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In 2007 the TAIF Company, which integrates the major part of oil refining, gas- and petrochemical facilities of Tatarstan, consolidated oil refining assets in its subsidiary company, TAIF-NK. Thus, what had been de facto for long, became de jure now: There is an integrated plant in Nizhnekamsk in operation which, in terms of production capacity and volume of output, is within the Russia's top ten refineries. The company is actively developing, providing with production output increase, expansion of the product mix, and improvement of petroleum products' quality. Mr. Alexander Babynin, General Director of TAIF-NK presented his views to the «Neft & Kapital» (N&K) magazine on what the plant is today and on perspectives of its development.

Alexander Babynin: «We intend to double the turnover and treble the net profit»

N&K: What is the TAIF-NK today's structure?

– It consists of two major blocks. The first one is the block of primary petroleum processing that includes ELOU-AVT-7; system of middle distillates hydrotreating (produces about 650 kta of kerosene and 1.5 million tons per year of diesel fuel based on ABB Lummus Global process); vis-breaking plant which processes heavy residues from oil refining to produce extra naphtha and black oil; and bitumen production based on the Biturox process (refer to «The Last Link», NiK No. 6, 2007). The second block is the motor gasoline plant that includes gas condensate processing capacities, commissioned in 2006.

N&K: Your ELOU-AVT-7 is a rather old unit. Do you have any problems with it?

– ELOU-AVT-7 is the basis of our production scheme. The unit is being continuously retrofitted. In 2007 the recovery of light petroleum products at ELOU was increased by over 2% due to energy– and resources saving, which we consider as our great achievement. It means additional 140 kta of light petroleum products. Given the difference in price for 1 ton of diesel fuel and that for vacuum gas oil, it translates into 1 billion rubles of additional net profit annually.

Planned revamp of AVT-7 will push up the light petroleum products output by another 1.5%. We will start to revamp it in the current year and finish next year. Revamp means to increase efficiency of furnaces, to modify the heat transfer arrangement, to replace mass exchange devices, to implement up-to-date distribution control system and emergency shutdown system. Besides, we intend

Dossier

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1994 – ecologist-engineer at NPI «Donbassekologia» (Mariupol)

1995-2003 – process engineer, senior engineer of PNU JSC «IPT Orgneftehimzavody» (Moscow)

2003-05 – deputy chief engineer for production, JSC «Nizhnekamsk refinery»

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2006 – deputy general director for production, CJSC TAIF-NK refinery

Since May 2006 until now – general director of JSC TAIF-NK

TAIF-NK is constructing now three plants to produce high octane components for the motor gasoline plant: two of them – for MTBE production and etherification of catalytic cracking light naphtha by methanol, will be put into operation in the current year.

to totally give up burning fuel oil in furnaces, a measure that will produce a favorable economic as well as environmental effect.

N&K: On the other hand, your motor gasoline plant is totally new. Is it true that only Euro-4 gasoline is being produced there?

– It is one of the most modern plants in the industry. Its basis is the catalytic cracking unit that processes vacuum gas oil produced at the refinery. At the plant's outlet, finished products are the commercial gasolines, which account up to 550 kta, and light gas oil of catalytic cracking, which is afterwards converted into the commercial diesel fuel after hydro-treatment at the refinery. In fact, it is for one complete year that we have been producing gasoline (100%) which fully corresponds to Euro-4 Standard requirements, including that for sulfur content of max. 50 ppm. This has been achieved through implementation of a unique process flow diagram, which allows us to maintain the production cost of Euro-4 gasolines at the level not exceeding that of Euro-2 gasolines, which the company was bearing before the above scheme was introduced. The nicety of this scheme is the unit for desulfurization of catalytic cracking light naphtha put into operation in 2007. By now, we have completed certification of the motor gasoline production meeting the Euro-4 Standard requirements. (I would like to note that we have used only domestic technologies, both during construction and retrofitting of the plant).

At the same time, we continue to look into the quality improvement and raise of output volumes of produced fuels. We are constructing now three plants to produce high octane components for the motor gasoline plant: MTBE production facility, etherification of catalytic cracking light naphtha by methanol, and dimerization of butane-butylene fraction. The first two will be put in operation in the current year, the third one – in 2009. After that we shall be in a position to increase the production output of commercial gasoline up to 880 kta (about 500 kta was produced in 2007), and increase the production rate of catalytic cracking unit up to 1 million tons of gas oil annually. Within next 2 – 3 years we plan to bring the output of motor gasoline up to 1 million tons per year with further quality improvement to meet the Euro-5 requirements.

N&K: In this case, it's time to think about your own brand name…

– Yes, if the plans are to continue production of Euro-4 and Euro-5 gasoline, then it makes sense to introduce a brand name. Because it does mean a guarantee of quality, and a signal to the customer. However, it does not seem feasible to press for a brand name by selling gasoline through someone else's retail networks. There is only one way out: establish your own retail network. TAIF Company has developed a strategic plan looking into setting about 150 to 200 gas stations under an original trade mark in Tatarstan, which will sell gasoline and diesel fuel produced exclusively by TAIF-NK. Such first gas stations have already been put into operation.

N&K: Does diesel fuel conform to Euro-4, too?

The TAIF-NK motor gasoline plant is one of the most modern in the industry: Its basis is the catalytic cracking unit.

– So far, it has been rated as Euro-2. But the existing equipment allows us to meet the Euro-3 Standard requirements even today. The scope of major overhaul for 2008 envisages revamping of the hydrotreatment unit, which will make it possible to produce the Euro-4 diesel fuel. But production of this fuel can be started not before we have set up the sales logistics. We are currently working on its concept. Evidently, it would be based on transportations by railways.

N&K: Gas condensate processing plant was put into operation just two years ago, but you are actively revamping it as well. Why? Not a very technically sound design was implemented?

