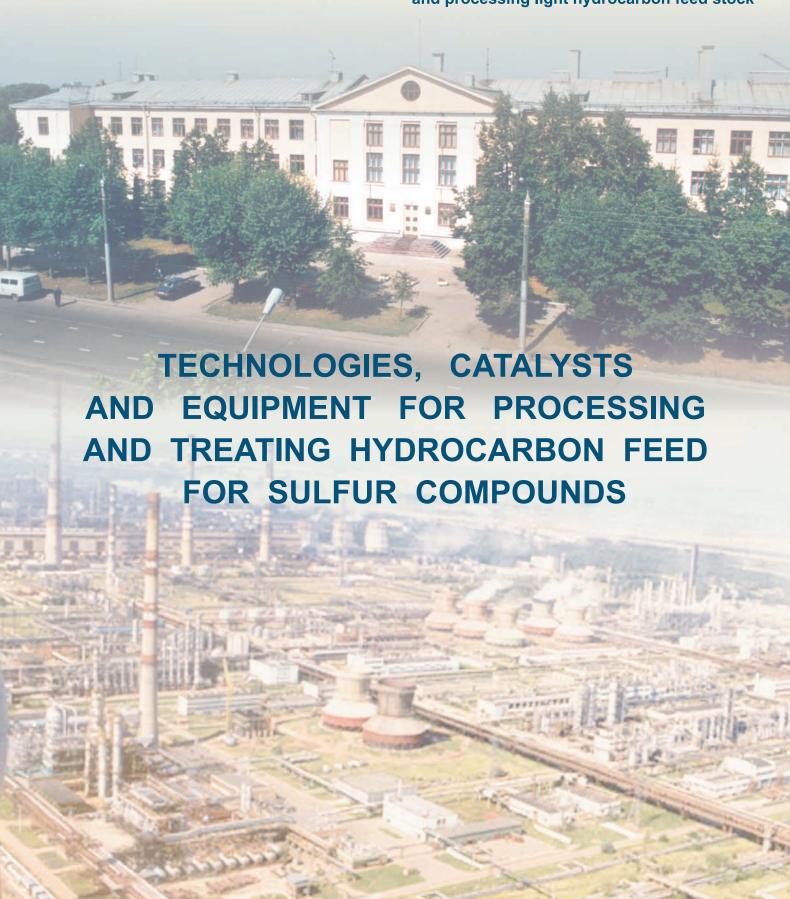




OJS VNIIUS

VOLGA RESEARCH INSTITUTE OF HYDROCARBON FEED

Established in 1965 as a chief All-Union Research Institute in the field of balances and technology of production and processing light hydrocarbon feed stock





Business and scientific ties of VNIIUS



VNIIUS developed high-efficient technologies of treating hydrocarbon feed and waste waters for sulfur compounds. The institute worked out and patented the first all-over-the-world process of oil treating for low molecular weight mercaptans, organized production of high-efficient catalysts for desulfurization processes and pure C_1 - C_6 hydrocarbons for metrology. VNIIUS has a licence on technologic estimations UK/DM 2946 and accreditation certificate of test center No. POCC RU.0001.21 H Π 39.

SCIENTIFIC-TECHNICAL PRODUCTS OF VNIIUS

- Technologic regulations for designing new and modification of operating desulfurization and gas fractionation plants.
- Technologic regulations for designing plants for preparation and processing high-viscous oils, natural bitumens and associated petroleum gas.
- Production and supply of desulfurization IVKAZ catalyst.
- Production and supply of hydrogen sulfide and mercaptan neutralizers for oils and gas condensates.
- Manufacture and supply of reagent mixers.
- Production of test gas mixtures with a wide range of compositions and concentrations for metrology, which have a status of State Standard Samples.
- Balances of production and consumption of hydrocarbon feed in Russian Federation.
- Regulatory documentation on product quality and environmental protection on oil and gas processing enterprises.
- Technologic regulations for production of gas and oil refineries products.
- Quality certificates for gases, crudes, motor fuels, oils, lubricants, bitumens and bitumen emulsions.
- Procedures of measuring concentrations of hydrocarbons, sulfur and other compounds in hydrocarbon streams, air and industrial wastes.

