

## 17.1 **Estonian Solid Heat Carrier Technology (TSK) as a Development Platform for Oil Shale Processing**

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Commercial oil shale processing is elusive. Oil shale can be cooked up in almost any apparatus which applies heat to produce usable oil, however the dream of producing stable saleable quantities of oil have eluded most of those who have tried. The problems arise as each deposit presents new challenges, so a technology has to be adapted to each deposit. From mining to crushing, drying to retorting, oil recovery and upgrading, storing and marketing and environmental impact minimization, the challenges are many.

Most players traditionally start with a review of the available processes and then chose one and start adapting the technology to suit. However most technologies have not been demonstrated at any commercial size so the development process is daunting. With the cost of oil production being high, cheap crude oil has typically shut out shale oil. We however appear to be entering a new era, where oil shale may take centre stage.

As a result, we have only three oil shale production cells in the world with any long term experience, in Estonia, Brazil and China. The technology in each is based on a long association of the same deposit and technical application. Estonia stands out as an exception in that it produces oil from two quite different processes, lump and fines retorts.

Eesti Energia's (EE) TSK Solid Heat Carrier technology developed from the Galoter process in Estonia has a long history at a respectable capacity of 3,000 tpsd and as such is well positioned to provide a solid platform for future development of a robust oil shale industry while providing good carbon dioxide capture and heat recovery opportunities.

This paper demonstrates the strength of the TSK technology and positions it for the future. Also outlined are EE's plans for development and expansion of the Estonian oil plant, and updates on EE's Jordanian oil and electricity projects.