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V. YEFIMOV

A BUSINESS TRIP TO CHINA

In the field of oil shale processing and utilization of shale oil both the Oil Shale Research Institute and the Oil Shale Processing Association (Kohtla-Järve) have for five years already successfully collaborated with respective Chinese organizations, namely with China Petro-Chemical Technology Company (SINOPEC INT'L), Peking Petroleum University, and Maoming Petroleum-Chemical Company.

In December 1992, these organizations invited a group of Estonian specialists to Chinese People's Republic, mainly to Maoming in South China. Maoming Petroleum-Chemical Company includes the Oil Shale Mineral Company which deals with mining and processing of lumpy shale (64 vertical retorts with throughput of 150 tonnes of oil shale per day each are in operation) and with combustion of oil shale fines in fluidized bed. Altogether about 3 million tonnes of oil shale are processed and 100,000 tonnes of oil are produced every year.

Although the main branch of production at Maoming Petroleum-Chemical Company is the deep refining of petroleum, the company is very interested in improving the technology for semicoking large particle oil shale and combustion of shale fines. In 1991 in Maoming construction of a separate condesation system has been completed and a retorting unit for semicoking large particle shale in circular chamber has been reconstructed according to the recommendations of the Oil Shale Research Institute and the Oil Shale Processing Association.

The experimental retort was put into operation in July 1991, and already during this short experience a higher efficiency of oil shale semicoking process was demonstrated as compared with retorts with counter-current heat carrier flow that have been used for many decades (since 1969 - 1970). The yield of oil increased from 60-65 to 75-80% of Fischer assay oil. We were glad to get direct data for the first time, since up to now we had to estimate this process only indirectly. Naturally, as mastering of this small capacity reactor is still in the initial phase, this oil yield obtained may not be the limit. Besides, during its operation some defects may become evident which must be eliminated.

The Oil Shale Mineral Company has two installations for combustion of shale in fluidized bed (35 t/h both) for producing steam and electric energy (the capacity of the power plant of 6,000 kW). The construction of a plant for combustion of 2 million tons of oil shale fines per year (the capacity of this power plant being 100,000 kW) is being designed.

The other region where oil shale processing on commercial scale takes place is located in North China and is based on Fushun oil shale deposit. In Fushun the exploitation of oil shale processing factory No. 2 (belonging to SINOPEC) was terminated in the end of 1992 because of the total amortization of the equipment (vertical retorts were built and put into operation at the beginning of 30ies), and because of the need in extension of petroleum processing at this plant. At the factory No. 2 about 3 million tonnes of oil shale were processed and 100,000 tonnes of shale oil were produced per year.

The oil shale processing industry in North China has begun to develop intensively within the framework of Shale Refinery of Fushun Coal Mine Bureau. In the end of 1991, as already reported in our journal, the first unit of 20 vertical Fushun-type retorts was put into operation with the throughput of 100 tonnes of oil shale per day each. At the beginning of 1992 another unit also consisting in 20 analogous retorts was put into operation. These retorts were translocated from the factory No. 1 which had been closed because of a soil slip induced by a nearby pit.

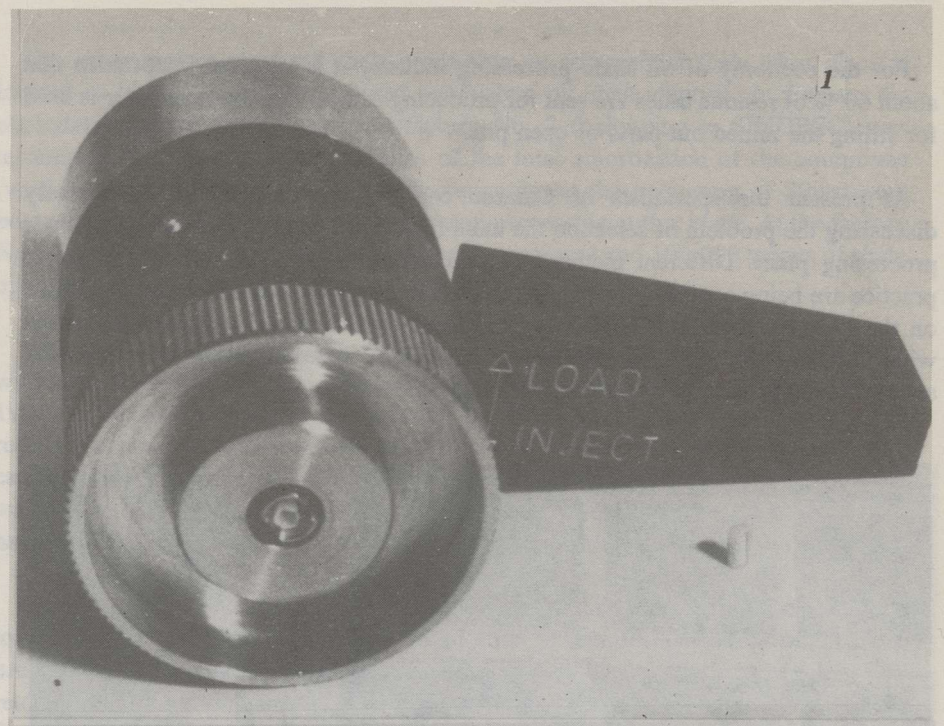
At these units of oil shale processing plant of Fushun Coal Mine Bureau 60,000 tonnes of oil were obtained in 1992. In addition to that 30,000 tonnes of oil were produced by semicoking shale fines using the process of slow burning in piles. The retort oil is highly demanded as liquid fuel. The oil obtained by semicoking shale fines using the latter process is distillated and treated with sulphuric acid. So the high quality gas oil is produced. The yield of retort oil makes 65% of Fischer assay oil, the yield of slow burning process oil - about 50%.