VNIIUS PROPOSES A WIDE RANGE OF SERVICES

- Inspection of plants, analysis of production and consumption, reserves and sales markets of light hydrocarbon feed on refineries, petrochemical plants and oil field objects.
- Analysis and investigation of oils and oil products according to GOST and ASTM.
- Development and supply of modular complex plants on "a turn-key" basis for desulfurization and gas fractionation.
- Supervision during design, start-up and operation of plants.

On a Client's request VNIIUS performs qualified sampling and analysis of the samples, works out a technical assignment for design, carries out plant design and commissioning, provides personnel training in new technologies of desulphurization and gas fractionation of hydrocarbon feed stock.

VNIIUS has appropriate agreements and uses services of leading Russian (J.S. «VNIPINeft», J.S. «Samaraneftekhimproekt») and foreign companies (Chevron, CAC, RIPI, Merichem, Propak System, Linde, Lurgi) during the development and supply of plants on a turn-key basis.

Nomenclature of our scientific-technical products is increasing constantly according to requirements of a Client.

Ve developed universal desulphurization technologies and are ready to work out recommendations.

We developed universal desulphurization technologies and are ready to work out recommendations for new processes and modify existing plants using equipment of your enterprise.

We are always open for business cooperation.

Give your problems to us and we will solve them!

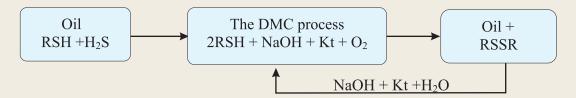
PROCESSES OF OIL AND GAS CONDENSATE DEMERCAPTANIZATION DMC-1, DMC-1M, DMC-1MA, DMC-2, DMC-3

SPHERE OF APPLICATION

Treatment of oil and gas condensates for toxic low molecular weight mercaptans C₁-C₄ to residual content of a sum of methyl- and ethyl mercaptans of no more than 20 ppm and that of hydrogen sulfide below 5 ppm

CHEMISTRY OF THE PROCESSES

Low molecular weight mercaptans C_1 - C_4 are oxidized to disulfides, and hydrogen sulfide is oxidized to sulfates with air oxygen over phthalocyanine IVKAZ catalyst in an aqueous-alkaline solution following a reaction:

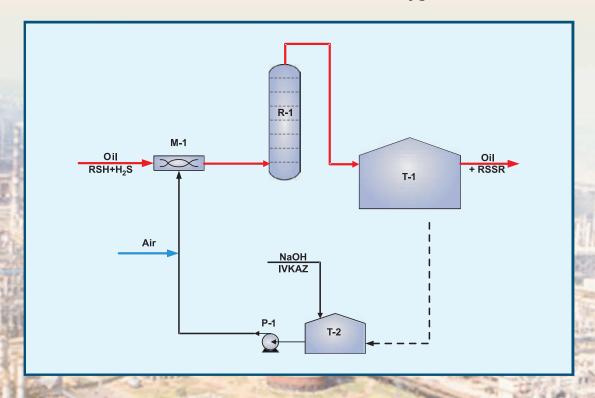


The technology provides treatment of feed stock (depending on Client's requirements):

- · for C₁-C₂ mercaptans(one-stage treatment to 10 ppm) DMC-1
- · for C₁-C₄ mercaptans (two-stage treatment to 30 ppm) DMC-3

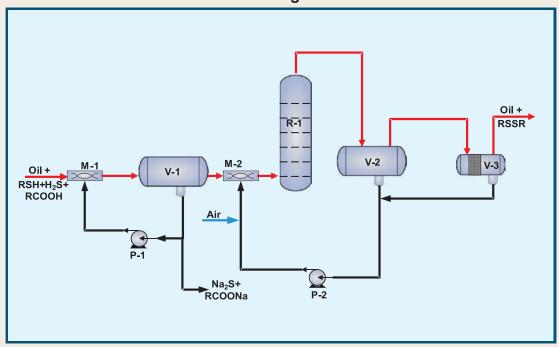
The DMC-1M process is proposed for treating heavy oils, which form stable emulsions with an alkaline solution.

