



## SCIENTIFIC & RESEARCH PROJECTS

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### Project Title:

**Benchmarking of Energy Saving Potential and CO2 Reduction in Iranian Compressor Stations**

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### Abstract:

Conventional benchmarking of different process industries, such as compressor stations does not consider energy saving potentials that exists within the process. On the other hand, full Pinch Analysis of these units is both costly and time consuming. For energy planning at macro economy level, we need a rapid and precise procedure that enables the planners to consider almost every potential for energy saving. This research investigates the use of an Organic Rankine Cycle (ORC) to recover waste heat for different types of compressor stations in Iran. In fact, applying ORC to produce electricity is a practical way to recover heat through gas pipeline compressor stations. The Pinch concepts are used in this work to maximise the heat recovery in heat exchanger network for producing maximum power in the expander of ORC. The developed model in this work is applicable for simply calculating the potential for energy saving and CO2 reduction in different gas compressor stations at different load operation and minimum approach temperature in heat exchanger network. The verification of the proposed model was evaluated and showed a very small error less than 2 %. Having developed the above-mentioned model, there is no need to carry out a full retrofit study for each existing compressor station as the model can simply be applied to similar processes and opportunity of energy saving can be recognized.