



# ALTA PROCESS SOLUTIONS

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## SCIENTIFIC & RESEARCH PROJECTS

**Project No.: 03**      **Year: 2015**

**Project Field: GHG Emission Reduction**

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### Project Title:

**Retrofit Strategy for Site-Wide Mitigation of CO<sub>2</sub> Emissions in the Process Industries**

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### Abstract:

The combustion of fossil fuels for providing heat and power in the process industries is a major contributor of CO<sub>2</sub> emissions. Heat integration methods have been widely used for energy-saving retrofit projects to improve the energy efficiency of process plants, reducing fuel consumed and consequently CO<sub>2</sub> emissions. It is not straightforward to identify the most appropriate strategy for CO<sub>2</sub> emissions reduction, as a wide range of options are available, including fuel switching, reducing energy demand through efficiency improvements, retrofit of heat exchanger networks, etc. The economic impact and design constraints of each option need to be considered. A systematic approach is presented to allow evaluation of trade-offs between the cost of emissions reduction options and the effect on overall CO<sub>2</sub> emissions. The approach applies a hierarchical conceptual design procedure. The proposed procedure is applied to a case study to demonstrate how an economic retrofit solution to reducing site-wide CO<sub>2</sub> emissions can be systematically developed and evaluated.