THE DMC-1M PROCESS
Commissioned at J.S. CNPC «Aktobemunaygaz» in 2001

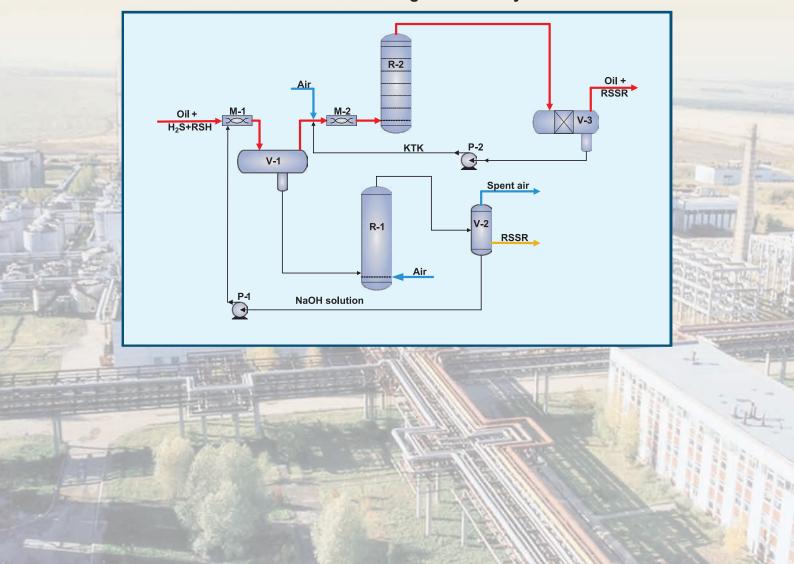


To treat heavy oils for hydrogen sulfide we propose DMC-1MA process using an aqueous-ammonia solution of IVKAZ catalyst to oxidize hydrogen sulfide to elemental sulfur. The advantage of the process is low operational costs. The DMC-1MA process was commissioned on the oil and gas producing plant of "Nurlatneft" in 2005.

THE DMC-1 PROCESS
Commissioned at «Tengizchevroil» in 1995



THE DMC-3 PROCESS
Commissioned at Orenburg Gas Refinery in 2000



PROCESSES OF OIL PRODUCT AND WASTE WATER TREATMENT FOR SULFUR COMPOUNDS (DMD, SEROX)

SPHERE OF APPLICATION

- Demercaptanization of gasoline, kerosene and diesel fuel DMD-1, DMD-3 processes
- Treatment of light hydrocarbon feed stock (C₂-C₆ fraction) for H₂S + RSH + COS + CS₂ DMD-2 processes
- Treatment of gasolines and gas condensates with production of an odorant (a mixture of C₁-C₄ mercaptans) DMD-2 «Odorant» process
- Treatment of pentane-hexane fraction for mercaptans and dimethyl sulfide DMD-4 process
- Treatment of waste waters for toxic sulfur compounds (NaSH + Na₂S + RSNa + Na₂SO₃) SEROX process

CHEMISTRY OF THE PROCESSES:

$$2RSH + 0.5 O_{2} \xrightarrow{Kt} RSSR + H_{2}O$$

$$RSH + NaOH \longrightarrow RSNa + H_{2}O$$

$$2RSNa + 0.5O_{2} + H_{2}O \xrightarrow{Kt} RSSR + 2NaOH$$

$$CS_{2} + 6NaOH \longrightarrow 2Na_{2}S + Na_{2}CO_{3} + 3H_{2}O$$

$$COS + 4NaOH \longrightarrow Na_{2}S + Na_{2}CO_{3} + 2H_{2}O$$

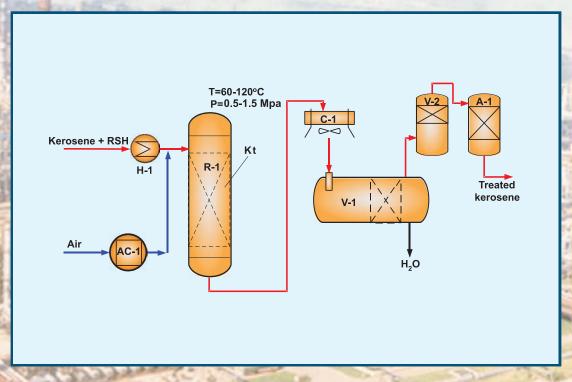
$$3Na_{2}S + 4O_{2} + H_{2}O \xrightarrow{Kt} Na_{2}S_{2}O_{3} + Na_{2}SO_{4} + 2NaOH$$

