DEVELOPMENT OF IMPROVED SOLID HEAT CARRIER TECHNOLOGY FOR ESTONIAN OIL SHALE

Dr. Indrek AARNA, Outotec GmbH Andreas Orth (a)

Eesti Energia AS, Head of R&D Department, Laki 24, 12915, Tallinn, Estonia,
indrek.aarna@energia.ee
(a) Dr.

Eesti Energia (EE) and Outotec have undertaken joint development of a new technology for shale oil production. The new TSK Technology will combine EE's improved solid heat carrier technology (TSK technology) and Outotec's Circulating Fluidized Bed technology.

Development work has focussed on increasing unit size and availability. In addition, extended effort has been put towards lowering environmental emissions. Todays' low unit capacity has been hindering wider utilization of TSK technology around the World. Existing unit capacity in Narva is 140 t/h of oil shale. The new plant will have double unit capacity, producing roughly 1.5 million barrels of shale oil per year. While EE has constantly increased availability of the existing TSK-140 units, reaching availability close to 75%, the new improved TSK technology is targeted to achieve a yearly availability over 90%.

Environmental emissions during shale oil production are one of the main obstacles in wider utilisation of oil shale. Spent shale from the existing TSK technology cannot be sold as a by-product. New improved TSK technology using Circulating Fluidized Bed (CFB) Technology, will burn out all organic matter from the ash, giving this new ash favourable properties for utilization in the cement industry. Furthermore, air emissions from the new plant will meet strict EU air emission limit values.

Outotec and EE have undertaken basic testing and engineering works for the Narva (Estonia) oil plant. The decision to construct the first new oil production plant in Narva, based on the improved technology, will be taken in May 2009. The new plant should be commissioned in 2012.