

> **HARNESSING SOLAR THERMAL TECHNOLOGY:** **A sustainable approach for Enhanced Oil Recovery**

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Enhanced Oil Recovery (EOR) projects face multifaceted challenges beyond the chasing of technological and economic efficiency. Over the past decade, the focus has shifted towards integrating environmentally friendly solutions. With the pressing need to curb fossil fuel consumption, service providers, National Oil Companies (NOCs), and International Oil Companies (IOCs) find themselves obligated to align with diverse nations' environmental regulations. This alignment underscores the necessity of sustainable measures to counter environmental pollution and its far-reaching impacts. Economic viability is also a prime concern in thermal enhanced recovery processes. Strategies targeting reductions in fuel consumption per ton of steam injected into reservoirs have emerged as a key driver of project profitability.

In this dynamic landscape, the rapid evolution of technologies like Solar Thermal Recovery has taken center stage. This innovative solution harnesses and concentrates solar energy through expansive receiver panels. The collected energy elevates water temperatures to the point of steam generation. Solar energy emerges as an ideal power source for EOR in remote areas, where conventional fuel sources may be limited, insufficient, or accompanied by exorbitant operational costs. Presently, the realm of Thermal Solar Energy Recovery boasts a series of successful projects within Heavy Oil Fields across diverse countries like Oman, Kuwait, and the United States. Yet, it's important to acknowledge that this technology does face a core challenge – the intermittent fluctuations in solar intensity experienced during specific periods of the day or in regions marked by distinct seasons and climatic shifts.

Despite this hurdle, the advantages of Solar Thermal Recovery are substantial. Chief among them is a marked reduction in costs, driven by diminished fossil fuel consumption. Equally impactful is the significantly lowered environmental footprint associated with project execution.

At Nakasawa we are committed to the evolution of technology towards environmentally friendly solutions".

Advantages of Solar Energy in EOR: A Radiant Revolution

Central to this transformation are the manifold benefits intrinsic to the utilization of solar energy in EOR processes:

Cost Reduction: By significantly curtailing fossil fuel consumption, Solar Thermal Recovery optimizes operational expenditures, thereby bolstering project economics.

Environmental Stewardship: A drastic reduction in the carbon footprint underscores a conscientious commitment to mitigating environmental impact, aligning with global sustainability objectives.

Resource Abundance: Solar energy is a renewable resource, ensuring a continuous and reliable power source for EOR operations.

Energy Independence: The harnessing of solar power liberates EOR projects from dependence on finite fossil fuel reserves, ensuring longevity and stability.

Operational Flexibility: Solar energy caters to the demands of remote or resource-constrained locations, offering an adaptable solution to power challenges.

Community Engagement: Embracing solar energy enhances corporate social responsibility efforts by promoting cleaner energy practices and fostering goodwill within local communities.

