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# Harnessing the Sun: Exploring Renewable Heat for Saskatchewan's Mining Sector

What if the sun could power the heat-intensive processes that drive Saskatchewan's potash industry? That's the question SolarSteam set out to answer with its innovative renewable heat generation pilot project, supported through a partnership with the International Minerals Innovation Institute (IMII) and its industry members.

The project explored the potential of concentrated solar thermal technology to provide high-temperature steam for key industrial processes like shaft heating, brine crystallization, and product drying. Over two phases of engineering work, SolarSteam modeled a modular solar field design capable of delivering consistent heat—even during Saskatchewan's cold winters—with the help of thermal energy storage.

Phase II of the project focused on scaling the concept to a 25 MW thermal system, evaluating how it might be integrated into existing mining operations. The system successfully demonstrated the ability to produce steam at 279°C and offset several thousands of tonnes of CO<sub>2</sub> annually. The work included detailed performance modeling, seasonal analysis, and technical schematics for real-world application.

While the technology proved technically viable, a comparative economic analysis showed that other renewable sources—like wind and solar photovoltaic systems with storage—currently offer more cost-effective solutions at the scale required for industry-wide deployment.

*The knowledge gained offers a strong foundation for future innovations in renewable heat. SolarSteam's work demonstrates what's possible when we challenge assumptions, explore bold solutions, and collaborate across sectors to build a cleaner energy future.*

**Proponent:** SolarSteam

**Project Duration:** January to April 2024

**Project Cost:** **\$60,000**

Industry Contribution: \$25,000

SolarSteam Contribution: \$35,000