

## A process integration targeting method for hybrid power systems

### Abstract

Pinch Analysis is a well-established methodology of Process Integration for designing optimal networks for recovery and conservation of resources such as heat, mass, water, carbon, gas, properties and solid materials for more than four decades. However its application to power systems analysis still needs development. This paper extends the Pinch Analysis concept used in Process Integration to determine the minimum electricity targets for systems comprising hybrid renewable energy sources. PoPA (Power Pinch Analysis) tools described in this paper include graphical techniques to determine the minimum target for outsourced electricity and the amount of excess electricity for storage during start up and normal operations. The PoPA tools can be used by energy managers, electrical and power engineers and decision makers involved in the design of hybrid power systems.