ZEOFORMING TECHNOLOGY

Description
The Zeoforming process was designed to produce high-octane lead-free AI-80 to AI-95 gasolines by refining low-octane gasoline fractions of different origin on zeolite catalysts. The scientific basis of the process was developed at the Institute of Catalysis, SB RAS (a patent holder of three base patents), and different versions of the industrial technology were designed and patented by the Zeosit Research-Engineering Center of the Institute of Catalysis, SB RAS (holder of an exclusive license to use the Zeoforming process). The process is intended for motor fuel production at low-capacity plants. The same Zeoforming plant is capable of manufacturing AI-80 to AI–95 gasolines conforming to State Standards GOST 2084-77 or GOST P 51105-97 without introducing any additives or additional compounding. Depending on the feedstock composition, the gasoline yields are as follows:
- 80-95% under AI-80 production conditions,
- 65-85% under AI-93 production conditions.

Zeoforming production plant with a capacity of 40 thousand tons/year
(Glimar refinery, Poland)

Technical appraisal and economic benefits
In contrast to the conventional process of gasoline production (reforming), the technology designed does not require:
- the presence of hydrogen and its associated compressor equipment;
- the stage of hydrofining to remove sulfur and nitrogen-containing compounds;
- expensive platinum catalysts;
- high-octane additives.
The above advantages sharply reduce the investment costs and operating costs and allow the construction of payable plants capable of processing over five thousand tons of feedstock per year. The self-contained plants can operate in hard-to-reach, remote areas of production of crude oil, gas condensate, and other hydrocarbon raw to meet the motor fuel demands of oil- and gas-industry workers and the population of neighboring areas.

Application areas
Production of high-octane lead-free gasolines from low-octane gasoline fractions of different origin (straight-line gasoline fractions, gas condensates, casing-head gasolines, natural gas liquids, refinery gases, etc.).
**Development stage**

Four plants with a capacity of 5 to 40 thousand tons per year were constructed under licenses and baseline designs of the Zeosit Research Center, Joint Institute of Catalysis, SB RAS: Russia (Nizhnevartovsk Gas Processing Plant (1992) 5 thousand tons/year), Poland (Glimar refinery (1997), 40 thousand tons/year, under the design of the Lurgi company), Kyrgyzia (Bishkek (1998), 40 thousand tons/year), Georgia (Rustavi (2002) 40 thousand tons/year), Southern Korea (Taejeon (2001), a demonstration plant, together with the Samsung corporation). Industrial production of catalysts was launched at the Novosibirsk Chemical Concentrates Plant.

**Patent situation**

Patents were granted in the Russian Federation (more than 20), Europe (one patent), and the CIS countries (three patents).

**Commercial offers**

Development of baseline designs of plants.
Customizing development and delivery of complete installations.
Quality control of delivered batches of catalysts.
Sale of licenses to use the process.

**Estimated cost**

According to calculations or a feasibility report.

**Contacts**

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