized for industrial applications. It can provide heat at up to 400°C and operate with pressures of up to 120 bars. Besides water, thermal oil or high-temperature glycol it can also generate steam directly. Due to its modular design, the system can be scaled up from a few hundred kW to several MW. It was the sales model based on partners in emerging and developing countries and the technology transfer for local production that became the basis of receiving the IKU prize. The IKU is a prestigious prize, which is this year already for the fifth time awarded by BMUB together with BDI.

One of the joint venture projects Industrial Solar is implementing with Royal Tech CSP, China is in Tanzania where work on a solar and gas combined process steam system with Fresnel collectors for a textile plant, offering 180°C steam. With the signed PPA (power purchase agreement) with the textile plant, Industrial Solar and Royal Tech CSP are going to implement this project toward a fast commissioning in 2016. This would be the first and biggest (planned for over 10,000m² aperture area) solar combined steam project in Africa adopting concentrating solar technology.

<http://www.iku-innovationspreis.de/iku-innopreis/index.php>

Compound Parabolic Concentrator profits at TTK Prestige



Photo: CPC installed at TTK Prestige

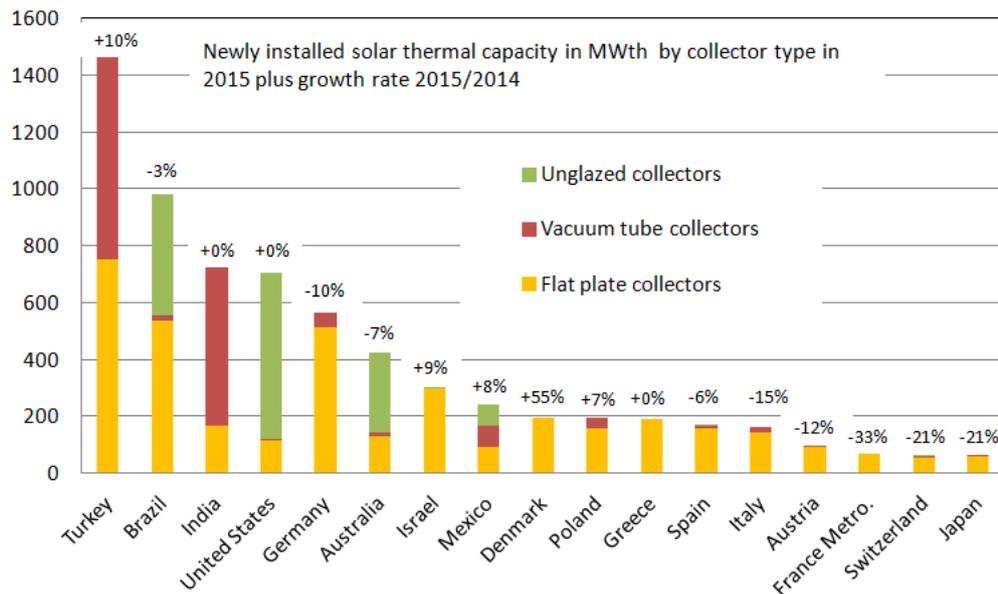
TTK Prestige, one of the leading pressure cooker manufacturers in India is profiting from a 200 m² made up of 60 Compound Parabolic Concentrator (CPC) installed in November 2014 at their factory in Roorke in Uttar Pradesh. The project is set up at an estimated cost of ₹ 40,91,000. The system commissioned in October 2015 delivers 10,500 liters hot water at 90°C on a normal sunny day. It is integrated to the existing diesel fired boiler. Solar heat will be prime source of energy and diesel fired will be used on inclement weather

While flat plate collector and ETC could satisfy industrial requirement of hot water around 70 °C and concentrator provide steam up to 8 bar pressure but only during limited days in a year hence Compound Parabolic Concentrator (CPC) was considered as an intermediate technology to provide pressurized hot water. Diesel operated thermal oil boiler heats water in storage tank to 90°C. The 90°C water is used in the cookware pressurizes washing. Solar thermal coil is connected to 5 kilolitre storage tank to produce hot water during night time.

From the date of installation, the project has saved close to 5,000 litres of diesel. After accounting for the central subsidy and the additional incentive under UNDP-GEF programme the payback period is estimated around 3 years.

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

Big Ups and Downs on Global Market



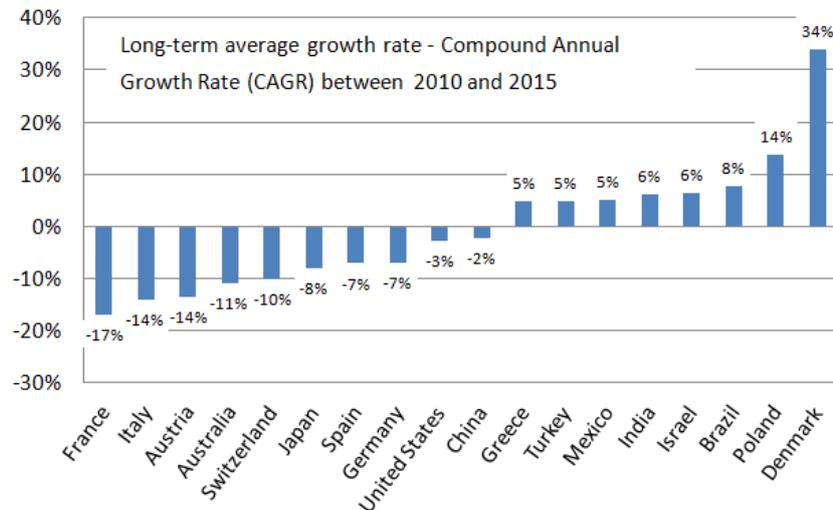
Figures: solrico, data (www.solrico.com)

