

# OIL REFINERIES ACROSS RUSSIA

This review is presented in 2 chapters. First chapter presents big and medium size refineries with more than 4 MMTA capacity. These refineries provide full circle of refining including crude distillation, secondary processes, lube oil production etc. Second chapter present low size and some of so called “mini-refineries” These plants were built after 1980 and have a simple process configuration including only crude distillation and in some cases catalytic reforming.

In the mid-1990s big vertically integrated companies (VIPC) emerged in Russia - LUKOil, TNK, Surgutneftegas, Gaspromneft, Rosneft etc. The major Russian refineries were included in VIPC. Some refineries (low size) are owned by different financial groups

## CHAPTER 1. FULL CIRCLE REFINERIES.

### ACHINSK REFINERY

Located in city of Achinsk, Krasnoyarsk region in Siberia, 3400 km from Moscow. Parent company - NK Rosneft. Overall capacity of Refinery is 7.5 MMTA, throughput in year 2016 was 7.1 MMTA. Major products are: Automotive gasoline, Diesel fuel, Asphalts, Heavy fuel oil, Sulfur. Fuel with middle level of conversion.

### AFIPSK REFINERY

Located in town of Afipsk, Krasnodar territory in the North Caucasus, 1300 km from Moscow. Owner – “Neftegasindustriya” company. Overall capacity of Refinery is 5.25 MMTA, throughput in year 2016 was 3.2 MMTA. Major products are: Automotive gasoline, Diesel fuel, Heavy fuel oil with low sulfur content. Fuel with low level of conversion.

### ANGARSK PETROCHEMICAL COMPANY

Located in Angarsk, Irkutsk region in Eastern Siberia, 4200 km from Moscow. Parent company - NK Rosneft. Overall capacity of Refinery is 10.2 MMTA, throughput in year 2016 was 9.2 MMTA. Include petrochemical part. Major products are: Automotive gasoline, Diesel fuel, Aviation gasoline, Petroleum coke, Asphalts, Heavy fuel oil, Lube oils, Sulfuric acid, LPG, Oxygen, Liquid nitrogen, Butyl alcohols, Methanol, Amines. Fuel-lube with high level of conversion and large petrochemical plant.

### ANTIPINO REFINERY

The first private refinery in Russia, built after year 1998. Located in the town of Antipino, near Tyumen, West Siberia. Owner – “Novy potok” group. Overall capacity of Refinery is 9.0 MMTA, throughput in year 2016 was 7.8 MMTA. Major products are: Automotive gasoline, Diesel fuel, Heavy fuel oil, Sulfur. Fuel with low level of conversion.

#### KHABAROVSK REFINERY

Located in town of Khabarovsk, Far East region, 6100 km from Moscow. Parent company - "NNK-Nezavisimaya Neftyanaya Kompaniya". Overall capacity of Refinery is 5 MMTA, throughput in year 2016 was 4.5 MMTA. Major products are: Automotive gasoline, Naphtha, Diesel fuel, Heavy Fuel oil. Fuel with low level of conversion.

#### KIRISHINEFTEORGSTINTES (KINEF)

Located in town of Kirishi, Leningrad region, 140 km southeast of St. Petersburg and 550 km northeast from Moscow. Parent company - Surgutneftegas. Overall capacity of Refinery is 20.5 MMTA, throughput in year 2016 was 18.8 MMTA. Major products are: Automotive gasoline, Diesel fuel, Jet fuel, Aromatics, Heavy fuel oil, LPG, Asphalts, Gas Turbine fuel. Fuel with middle level of conversion

#### KOMSOMOLSK REFINERY

Located in city of Komsomolsk, Far East, Khabarovsk region, 270 km north of Khabarovsk and 6200 km east of Moscow. Parent company – NK Rosneft. Overall capacity of Refinery is 8 MMTA, throughput in year 2016 was 6.24 MMTA. Major products are: Automotive gasoline, Diesel fuel, Jet fuel, Heavy fuel oil, Petroleum coke. Fuel with middle level of conversion

#### KRASNODAR REFINERY

Located in City of Krasnodar, the capital of Krasnodar territory in the North Caucasus, 1300 km from Moscow and 100 km from Black Sea. Parent company KrasnodarEkoneft. Overall capacity of Refinery is 3.1 MMTA, throughput in year 2016 was 2.7 MMTA. Major products are: Natural gasoline, Diesel fuel, Jet fuel for supersonic jets, Marine fuel, Heavy fuel oil, Road asphalt, Naphtenate soap. Fuel with low level of conversion

#### KUIBISHEV REFINERY

Located in suburbs of the city of Samara, the capital of Samara region, near the Volga river, 850 km southeast of Moscow. Parent company – NK Rosneft. Overall capacity of Refinery is 7 MMTA, throughput in year 2016 was 6.11 MMTA. Major products are: Automotive gasoline, Jet fuel, Diesel fuel, Heavy fuel oil. Fuel with middle level of conversion.

