

599f Synergy Analysis of Collaborative Supply Chain Management in Energy Systems Using Multi-Period Milp

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Energy, a fundamental entity of modern life, is usually produced using fossil fuels as the primary raw material. A consequence of burning fossil fuels is the emission of environmentally harmful substances. Energy production systems generate steam and electricity that are served to different process customers to satisfy their energy requirement. The improvement of economical and environmental performance of energy production systems is a major issue due to central role of energy in every industrial activity. A systematic approach to identify the synergy among different energy systems is addressed in this paper. The multi-period and discrete-continuous nature of the energy production systems including investment costs are modeled using MILP. The proposed approach is applied on two examples that are simplified versions of an industrial problem. It is shown that the approach presented in this paper is very effective in identifying the synergy among different companies to improve their economical and environmental performance significantly.