

Title:**Manufacture of Synthetic Oil and Gas from Natural Low-Grade Mineral Fossil Fuels****Abstract:** (Your abstract must use 10pt Arial font and must not be longer than this box)

The unique experience of designing power and technological plants processing low-grade kinds of solid fuel (oil shale, brown coals, peat, waste) is offered. The technology of high-speed pyrolysis of oil shale in installations with the solid heat-carrier SHC (or UTT - Russian abbreviation of the same) with production of synthetic oil and gas has been developed and improved since 1950. The first pilot installation UTT-2.5 with shale processing capacity of 2.5 tons a day was started up in 1947. In 1953 UTT-200 was launched and the capacity has been increased in 80 times. Then in 1963 installation UTT-500 was entered into commercial operation and operated till 1981. Since 1980 two UTT-3000 units capable of processing more than 6000 tons of shale with production of more than 1000 tons a day of synthetic oil and gas were launched and are successfully maintained till now. The method of high-speed pyrolysis of shale "Galoter" is put in a basis of technology. This technology is the most effective and mastered in industrial scale. The technology has the highest efficiency of use of combustible mineral fuel - thermal efficiency of 88.5 %, chemical efficiency of 83.1% and energy efficiency 88.1%. Besides processing oil shale, the technology can be applied to processing various organic materials for synthetic oil and gas – i.e., worn out tires, oil soaked soils, cakes, and tar. Shale ash serves as the heat-carrier. It is chemically active and binds harmful compounds of flue gases to safe ones, and the surplus of ashes removed from the process can be used for manufacture of cement, building materials, and as the deacidizing agent for soil development. In case of insufficient ash as the heat-carrier in initial raw oil shale, the mineral components of corresponding structure are used as amends to raw mixture - sand, calcareous material, gravel, etc. The technology has a wide range of technological modes and allows adjustment to a parity of volumes of different fractions of liquid distillates and gas. Processing solid fuel in UTT allows reduction of emissions of greenhouse gas (GHG) in comparison with direct burning of this fuel. Power capacity of installation UTT-3000 - 12 MW, i.e., below a minimum level of capacity 20 MW from the point of view of the account of GHG emissions.

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