The global solar thermal market went into another year of notable decline in 2015. With 37.2 GW_{th}, the newly installed glazed and unglazed collector capacity in the 18 largest countries was 14 % lower than in 2014 (43.4 GW_{th}). Between 2013 and 2014, the decrease in these 18 major countries – which represent 95-97 % of the world market – had been 15 %. The further slowdown last year was the result of diminishing collector area figures in China (-17 %), and in Europe (nine biggest nations down by -5 %). The countries with the highest growth rates last year were Denmark (+55 %), Turkey (+10 %), Israel (+9 %) and Mexico (+8 %). The chart shows both 2015's newly installed collector area, broken down by collector type – flat plate, vacuum tube and unglazed collector area, and the 2014-2015 growth rate (excluding China, whose 2015 market volume was 21-times larger than Turkey, which ranked second). China added 30.5 GW_{th} in 2015 of which 12.6 % were flat plate collectors (5.5 million m²).

The market figures were provided by the national industry associations or individuals. Their names can be found at the end of this article. Last year's newly added solar thermal collector area is one indicator of the business situation in a particular country. Another one is the long-term average growth rate (Compound Annual Growth Rate, CAGR) between 2010 and 2015, as shown in the figure below. Denmark is the number one in both categories because of its rising demand for solar district heating. The Scandinavian country's CAGR 2010-2015 adds up to 34 % and there are numerous plans for **large-scale projects** totalling 500,000 m² (350 MW_{th}) in 2016.

Poland ranks second with a CAGR 2010-2015 of 14 %, but the national statistics include some uncertainty regarding 2015, as the **Polish Institute for Renewable Energy** (EC BRECI EO) ended its annual market survey last year. The estimate for an additional capacity of 277,000 m² (194 MW_{th}) in 2015 was provided for the first time by the Association of Manufacturers and Importers of Heating Appliances (Polish acronym: SPIUG), which has a slightly different membership structure to influence the outcome of its annual market survey. SPIUG mainly addresses companies which grew together with the public tender segment over the last two years, the head of SPIUG, Janusz Staroscik explained, whereas EC

BREC IEO also covered retail market suppliers, which experienced a sharper downturn.



Compound Annual Growth Rate (CAGR) of newly installed collector area of the 18 biggest solar thermal markets worldwide between 2010 and 2015, based on the volume added in 2015. The CAGR rate for India is preliminary.

Except for Denmark and Poland, the key European markets displayed rather weak performances last year, resulting in overall negative CAGR 2010-2015 rates, especially across the Mediterranean countries of France (-17 % CAGR) and Italy (-14 % CAGR). Germany wound up with a disappointing slump of 10 % in 2015, bringing the long-term CAGR rate down to -7 %. The low price of oil and gas had a strong effect on the shrinking markets in much of Europe. The German and French market continued with their significant downswing despite the improved benefits to the countries' national incentive programmes. In Italy, the bureaucratic nature of national subsidy scheme **Conto Termico** has had the unfortunate consequence of producing only a small number of applications, so that the scheme was merely able to subsidise 10 % of the Italian market in 2014.

In Turkey, it was primarily the vacuum tube manufacturers that profited from the increased market volume, which went on to reach 2.1 million m² (1.5 GW_{th}). According to the statistics by **Kutay Ülke**, Export Manager of Ezinç Metal, the share of vacuum tube collectors rose to 49 % in 2015, up from 44 % in 2014.

Deployment in Brazil last year remained below expectations, with the market down by 3 % compared to 2014, a development not in line with the average growth rate in Brazil of +8 % between 2010 and 2015. Constraints on the market included the national economic crisis, which lowered investment and purchasing power, and the delay in implementing the next phase of the social housing programme Minha Casa Minha Vida.

The market statistics in India is only a preliminary estimation assuming a constant market volume in the fiscal year 2015-2016 with a high share of vacuum tube collectors of around 80%. More detailed data will follow in the next weeks. As of early 2016, India's government and the solar thermal industry were still discussing new support measures to replace the national grant scheme, which was suspended in August 2014 and resulted in a slowdown in demand. A consequence of these discussions was the draft of a **Renewable Heating Obligation** that, if enacted, would be the first of its kind worldwide. The volume of

concentrating collector area was estimated to have been 15,650 m² in 2015, up from 10,500 m² in 2014 – but still a niche market.

News courtesy: Baerbel Epp. Visit <http://www.solarthermalworld.org/content/big-ups-and-downs-global-market>