V. Yefimov lecturing at Peking Petroleum University

For the economy of oil shale processing industry it is of great importance that about 60 % of residue ashes are sent for producing cement and the remainder is used for filling the mined out parts of open pits.

At present the specialists of Chinese coal mining industry are intensively discussing the problem of selection the units for the second step of Fushun oil shale processing plant. Different methods of semicoking oil shale known in the world practice are being considered. It seems to us that the greatest attention has been paid on the Japanese method JOSECO and the method of semicoking in vertical retorts with circular chamber elaborated by our specialists, especially after the successful start of the experimental retort in Maoming.

Estonian specialists on the business trip in China



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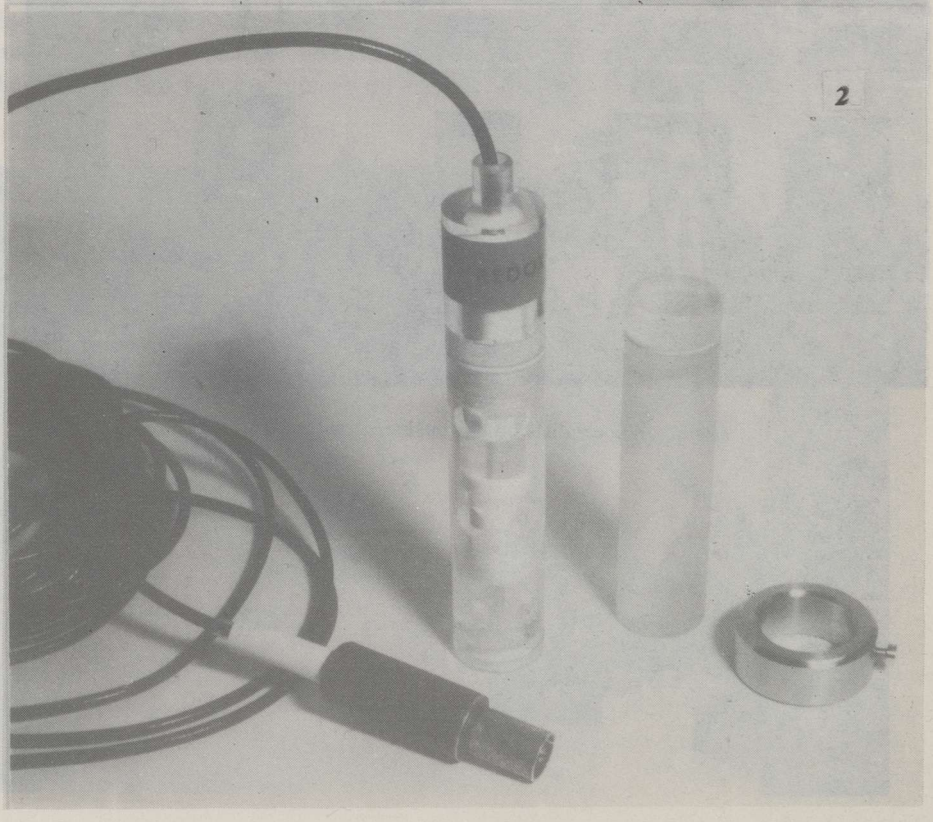

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