$$2NaHS + 2O_{2} \xrightarrow{Kt} Na_{2}S_{2}O_{3} + H_{2}O$$

$$2Na_{2}SO_{3} + O_{2} \xrightarrow{Kt} 2Na_{2}SO_{4}$$

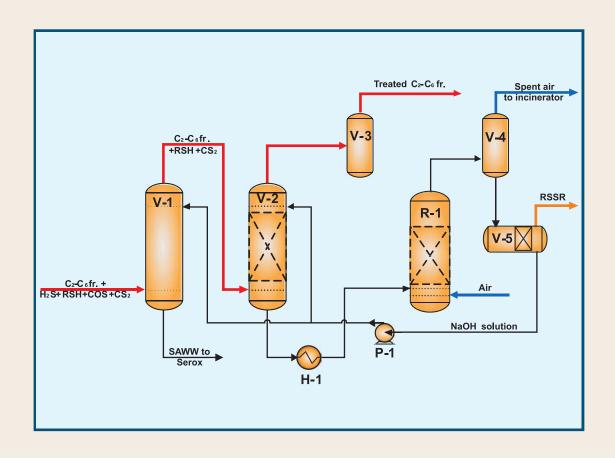
$$SEROX$$

THE DMD-1 PROCESS Commissioned at Kuibyshev Oil Refinery in 2000



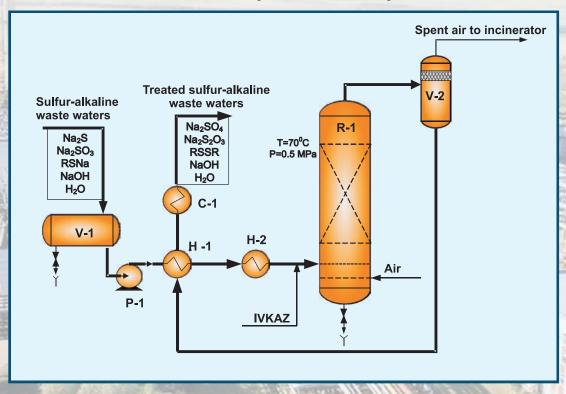
THE DMD-2 PROCESS

Commissioned at Perm Gas Refinery in 2000

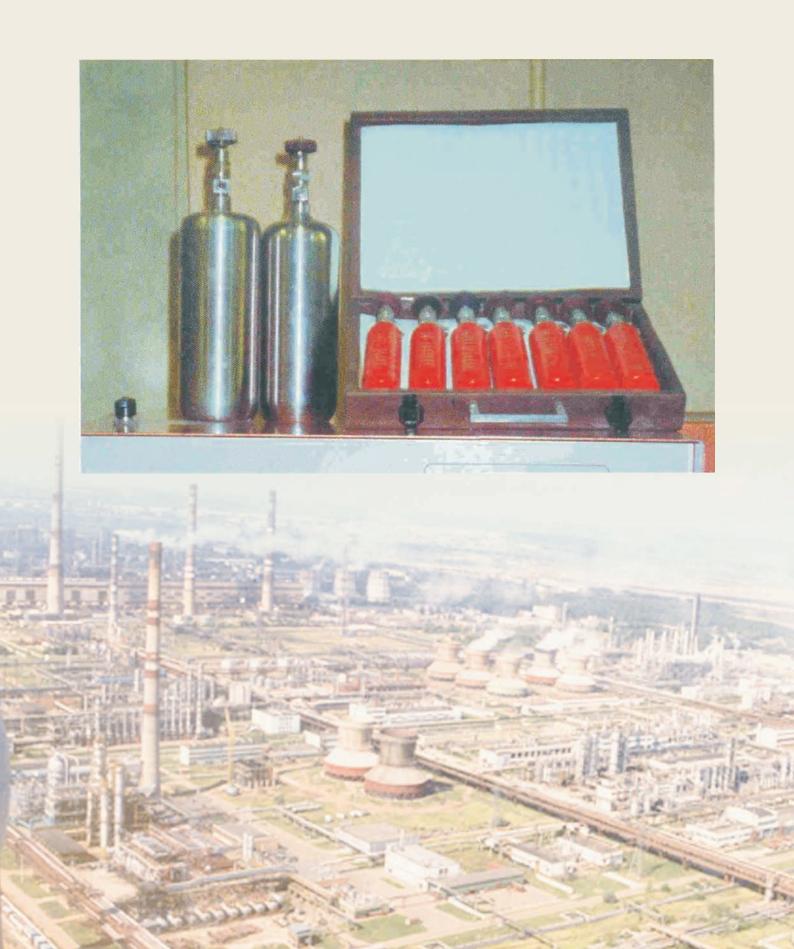


THE SEROX PROCESS

Commissioned at Ryazan Oil Refinery in 1991



STANDARD SAMPLES of light hydrocarbons and gas mixtures



STANDARD SAMPLES -

are a basis of accuracy and authenticity of analytic measurements

J.S. «VNIIUS» produces certified pure hydrocarbons and certified gas mixtures, including multicomponent mixtures, of wide concentration range.

1. CERTIFIED PURE HYDROCARBONS

Methane, ethane, propane, iso-butane, n-butane, ethylene, propylene, iso-butylene, α -butylene, β -butylene, allene, methyl acetylene.

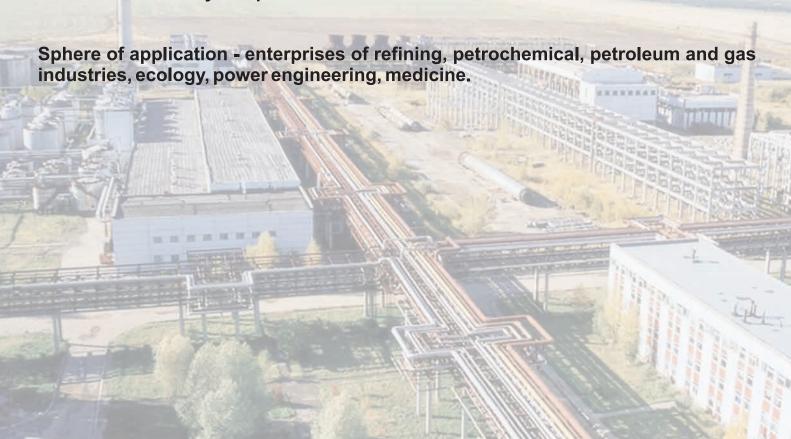
2. CERTIFIED GAS MIXTURES

Certified binar and multicomponent mixtures of hydrocarbons, organic sulfur and non-organic compounds in nitrogen, helium, argon, air and other gases are produced.

A volume fraction range of the components in a mixture is 0.0005-99 %. The mixtures are supplied in 1, 2, 4, 5, 10, 40-liter cylinders (of VNIIUS or Customer).

Orders are fulfilled during 2-5 weeks depending on complexity.

Certified pure hydrocarbons and gas mixtures are designed for analyzer graduating and checking, for product quality control and for metrological certification of analytical procedures.



OUR MAJOR IMPLEMENTATIONS

DESULFURIZATION OF HYDROCARBON FEED AND WASTE WATERS

1. <u>DMC-1 process</u> (Tengiz crude demercaptanization plant)

Kazakhstan, JV «Tengizchevroil»

In operation since 1995 (1 line), 1996 (2 line)

Capacity-2 x 4 MMt/ yr (2 x 80 000 bbl/day),

after reconstruction in 1999 capacity 2 x 6 MMt/yr (2 x 120 000 bbl/day)

Catalyst - IVKAZ

Mercaptan sulfur content (methyl - and ethyl mercaptans):

- before treatment 0.026-0.03% mass (260+300 ppm)
- after treatment < 0.002 % mass (20 ppm)

The design is developed by «Bechtel Co.», England

The plant is equipped and mounted by «Brown and Root Co.»