#### MOSCOW REFINERY

Located within city limits of Moscow, near the eastern part of beltway. Parent company - Gaspromneft. Overall capacity of Refinery is 11.0 MMTA, throughput in year 2016 was 10.7 MMTA. Major products are: Automotive gasolines, Jet fuel, Diesel fuel, Heavy fuel oil, Asphalts, Sulfur, Polypropylene. Fuel with middle level of conversion.

#### NIZHEGORODSKY REFINERY

Located in the town of Kstovo, near the city of Nizhni Novgorod, 400 km east of Moscow, on the Volga river. Parent company - LUKOil. Overall capacity of Refinery is 17 MMTA, throughput in year 2016 was 14.1MMTA. Major products are: Automotive gasoline, Naphtha for pyrolysis, Jet fuel, Diesel fuel, Furnace oil, Aromatics, Lube oils, Heavy fuel oil, Asphalts. Fuel-lube with high level of conversion

#### NIZHNEKAMSK REFINERY

Located in the city of Nizhnekamsk, Tatarstan Republic, 900 km east of Moscow and 180 km from the city of Kazan, Tatarstan capital. Parent company –TANECO. Overall capacity of Refinery is 7 MMTA, throughput in year 2016 was 6.5 MMTA. Major products are: Straight-run gasoline for pyrolysis, Diesel fuel, Technical kerosene, Furnace fuel, Heavy fuel oil, Asphalts. Fuel with middle level of conversion. Formerly part of petrochemical complex.

#### NOVOKUIBISHEVSK REFINERY

Located in the town of Novokuibyshevsk, 20 km from the city of Samara, on the bank of the Volga river, 850 km southeast of Moscow. Parent company - NK Rosneft. Overall capacity of Refinery is 8.8 MMTA, throughput in year 2016 was 7.13 MMTA. Major products are: Automotive gasoline, Aviation gasoline, Jet fuel, Diesel fuel, Furnace fuel, Aromatics, Lube oils, Heavy fuel oil, Asphalts, Petroleum coke. Fuel-lube with high level of conversion

#### NOVOUFIMSKY REFINERY (BASHNEFT-NOVOOIL)

Located in the suburbs of Ufa, the capital of Bashkortostan, 1300 km southeast of Moscow. One of three Ufa refineries (Novo-Ufimsky, Ufaneftekhim, Ufa refinery). Parent company - Bashneft. Overall capacity of all Ufa refineries is 24.7 MMTA, overall capacity of Bashneft-Novooil is 7.1 MMTA, throughput of all 3 Ufa refineries in year 2016 was 18.3 MMTA. Major products are: Automotive gasoline, Aviation gasoline, Jet fuel, Diesel fuel, Lube oils, Heavy fuel oil, Asphalts, Petroleum coke, Furnace oil, Sulfur, Hard wax. Fuel-lube with high level of conversion.

#### OMSK REFINERY

The biggest refinery in Russia. Located in the city of Omsk, Western Siberia, 2200 km east of Moscow. on the bank of Irtysh river. . Parent company - Gaspromneft. Overall capacity of Refinery is 25 MMTA, throughput in year 2016 was 20.5 MMTA. Major products are: Automotive gasoline, Aviation gasoline, Naphtha, Jet fuel, Diesel fuel, Furnace oil, Aromatics, Lube oils, Heavy fuel oil, Asphalts, Sulfur, LPG, Petroleum coke. Fuel-lube with high level of conversion

#### ORSKNEFTEORGSINTES

Located in suburbs of the city of Orsk, of the Orenburg region, near the Ural river, 1400 km southeast of Moscow. Parent company “Forte-Invest”. Overall capacity of Refinery is 5 MMTA, throughput in year

