

## HEAT TRANSPORT BY RAIL - AN EVALUATION OF THE OPTIONS

Work is currently in progress to examine ways of using the railway to carry bulk low grade heat, from geothermal wells or power stations to a geographically convenient point for distribution in pipes through a local district heating network. As energy becomes scarcer the incentives for the use of remote sources of lower grade energy will increase, and railways could provide a viable alternative to compete with pipelines for the bulk haul phase of the operation.

The railway operation is seen essentially as an intensive shuttle service with rapid loading and unloading provision, ideally carried out without stopping the train. Trains run between purpose built terminals at the source and destination ends, which essentially represent heat storage facilities. This paper takes these ideas, examines possible heat sources in the UK, and gives consideration to the practicability of transporting the necessary quantities of heat. Various substances are examined for suitability as transport media including water, pressurised water, various chemical systems and a system involving latent heat of fusion. The economic viability of the various schemes is examined only in a general way.

It is concluded that:

- Heat transport by rail is technically possible, and should be examined in detailed economic terms, for schemes up to 200MW (thermal) peak load.
- Further studies should concentrate on water as the heat transport medium.
- There are abundant supplies of hot water available from various sources in the UK.
- Further experimentation is needed in the area of water transfer at the terminals.