

***Test facilities and first results for the improved solid heat carrier technology (ENEFIT280) for processing different oil shale types***

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Outotec and Eesti Energia (EE) jointly developed the ENEFIT technology for the oil winning from oil shale. The new process combines EE's proven solid heat carrier technology and Outotec's experience and knowledge in fluidized bed technology. At Outotec's R&D center in Frankfurt/Main (Germany) a bench scale unit was built, simulating the core oil-winning process of the ENEFIT technology. The bench scale unit is able to process about 10 kg/h oil shale and to produce up to 2 l/h shale oil, dependent on oil content and yield. The objective of the bench scale test work is to study the influence of different process parameters on oil quality and optimize the pyrolysis and condensation process. Different oil shale types and heat carrier materials can be tested in order to further develop ENEFIT technology and adapt the technology to different oil shale properties and gain important scale up data. In addition the obtained oil sample can be used for determination of expected oil quality. Outotec and EE have already undertaken basic test work with the bench scale unit using Estonian oil shale and first tests with oil shale from different resources. Outotec's and EE's joint venture (EOT) have made investment decisions on building a new oil winning pilot plant at Outotec's R&D center in Frankfurt. The new plant will be integrated in Outotec's existing 700mm circulating fluidized bed (CFB) combustor and will be able to process up to 350 kg/h oil shale. The 700mm CFB combusts the semi coke from the pyrolysis process and delivers the hot heat carrier for the new oil-winning process. With the new oil-winning pilot plant enough shale oil can be produced for testing the upgrading of oils from different oil shale types.