One Step Ahead

PROCESS ECOLOGY

Gas-driven Glycol Pump Optimization

Case Study

Process engineering and optimization
By Process Ecology Inc.

Calgary, AB **T** 403- 690-0550 info@processecology.com www.processecology.com

Gas-driven Glycol Pump Optimization

Process Ecology was contracted by a major operating company to review the opportunity for optimization (estimation of emissions reduction and cost savings) of the operating conditions of gas driven pumps in six glycol dehydration units. The best two candidates for pump replacement were chosen based on the largest fuel gas savings and GHG emission reductions.

Aspects of the analysis included triethylene glycol (TEG) circulation rate reduction, stripping gas elimination/reduction, TEG pump evaluation, and contactor hydraulic verification.

The best candidates for pump replacement were units one and two. Unit one had the largest savings of $14,142/y, GHG emissions reduction of 2,365 tonnes CO_2eq/y and the potential to provide project payout in less than a year. (Fig. 1, Fig. 2). Unit four had the second largest savings of $13,410/y and GHG emissions reduction of 2,200 tonnes CO_2eq/y.

To capture these opportunities some modifications and actions were taken by the operating company as follows:

- Glycol pump replacement to meet the optimal glycol circulation rate, and,
- Elimination of stripping gas use in unit one

Based on these recommendations, the operating company carried out the glycol pump replacement for dehydration plant unit one that cost approximately $8,000. The pump replacement job was performed during a scheduled dehydration facility maintenance shutdown with limited disruption to operations. Other maintenance activities were performed simultaneously during this time.

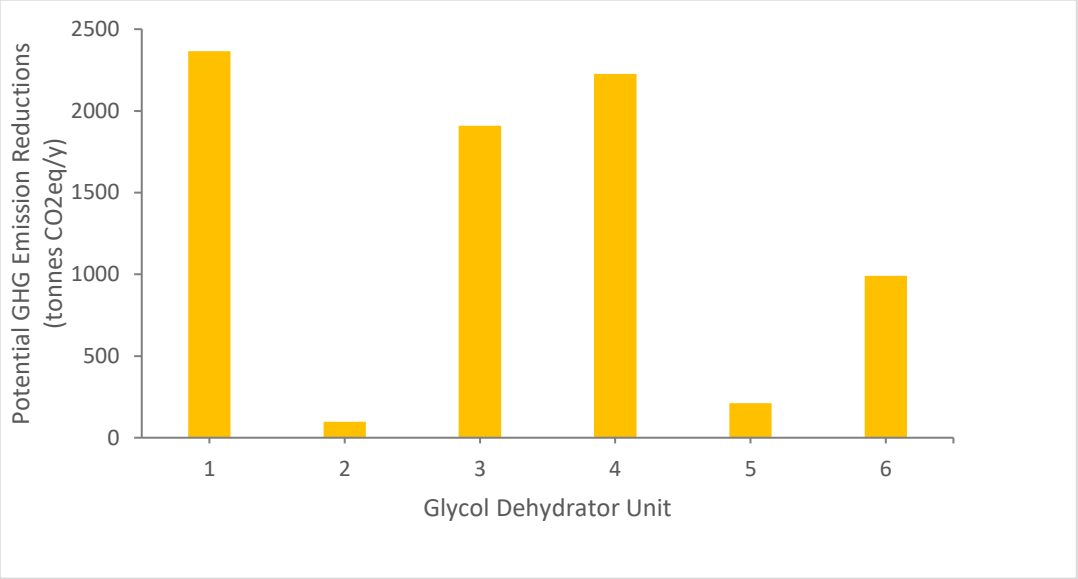

Figure 1. Potential GHG emission reductions (tonnes CO_2eq/y).

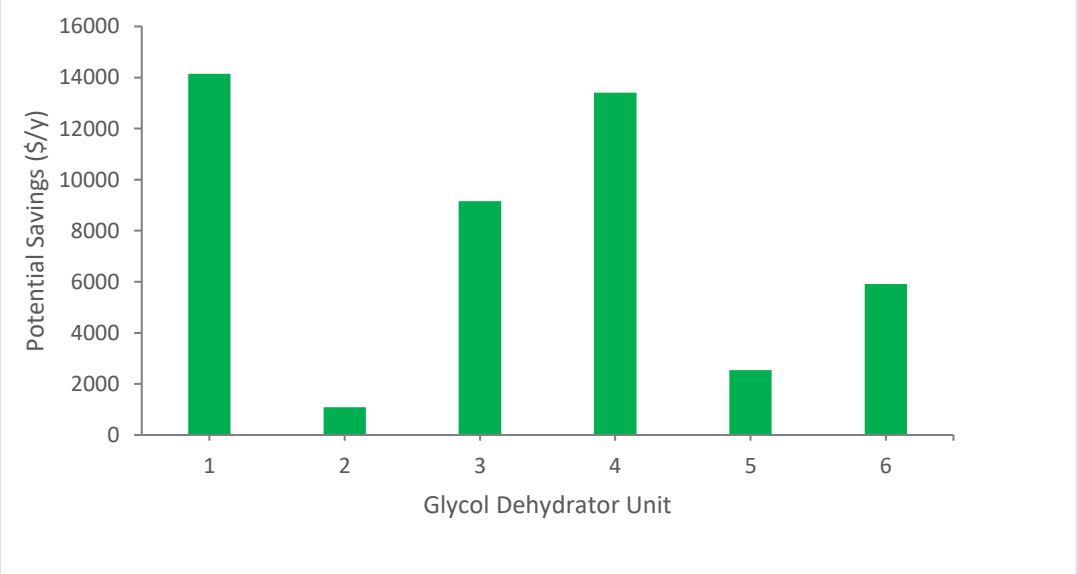

Figure 2. Potential gas fuel savings ($/y) for the six glycol dehydrator units.