2017 was 4.74 MMTA. Major products are: Automotive gasoline, Jet fuel, Diesel fuel, Motor fuel, Heavy fuel oil, Asphalts, LPG, Sulfur. Fuel with middle level of conversion

#### PERM REFINERY

Located in the city of Perm, the regional center of the Western Urals, 1400 km east of Moscow, in the vicinity of the Kama river. Parent company - LUKOil. Overall capacity of Refinery is 13 MMTA, throughput in year 2016 was 11.9 MMTA. Major products are: Automotive gasoline, Naphtha for pyrolysis, Jet fuel, Diesel fuel, Furnace oil, Aromatics, Lube oils, Heavy fuel oil, Asphalts, Solid wax, Petroleum coke. Fuel-lube with high level of conversion

#### RYAZAN REFINERY

Located in the city of Ryazan, 200 km southeast of Moscow. Parent company – NK Rosneft. Supplies approximately 40% of Moscow fuel consumption. Overall capacity of Refinery is 18.8 MMTA, throughput in year 2016 was 15.35 MMTA. Major products are: Automotive gasoline, Jet fuel, Diesel fuel, Furnace oil, Aromatics, Lube oils, Heavy fuel oil, Asphalts. Fuel-lube with middle level of conversion.

#### SALAVATNEFTEOTGSINTES (GASPROMNEFTEKHIM SALAVAT)

Located in the city of Salavat of the Bashkortostan Republic. 1200 km east of Moscow and 140 km from Ufa, capital of Bashkortostan. Refinery is a part of big complex including refinery, petrochemical plant and fertilizers plant. Parent company – PAO Gazprom. Overall capacity of Refinery is 10 MMTA, throughput in year 2016 was 9.4 MMTA. Major products at refinery part are: Automotive gasoline, Naphtha for pyrolysis, Jet fuel for supersonic jets, Diesel fuel, Aromatics, Heavy fuel oil, Asphalts, Sulfur, LPG. Fuel with high level of conversion and large petrochemical plant

#### SARATOV REFINERY

Located in the city of Saratov, 700 km southeast of Moscow. Parent company - Rosneft. Overall capacity of Refinery is 7 MMTA, throughput in year 2016 was 5.9 MMTA. Major products are: Automotive gasoline, Jet fuel, Diesel fuel, Furnace oil, Heavy fuel oil, Asphalts. Fuel with middle level of conversion

#### SYZRAN REFINERY

Located in the city of Syzran, Samara region, 800 km southeast of Moscow and 150 km from Samara. Parent company - Rosneft. Overall capacity of Refinery is 8.5 MMTA, throughput in year 2016 was 6.32 MMTA. Major products are: Automotive gasoline, Jet fuel, Diesel fuel, Heavy fuel oil, Asphalts. Fuel with middle level of conversion

#### TUAPSE REFINERY

Located in the city of Tuapse, the Krasnodar region, 1300 km south of Moscow and 100 km from Krasnodar, region capital. Parent company - Rosneft. Old refinery (started up in 1929) had capacity 3 MMTA. In 2013 a biggest in the world crude unit, 12 MMTA capacity, started up. A hydrocracking

complex is under construction. Tuapse is the only refinery in Russia situated on the sea coast (the Black Sea). Overall capacity of Refinery is 10 MMTA, throughput in year 2016 was 9.84 MMTA. Major products are: Automotive gasoline, Diesel fuel, Heavy fuel oil. Fuel with low level of conversion.

#### UFANEFTEKHIM

Located in the suburbs of Ufa, 1300 km southeast of Moscow. Parent company - Rosneft. One of three Ufa refineries. Overall capacity of all Ufa refineries is 24.7 MMTA, overall capacity of Ufaneftekhimi is 9.5 MMTA, throughput of all 3 Ufa refineries in year 2016 was 18.3 MMTA. Major products are: Automotive gasoline, Diesel fuel, Aromatics, Lube oils, Heavy fuel oil, Asphalts. Fuel-lube with high level of conversion.

#### UFIMSKY REFINERY

Located in the suburbs of Ufa, 1300 km southeast of Moscow, the oldest among 3 Ufa refineries. Parent company - Bashneft. Overall capacity of all Ufa refineries is 24.7 MMTA, overall capacity of Ufimsky refinery is 7.5 MMTA, throughput of all 3 Ufa refineries in year 2016 was 18.3 MMTA. Major products are: Automotive gasoline, Diesel fuel, Heavy fuel oil, Motor lube oil, Sulfur. Fuel with middle level of conversion.

