8.3 **Modelling Analysis and Optimization of Oil Shale Retorting Processes for Different Oil Shale Deposits**

Jimmy Jia, Rick Sherritt, Jim Schmidt

PROCOM Consultants, Darra, QLD, Australia

With the rapid increase in crude oil price in the last couple of years, oil shale is becoming an important alternative oil source. More and more oil shale projects are being revived and seriously considered to undergo development or scale up. A computer modeling tool has been developed within PROCOM that has been applied to oil shale process development and design optimization and has shown significant time saving in process design and optimization.

In this paper, the oil shale computer simulator is used to analyze the effect of three oil shale feeds from different oil shale deposits (A, B and C) on the oil shale process operation and thus the oil shale process for each oil shale deposit is treated individually. The heat balance, heat efficiency and heat recovery analysis are carried out for each process, using an advanced oil shale thermo-property package based on detailed conventional and unconventional components. One process model result was compared with corresponding pilot plant test data and showed good agreement.

This study revealed a valuable oil shale simulation tool with flexibility to be able to simulate current gas heat carrier, solid heat carrier and new conceptual oil shale process performance and to reflect the effect of the variety of oil shale properties such as moisture, mineral and organic matter. The simulation results provided reliable data for process design and process optimization according to the specific oil shale properties.