– The original plant concept provided for output of straight-run gasoline (500 thousand tons per year), diesel fuel (400 thousand tons per year) and distillation residue. But after a year we modified the process flow diagram to make it more efficient: it allowed us to recover an additional kerosene fraction. In the current year, ELOU-1 block was added to this complex (that consisted only of the AT-1 atmospheric block before), which makes processing of salty condensates possible. The point is that while starting this unit, we focused mainly on gas condensate with salt low content. But it turned out that there is short supply of such raw material in the market.

Putting ELOU-1 block into operation allows processing of gas condensates with salt content up to 150 mg/l, i.e. increase the load ratio. This measure proved to be very opportune. Because the main task of the plant is to produce extra volumes of naphtha (extra to 1 million tons per year produced at the refinery) to ensure supply of feed stock for the ethylene plant complex of JSC «Nizhnekamskneftekhim» managed by the TAIF Group, whose production capacity after modernization by the end of 2008 should reach 650 thousand tons per year.

N&K: In 2007, according to its basic financial indices, TAIF-NK was rated as second-best in Tatarstan after Tatneft...

– TAIF-NK is a highly effective and, therefore, a highly profitable enterprise. Our production scheme is very flexible; so, by analyzing market situation, we quickly get readjusted to the output of products which are in high demand at a given moment. Such ability allows us to maximize a margin. It is precisely for the same purpose that we most economically consume power and resources. You can't see any single flare burning. We do not have any wastes for disposal: everything is subject to reprocessing.

At the same time, TAIF-NK constantly improves its business management system. We understand that maximum profit can be achieved only through the optimal management of available assets. Depending on the quality of adopted managerial decisions, efficiency of the control and management system, the results of company's financial performance achieved with the same produc-

tion capacity, can be diametrically opposite. To ensure consistently high result in operations, TAIF-NK introduced an integrated management system and certified its compliance to the requirements of four international standards. According to the data available with me, at present in Russia only LUKOIL-Nizhegorodneftekhimorgsintez is another holder of a similar package of certificates of compliance.

The foregoing allowed us to bring the company's turnover to 65 billion rubles (in 2006 – 55 billions) and to double the profit. However, these indices can be significantly increased.

N&K : Due to what?

– Due to going as deep as possible in oil refining. We spent considerable funds and 8 years of groping for the correct way, the right direction of development which would yield the maximum profit. And today we have a thoroughly prepared plan allowing us to achieve that goal. In our opinion, it is a key plan for development not only for our enterprise, but for the industry as a whole.

N&K: And what kind of plan is that?

– Maximum processing of oil refinery heavy residues using gasification and hydro-cracking processes. Its key point – production of hydrogen to be used in secondary hydro-treatment processes, obtained not from natural gas (a standard scheme with economic impact, depending on natural gas price and availability of raw material allocations), but from the cheapest raw material – heavy petroleum residues.

N&K: The process of gasification is well known. It was developed in the West in the middle of the last century, but it wasn't applied widely, as the then prices for utilities were very high.

– That's right. But with the hydrocarbons' prices of today, this process becomes very effective. In fact, what is going on now in the industry? In principle, nobody was ready to expect that the prices for raw materials and utilities would reach such levels by the end of this decade. Even the leading licensors did not expect this.

But the price rise took place. And it was very dramatic. Today we have been confronted with the fact of expensive petroleum and natural gas, but also with the prospects for further growth of prices. At the same time, we are facing the tendency of extraction of heavier oils. And such oils after refining yield less light petroleum products and more sulfur. Against that background the government is toughening ecological requirements for the oil products, mainly for sulfur content. In other words, a still more intensive oil processing and a still higher degree of product treatment are required, for which still more hydrogen is needed. It is common knowledge that the basic raw material for hydrogen production is natural gas. This means that the circle has closed. Economics of crude oil processing is bursting at the seams.

Gasification process of oil refinery heavy residues with the production of synthesis gas offers a way out, as it helps to solve a number of matters of principle. For example, it would allow TAIF-NK to double its turnover and multiply the profit.

N&K: And you believe that constructing heavy oil residues processing complexes on the basis of gasification holds the future not only for your enterprise, but for the whole sector?

– Exactly so. Let me give you a simple calculation. Up to 75 million tons of black oil is produced annually in Russia that could be processed into 55 million tons of high quality EURO-5 petroleum products, and from process residues, via synthesis-gas, 7– 8 thousand megawatt of electric power could be generated, or large volumes of raw materials could be obtained for chemical needs. At the same time, it will allow to solve ecological problems. In other words, the gasification complex is absolutely self-contained and wasteless.

This is the formula that could double the turnover of the sector. And it should be present in the development strategy of Russia's petrochemical complex for the period up to 2030. It is necessary to process all heavy residues coming from the oil refining and petrochemical facilities, except those that could be used for highly efficient production coke for the aluminum industry.

N&K: By the way, you had plans to set up a joint project with Rusal for processing of heavy residues into coke? Why did it not work?

– Because we are processing heavy oil, and only very expensive coke can be produced from the residues thereof. It appeared that Rusal was not prepared to buy it at that price. More even so, when you have other options.

N&K: Two years ago TAIF announced an international tender to propose a scheme for heavy residues processing. What was the conclusion?

– Today we are reviewing two alternative feasibility studies – from Lurgi of Germany and from Chyoda of Japan. The first alternative puts an accent on energy generating option, the second one – on fuel. In other words, according to Lurgi's scheme, we shall be producing less petroleum products, but more energy. According to Chyoda's scheme, the focus is made on maximum output of petroleum products. At the same time, both schemes fully meet the needs of the enterprise in hydrogen.

The basic difference between the two feasibility studies lies in the upstream section of the pro-