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Domestic Solar Hot Water Systems in Order to Reduce the Electricity Peak Demand in Assalouyeh

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Abstract : The personal residential camps of South Pars gas complex are one of the few places where electric energy is used for the bath water heating. The widespread use of these devices is mainly responsible for the high peak of the electricity demand in the residential sector. In an attempt to deal with this issue, to reduce the electricity usage of the hot water, as an option, solar hot water systems have been proposed. However, despite the high incidence of solar radiation on the Assaloyeh about 20 MJ/m²/day, currently, there is no technical assessment quantifying the economic benefits on the region. The present study estimates the economic impacts resulting by the deployment of solar hot water systems in residential camp. Hence, the feasibility study allows assessing the potential of solar water heating as an alternative to reduce the peak on the electricity demand. In order to examine the potential of using solar energy in Bidkhoon residential camp two solar water heater packages as pilots were installed for restaurant and building. Restaurant package was damaged due to maintenance problems, but for the building package, we achieved the result of the solar fraction total 83percent and max energy saving 2895 kWh, the maximum reduction in CO_2 emissions calculated as 1634.5 kg. The results of this study can be used as a support tool to spread the use solar water heaters and create policies for South Pars Gas Complex.

Keywords : electrical energy, hot water, solar, South Pars Gas complex
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