ALTA PROCESS SOLUTIONS

AFFILIATED TO ALTA ENERGY SOLUTIONS CORPORATION

ALTIUS CENTRE – SUITE 2500 – 500 4th AVE SW CALGARY, AB, T2P 2V6 CANADA

INFO@ALTAENERGY.CA | WWW.ALTAENERGY.CA | WWW.ALTAPROCESS.CA

SCIENTIFIC & RESEARCH PROJECTS

Project No.: 04 **Year:** 2013

Project Field: Sub-Ambient Processes (Cryogenics)

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Project Title:

Improving Energy Efficiency of an Olefin Plant, A New Approach

Abstract:

Low-temperature gas separation processes are the most important gas separation routes. There is a complex interaction between core process (separation columns), associated heat exchanger network and refrigeration cycles in sub ambient processes. The aim of this paper is performing a comprehensive retrofit study of an Olefin plant (as an industrial example) to improve the overall energy efficiency. In this regard, the effect of improving column operating parameters and refrigeration cycles are first evaluated separately. Then, column operating parameters and refrigeration cycles as well as heat exchanger network are optimized simultaneously using genetic algorithm or simulated annealing. Having compared all results, one can conclude that simultaneous optimization leads to higher efficiency of the overall system.