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SCIENTIFIC & RESEARCH PROJECTS

Project No.: 10 **Year: 2014**

Project Field: Heat Exchanger Networks (HENs)

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Project Title:

A Novel Approach to Hot Oil System Design for Energy Conservation

Abstract:

In this paper, a new systematic design methodology was developed for hot oil system by changing arrangement of heat exchanger network from parallel to mixed series/parallel. In re circulating hot oil systems, hot oil from the hot oil generator is supplied to a network of heaters that usually has a parallel configuration. However, re-use of hot oil between different heating duties enables hot oil networks to be designed with series arrangements. This allows better hot oil generator performance and increased heating capacity, both in the context of new design and retrofit. First, the hot oil generator and the hot oil network were examined separately, in order to discuss the nature of hot oil system design. A model of hot oil systems was then developed to examine the performance of the hot oil generator to recirculation flow rate and return temperature, as well as to predict heating efficiency. In second step, the design of the overall hot oil system was developed by investigating the interactions between the hot oil network design and the hot oil generator performance. Debottlenecking procedures for the design of hot oil systems was also developed.