

FCC - Fluid Catalytic Cracking

Executive Summary

Project Subject: Two-stage catalytic cracking of hydrocarbons

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Industry: Petrochemistry

Project Status: Pre-seed

Business Description: Thermo-catalytic cracking of fluid feedstock is used in order to produce additional quantities of light transportation fuel products by destruction heavy oil fractions. During the past years one of the main tendencies in the world oil market is an increase in using relative quantity of heavy oils. Due to this tendency, the fluid catalytic cracking (FCC) has to be performed using a raw stock of much worse quality – the heavy gas oils are produced and supplied to the FCC installations. These heavy gas oils cause much higher rate of coke that results in a further decrease of yield of the most valuable light transportation fractions.

Product Description: The presented project has developed the unique technology of two-stage catalytic cracking of hydrocarbons, which allows increasing the yield of the most valuable fractions by means of improving the feedstock quality. The advantages of this technology are as follows:

- The new process is based on existing catalysts
- Existing types of equipment are used
- The method can be used for improvement of existing FCC installations
- Patenting of the technology is possible.

The two-stage FCC process has already been tested in laboratory conditions. According to the conducted testing, a 4% increase in the light fuel yield was achieved.

Market Opportunity: The potential market of the presented technology is very wide, since the current number of FCC installation in North America, Western Europe and Eastern Asia comprises more than 500 units. Production rate of different FCC installations varies from 100 to 1300 thousand ton of feed per year. For a middle sized 700 thousand ton installation increase of the motor fuel fraction in the product by 1% only corresponds to additional profit of about \$800,000 per year.

Development: The main part of R&D activities will consist of testing the new technology in a pilot plant conditions and searching for optimal range of parameters for the first stage of treatment – temperature, loading on catalyst, residence time, etc. This research can be based on the existing pilot installation after its providing with the same additional equipment and measuring instruments.