

Analysis of the current status of solar energy industrial thermal utilization

What are the prospects of solar process heating systems in industries?

Prospects of solar process heating systems in industries. Energy is the essential need for the development, modernization and economic growth of any nation in the industrial sector. About 32-35% of the total energy of the world is used in the industrial sector.

How reliable is solar thermal system for industrial process?

The reliability of solar thermal system for industrial process is a dependant of the following; temperature level of the process heat, climate condition, system integration and design method. The aim of this review is to identify the trend of research development on solar thermal systems for industrial applications. II. PROCESS TEMPERATURE RANGES

What is the development trend of solar energy utilization?

Through looking forward to the development trend of solar energy utilization from the aspects of improving efficiency, reducing cost, and diversifying utilization method etc., we find that the utilization of solar energy resources has entered the fast track of development.

What are the economic parameters of solar industrial process heat?

Economics analysis of solar industrial process heat Economic assessment of solar IPH system for different industrial sectors includes payback period, the net present value (NPV) and internal rate of return (IRR). These parameters are commonly calculated based on fuel saved due to the installation of IPH system.

Is solar thermal system suitable for industrial applications?

Researchers reviewed solar thermal system for industrial and commercial applications and identified the study flow of the solar thermal system for industrial implementation, and the author concluded that there is very less significant research in low and medium range temperature industrial process heat.

Is solar energy utilization cost-effective?

technological maturity and investment, solar energy utilization is relatively cost-effective. However, large-scale application, so it is also widely used in the market. Details are shown in table 2. Solar thermal and photoelectric technologies are widely used in the world.

At present, the development of renewable energy is a common goal, and there is a global consensus among countries around the world. By 2023, the global cumulative ...

Based on global distribution of solar energy and its feature, this paper discusses a review about solar ...

The paper presents a review of solar thermal utilization to various commercial and industrial process

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applications. The current trend around the world has shown that the growth of solar thermal energy for Industrial use is slow compared to domestic applications due to higher temperature requirement and available solar system's low efficiency.

Firstly, focus on the two main solar energy utilization modes, photovoltaic and photothermal, we systematically introduced the main types, research status and development trend of photovoltaic technologies, as well as the current situation and development trend of thermal power generation, building heating and refrigeration, seawater desalination and industrial heating in photothermal ...

By comparing the status of four different solar energy utilizations, we found that the efficiency range of solar energy utilization is 30-80%; the average efficiency of solar lighting...

Energy storage is an important link between energy source and load that can help improve the utilization rate of renewable energy and realize zero energy and zero carbon goals [8- 10].However, at the industrial park scale, the proportion of renewable energy penetration on the source side is constantly increasing, the energy demand on the load side is growing sharply; ...

solar thermal systems for industrial applications. A Review of Solar Thermal Systems Utilization for Industrial Process Heat Applications Mathias B. Michael, Esther T. Akinlabi, Member, IAENG and Tien-Chien Jen T Proceedings of the World Congress on Engineering and Computer Science 2016 Vol II WCECS 2016, October 19-21, 2016, San Francisco, USA

In this review paper, current industrial process-heat systems are classified based on solar collector technologies and heat demand temperatures for the identification of typical ...

Although solar energy is abundant, accessible, affordable, and ecologically and environmentally friendly, in rural Ethiopia, the majority of Households are still using pollutant kerosene for lighting.

The viable solution used for the massive building energy consumption is the efficient and appropriate utilization of renewable energy [8].Solar energy is a burgeoning energy source for direct building space heating applications [9].Nonetheless, the solar irradiance resource has a downside of its intermittent behavior, where the demand for space heating and the ...

Proceedings of the World Congress on Engineering and Computer Science 2016 Vol II WCECS 2016, October 19-21, 2016, San Francisco, USA A Review of Solar Thermal Systems Utilization for Industrial Process Heat Applications Mathias B. Michael, Esther T. Akinlabi, Member, IAENG and Tien-Chien Jen Abstract - This paper presents a literature review on Solar thermal ...

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