#### UKHTA REFINERY

This plant is the northernmost refinery in Russia, located in the city of Ukhta, Komi Republic, 1200 km northeast of Moscow, adjacent to the Arctic Circle. Parent company - LUKOil. Overall capacity of Refinery is 4.0 MMTA, throughput in year 2016 was 2.9 MMTA. Major products are: Automotive gasoline, Diesel fuel, Heavy fuel oil, Asphalts. Fuel with low level of conversion.

#### VOLGOGRAD REFINERY

Located in the city of Volgograd, 900 km southeast of Moscow, on the bank of Volga river. Parent company - LUKOil. Overall capacity of Refinery is 14.5 MMTA, throughput in year 2016 was 12.8 MMTA. Major products are: Automotive gasoline, Diesel fuel, Kerosene, Aromatics, Heavy fuel oil, Lube oils, Asphalts, Petroleum coke. Fuel-lube with high level of conversion

#### YAROSLAVNEFTEORGSIINTES (SLAVNEFT-YANOS)

Located in the city of Yaroslavl, 250 km northeast of Moscow, on the bank of Volga river. Parent company - Slavneft. Overall capacity of Refinery is 15 MMTA, throughput in year 2016 was 13.8 MMTA. Major products are: Automotive gasoline, Diesel fuel, Jet fuel, Aromatics, Heavy fuel oil, Lube oils, Asphalts, Waxes, Sulfur, LPG. Fuel-lube with high level of conversion

## CHAPTER 2. LOW SIZE AND MINI-REFINERIES

There are some low size (1-4 MMTA capacity) and approximately 120 so called “mini-refineries” with capacity 0,05-1,0 MMTA. These plants usually include crude unit (atmospheric or atmospheric and vacuum distillation). Some of these refineries have small capacity catalytic reforming units for gasoline upgrade. The major products of these plants are straight-run (or automotive) gasoline, sulfuric diesel fuel and heavy fuel oil.

Characteristics of some low-size and mini-refineries presented below

### YAROSLAVL MENDELEEV REFINERY

The oldest refinery in Russia, started up in 1879. Located in town of Konstantinovskiy, Yaroslavl region, 80 km from Yaroslavl and 280 km from Moscow. Overall capacity is 0.25 MMTA. Major products are: Straight-run gasoline, Sulfuric Diesel fuel.

### SURGUT PLANT OF GAS CONDENSATE STABILIZATION

Located in the city of Surgut, Khanty-Mansi region, West Siberia, on the bank of Ob river. Parent company - Gazpromneft. Feedstock – mixture of crude oil and gas condensate. Overall capacity of plant is 3 MMTA, throughput in year 2017 was 2.8 MMTA. Major products are: Automotive gasoline, Diesel fuel, Jet fuel

### KRASNOLENINSK REFINERY

Located in the city of Nyagan, Khanty-Mansi region, West Siberia. Parent company - Rosneft. Overall capacity of plant is 300 MTA. Major products are: Straight-run gasoline, Jet fuel, Diesel fuel

### MARI REFINERY

Located in the city of Yoshkar-Ola, Mari-El republic capital, Middle Volga region. Overall capacity of plant is 1250 MTA. Major products are: Straight-run gasoline, kerosene, furnace oil, sulfuric acid, heavy fuel oil, asphalt, butane

### NOVOSHAKHTINSK PLANT FOR OIL PRODUCTS PRODUCTION

Located near the city of Novoshakhtinsk, Rostov region. Owner - company “Yug Rossii”. Overall capacity of plant is 2500 MTA. Major products are: Straight-run gasoline, Jet fuel, Diesel fuel, Furnace oil, Marine fuel oil, Heavy fuel oil.

### YASKY REFINERY

Located in the town Yaya, near city of Anzhero-Sudzhensk, Kemerovo region, East Siberia. Owner - company “Neftekhimservice”. Overall capacity is 3000 MTA, Major products are: Straight-run gasoline, Sulfuric Diesel fuel, Heavy fuel oil.

## ILSKY REFINERY

Located in the town Ilsky, 55 km from city of Krasnodar and 80 km from Black Sea. Owner - company "Neftekhimservice". Overall capacity is 3000 MTA, Major products are: Straight-run gasoline, Sulfuric Diesel fuel, Marine fuel oil, Heavy fuel oil, Asphalts.