

News for the month of October 2016....

Hero MotoCorp adopts solar thermal cooking system at Neemrana plant



Photo courtesy: Clique Solar, Mumbai

Hero MotoCorp Limited, India's largest motorcycle manufacturer with their desire to commit to environment have adopted a high temperature solar thermal steam cooking system at its newly set-up manufacturing unit in Neemrana in Rajasthan state. The company has provided a modern canteen for its employees and visitors in the Neemrana plant. The complete solar thermal system was commissioned and put into operation in August 2016.

The manufacturing plant fondly known as "Garden Factory" at Neemrana has put up an Arun100™ dish with an aperture area of 104 m² to reduce consumption of conventional fuels in the operation of the modern canteen. The process requires two grades of water viz. filtered (potable) and soft water without any intermixing of the streams at different temperatures. While the filtered water is used for cooking application, soft water is used for washing of canteen utensils. The system set-up has addressed both the issues.

However, these 2 services were to be addressed using single solar energy equipment from a reliable source with an established reputation for long term and demonstrated performance.

Soft water is supplied as feed water to the solar thermal concentrator Arun@100. The special tracking system of the ARUN® dish maintains the face of the collector surface normal to the solar radiation at all times thus avoiding cosine losses and maximizes the efficiency of the asset. The special receiver is insulated from all sides except the bottom from which the reflected radiation strikes the inner surface of the receiver.

The concentrated solar thermal steam generation system is provided with several inherent safety features to protect the plant from potentially harmful situations such as high temperature, high pressure, lack of flow, high winds etc.

These controls of heating and fresh input of water are completely automated. Thus, whenever radiation is available, the contents of the tanks are heated to the preset temperatures. The user (canteen) draws out the hot water from the tanks on an as-and-when-required basis.

Ever since it was set up it has already resulted in savings of 496 kg in a single month. The system is likely to provide 2,500 kgs of annual fuel savings and will pay back in less than 3 years after accounting for all the incentives from central government and the GEF-UNDP programme.

<http://www.heromotocorp.com>

Unique case of Sohni Mahipal hospital



Photo courtesy: Quadsun Solar, Gurugram

Sohni Mahipal Hospital is benefitting from a 57 m² concentrating solar thermal hot water system supplied by Quadsun Solar in June 2016. The system was commissioned in a month time and cost that is competitive to pressurize flat plate systems. The case is unique as it has not availed of any fiscal incentive and is still competitive to conventional systems.

The hospital has hot water requirement for various day to day activities round the year which until the commissioning of this system was largely met using Diesel fired boiler. Considering the high cost and polluting nature of diesel energy the authorities decided to explore sustainable means hence opted for a solar thermal system. An analysis showed that it provided the lowest cost of energy for a pressurized system integrated with their diesel hot water generator.

All the challenges of space constrains and integration of solar systems with existing hot water system were innovatively handled by Quadsun and their channel partner Apollo Power Systems staff. There are 13 dishes each of 4.4 sq. metre commissioned that can deliver up to 10,000 litres of hot water up to 65°C on a normal sunny day. The mirrors are high reflectivity, tempered glass that withstand falling objects. The high concentration of over 700x and precise tracking combine to deliver the high efficiency. According to the authorities the energy saved will be around 8,000 litres of diesel and avoid 10,000 kg CO₂ emissions.

The hospital maintenance staff have undergone basic training by Quadsun engineers to ensure uninterrupted maintenance and upkeep of mirrors and the structures. The simplicity of the system allows the staff to maintain / repair and operate the system. All Problems can be remotely monitored for quick action.

Prakash Bhalekar of Quadsun Solar informs “Given the good solar resource in Jaipur and the high efficiency of our system, the customer will get a very rapid payback on the investment through savings in diesel.”.

<https://jaipur.manipalhospitals.com/>

Award winning System reaping benefits at ammunition factory



Central Ammunition Depot, Pulgaon in Maharashtra state is the largest ammunition depot of Indian Army, and the largest Ammunition Depot in Asia is required to demilitarize/dispose off large quantity of ammunition, which becomes unserviceable on expiry of usable shelf life. Traditionally it is disposed of by use of demolition explosives in faraway demolition grounds/firing ranges. The methodology is neither economical nor environmental friendly. Medium Caliber and High Caliber ammunition is filled with Tri-Nitro-Toulene (TNT), which has a melting point of 80°C. To meet his melting heating load the depot is making use of concentrated solar thermal system using six Scheffler dishes each of 16 m² at an investment close to Rs. 40 lakh. This was found to be eco-friendly comparatively. It was the brainchild of Brigadier Sanjay Sethi.

Ministry of New and Renewable Energy (MNRE), government of India appreciated this development and gave Excellence Award in April 2016.

The conventional demilitarization methods are based open demolition have a huge impact on the environment. The use of explosives pollutes the atmosphere, and demolition debris impregnates the soil around demolition pits.

Comparatively the use of concentrated solar thermal (CST) technology for demilitarization has no impact on environment. The Depot has designed an innovative method which uses steam generated by CST system to melt out the TNT fillings inside shells of munitions with calibres of 40 mm, 81 mm, 105 mm, 120 mm, 122 mm, 125 mm, 130 mm and 155 mm. The filled shells are rendered cent per cent free from explosives and the recovered TNT filling can be re-casted for offering to the mining sector through the Chief Controller of Explosives. Moreover, the process ensures that the complete shell body is recovered, which can also be recycled/auctioned.

The metallic and explosive contents that make an ammunition round are recovered in entirety, for recycling/reuse. In open demolition methods recovery is not more that 1-2 percent. Also transportation expenditure for ferrying to far away demolition grounds is also avoided.

This methodology evolved and the facility designed is completely replicable at other ammunition depots. As an extension to the project the manufacturer Taylormade Solar Solutions plans to supply a diesel fired boiler to take care during non-sunlight hours and ensure sustainable working of the system.

https://en.wikipedia.org/wiki/CAD_camp

Solar Water Heater market in India registers growth in 2015-16



Photo: Domestic solar water heater installation in northern India

Evacuated Tube Collectors continue to dominate the Indian market rather has a gigantic share in comparison to flat plate collector market. Interestingly the market is moving upwards and gradually coming out of the distress of removal of subsidy since mid-2014. According to import statistics of Legumex Impex Private Limited during the period 2015-16 little over 72 lakh vacuum tubes were imported for solar water heater application under various HS codes as given in Table 1 below which resulted in an area little below 14.5 lakh m².

HS Code	84191920	84199090	84199010	84191910
Total	66614	1563125	3529949	1851446

Table 1: Import of vacuum tubes under various HS codes during 2015-16

In comparison flat plate collector area installed was around 1.72 lakh m². The share of evacuated tube collectors in fiscal year 2015-2016 was close to 90 %.

During the fiscal year 2014-15 the total market estimated was around 12 lakh m², thus overall there is a rise of 35% and includes imports of complete systems.

There is an increased trend of market growth in the residential sector considering evacuated tube systems are most favourable for this segment thus acceptance by common masses is established.

However a brief survey amongst some of the leading manufacturers has revealed that their overall business has either gone down or is barely sustaining, which means a lot of traders have captured the market. There is also a general feeling that plenty of sub-standard products have penetrated the country. This could have a bearing on domestic manufacturing and the already devised standards by Bureau of Indian Standards need to strictly enforce to ensure qualitative systems come in.

Another conclusion drawn is that with such huge demand for vacuum tubes domestic manufacturing should become viable and the benefits of "Make in India" launched by the present government must be taken full advantage of.

<https://www.zauba.com>