Solar industrial heating system

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The solar thermal system integrates easily with any commercial boiler. The solar array can preheat make-up water to a boiler and/or reheat steam condensate. The technology can heat and type of fluid by using a heat exchanger. The heat exchanger is specific to the type of fluid being heated which means no fluid other than the Solar Heat Transfer Fluid (HTF) is pumped through the solar array. Heat is transferred to the process fluid in the heat exchanger.

Monitoring systems can verify the daily solar production, flow ratesand temperatures.Keep in mind:o XCPC Solar thermal systems can produce temperatures up to 400 o Fo Significant reductions in Green House Gaso Are cost effective and have great Return on Investment

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Solar energy can be used to generate heat for a wide variety of industrial applications, including water desalination, enhanced oil recovery, food processing, chemical production, and mineral processing, among many others. This can be done either through concentrating solar-thermal power (CSP) technologies or by using resistive heaters or heat pumps powered by photovoltaic panels. When concentrating solar-thermal energy is used for industrial processes, mirrors are used to concentrate sunlight onto a receiver, which can readily reach very high temperatures, compared to electric heaters.

Because CSP is capable of reaching a wide range of temperatures, it is well suited for many industrial applications, from relatively low-temperature food-production processes to chemical processes that require very high temperatures. Learn the basics of CSP and industrial processes.

According to the Energy Information Administration, in 2019, the industrial sector accounted for 35% of total U.S. end-use energy consumption and 32% of total U.S. energy consumption. Advancing solar technologies for industrial processes helps to meet the goals of the U.S. Department of Energy Solar Energy Technologies Office to create a carbon-free energy sector by 2050. Learn more about SETO"s CSP goals.

Many projects in this topic address solar thermal desalination, which has the potential of treating highly concentrated brines from seawater, underground aquifers, and industrial wastewaters that are otherwise difficult to purify, for use in municipal, agricultural, and industrial water supplies. Additionally, SETO

research is helping to develop ultra-low-cost solar collectors and thermal energy storage technologies that are well-suited for other low-temperature industrial processes. For industrial processes that require high temperatures, SETO is funding projects developing high-temperature thermal systems capable exceeding the temperature limitations of existing CSP systems. Several of SETO"s funding programs have projects that focus on solar for industrial processes:

To view specific projects that support solar for industrial processes, search the Solar Energy Research Database.

Learn more about CSP research, other solar energy research in SETO, and view current and former funding programs.

Thermal energy and steam are required for all types of industrial processes. Used in everything from oil and gas extraction, mining, and food and beverage processing to sanitation, commercial laundries, and distillation, heat is a vital part of the processing and manufacturing sectors.