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A new improved solid heat carrier technology (Enefit 280) for processing of oil shale with different grades

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Eesti Energia (EE) and Outotec have jointly developed a new technology for shale oil production. The new Enefit 280 technology combines EE's improved solid heat carrier technology and Outotec's fluidized bed technologies. Enefit 280 technology is able to process 280 t/h of fine-grained oil shale. Oil shale fines are fed into a Venturi-type dryer, where oil shale is dried using excess heat of the flue gases from the process. Dry oil shale is then mixed with hot heat carrier ash and fed into a rotary kiln, where pyrolysis of oil shale takes place. Produced vapor-gas mixture and spent shale are separated in a dust chamber and a downstream cyclone. Vapor-gas mixture is sent to the oil condensation section of the plant. Spent shale is fed into a Circulating Fluidized Bed (CFB) combustion unit, where spent shale is completely combusted. Combustion in the CFB allows the system to reduce air emissions efficiently and complete combustion of spent shale. Hot flue gases from the CFB are fed into the Waste Heat Recovery System (WHRS), which extracts excess heat from hot flue gases. The new Enefit 280 plant will include, in addition to pyrolysis technology, other important sections, like a feed preparation system, an oil condensation section, and a power generation unit. Enefit 280 should have an availability of over 90%, should meet strict EU environmental requirements, and have a high thermal efficiency. EE Oil & Gas has made an investment decision to build a new shale oil production plant based on Enefit 280 technology in Estonia. The new plant should be commissioned in 2012.