Solar thermal energy republic of china

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There are two main market drivers of solar energy systems, on the one hand, the Chinese government published a series of regulations to increase the proportion of renewable energy for all energy consumption, which includes the promotion of solar thermal applications, such as Chinese national standard GB 55015 General code for energy efficiency and renewable energy application in buildings has mentioned that “solar systems should be installed in new buildings”. On the other hand, solar combined heating system can save the conventional fuel fee, which is economical.

Most solar manufactures are located in eastern China. Fifty percent of the manufacturers are centralized in 3 provinces: Zhejiang, Shandong and Jiangsu. In 2014, the annual amount of exports was near USD 300 million. The most general mode of product sales is three-tiered: the manufacturer, distributor, and retailer. For some compact products, such as solar water heaters, the installation is the responsibility of the seller, and for the large construction projects, the manufacturers have specific departments in charge of the installation work.

In the first half of 2019, export of solar thermal products from China are totally 1.15 million square meters, imports of solar thermal products of China are 29 thousand square meters.

There were 5.57 million people engaged in the solar thermal industry at the end of 2022, most of them worked in the field of solar water heating, which represented about an 85% share of the whole industry.

A typical compact solar water heater (generally with 2 m2 collectors and a 200L tank) is about 3,000 to 5,000 RMB Yuan, including the installation charge. For a solar hot water system, the cost is about 1,500 to 2,500 RMB Yuan per square meter collector. For a solar space heating system, the cost is about 2,000 to 4,200 RMB Yuan per square meter collector.

Solar district heating is becoming a new area of development for solar thermal systems in China. Over 13,000 square meters of collector area has been built. Besides district heating system, solar combi-system for single-family houses is a new trend in China.

The passive house is the most common solar energy building, especially in the rural areas of northern China. This type of house appeals to many people because of the large southern windows and the possibility for an attached sunspace. Due to the promotion of "nearly/net zero energy building" (NZEB), daylighting, solar heating and cooling are becoming new focus areas.

The main market drivers are the policies and regulations for reducing building energy consumption and renewable energy application. Such as, Chinese national standard GB 55015 General code for energy efficiency and renewable energy application in buildings was published in 2021 and requiring the use of solar system in new buildings.

According to the construction experiences, a well insulated passive house with attached sunspace costs about 40,000 RMB Yuan more than the common residential building in rural areas of northern China.

China has a series of science and technology programs, such as a national five-year plan, National Key Research Projects, etc. Most of these include solar energy research, and some include solar thermal technology research.

In recent years, there are great development on solar district heating system, the project of solar district heating system in Langkazi country, Tibet was built in 2018, the solar fraction of which is 100% according to the testing data between Jan.1 to Apr. 30 in 2019. Solar combisystem are used in Qinhuangdao and Xingtai in 2020.

At the national level, the Ministry of Science of Technology is responsible for all national S& T programme, and the local S& T commission is responsible for a sub-program at the local level.