2. DMD-2 process (n-Pentane demercaptanization plant)

Russia, Novokuibyshevsk PCC

In operation since 1974

Capacity -120 000 t/yr (3 800 bbl/day)

3. <u>DMD-2 process</u> (demercaptanization plant for C₂-C₆ fraction)

Russia, J.S. «Salavatnefteorgsintez»

In operation since 1975

Capacity - 400 000 t/yr (12 700 bbl/day)

4. <u>DMD-2 process</u> (demercaptanization plant for C₂-C₆ fraction)

Russia, J.S. «Salavatnefteorgsintez»

In operation since 1976

Capacity - 600 000 t/yr (19 000 bbl/day)

5. DMD-2 process (demercaptanization plant for butane - butylene fraction)

Russia, Samara Oil Refinery

In operation since 1977

Capacity - 130 000 t/yr (4 000 bbl/day)

6. DMD-2 ODORANT process

(gas condensate demercaptanization and odorant production)

Russia, J.S. «Orenburg Gazprom»

In operation since 1983

Capacity:

- for condensate 600 000 t/yr (12 000 bbl/day)
- for odorant production 3 000 t/yr

7. DMD-2 process

(demercaptanization of butane-butylene and pentane-amylene fractions)

Russia, Ryazan Oil Refinery

In operation since 1985

Capacity - 125 000 t/yr (4 000 bbl/day)

8. DMD-2 process (demercaptanization plant for butane-butylene fraction)

Lithuania, Mazheikai oil refinery

In operation since 1990

Capacity - 220 000 t/yr (7 000 bbl/day)

9. Serox-W process (plant for sulfur-alkaline waste water treatment)

Lithuania, Mazheikai oil refinery In operation since 1990 Capacity - 25 m³/hr

10. Serox-W process (plant for sulfur-alkaline waste water treatment)

Russia, Moscow Oil Refinery In operation since 1990 Capacity - 30 m³/hr

11. <u>DMD-2 process</u> (demercaptanization plant for butane-butylene fraction)

Russia, Ufa Oil Refinery In operation since 1991 Capacity - 220 000 t/yr (7 000 bbl/day)

12. Serox-W process (plant for sulfur-alkaline waste water treatment)

Russia, Ryazan Oil Refinery In operation since 1991 Capacity - 20 m³/hr

13. Serox-W process (plant for sulfur-alkaline waste water treatment)

Kazakhstan, Pavlodar Oil Refinery In operation since 1991 Capacity - 25 m³/hr

14. <u>DMD-2 process</u> (demercaptanization plant for butane-butylene fraction)

Russia, Moscow Oil Refinery In operation since 1992 Capacity - 220 000 t/yr (7 000 bbl/day)

15. <u>DMD-2 process</u> (demercaptanization plant for liquefied gases)

Russia, J.S. «Astrakhan Gasprom» In operation since 1992 Capacity - 400 000 t/yr (13 000 bbl/day)

16. Serox-W process (plant for sulfur-alkaline waste water treatment)

Russia, Omsk Oil Refinery In operation since 1992 Capacity - 20 m³/hr

17. Serox-W process (plant for sulfur-alkaline waste water treatment)

Bulgaria, Burgas oil refinery In operation since 1994 Capacity - 5 m³/hr

18. Complex for demercaptanization of light petroleum fractions

Russia, kuibyshev Oil Refinery In operation since 1996:

- **DMD-2** unit of C_3 - C_4 fraction treatment for 200 000 t/yr (6 400 bbl/day)
- DMD-2 unit of C₅ fraction treatment for 110 000 t/yr (3 400 bbl/day)
- **DMD-3** unit of C₆₄ fraction treatment for 310 000 t/yr (9 000 bbl/day)
- Serox-W unit of sulfur-alkaline waste water treatment for 6 m³/hr

19. DMD-4 process (plant for iso-pentane fraction treatment for dimethyl sulfide)

Russia, Sterlitamak, J.S. «Cauchuk» In operation since 1996 Capacity - 25 000 t/yr (800 bbl/day)

20. Serox-W process (plant for sulfur-alkaline waste water treatment)

Russia, Yaroslavl Oil Refinery In operation since 1999 Capacity - 20 m³/hr

21. DMC-3 process (plant for gas condensate demercaptanization)

Russia, Orenburg, J.S. «YUPK» In operation since 2000 Capacity - 2 MM t/yr (40 000 bbl/day)

22. DMD-1 process (plant for kerosene demercaptanization)

Russia, Samara Oil Refinery In operation since 2000 Capacity - 310 000 t/ yr (6 500 bbl/day)

23. <u>DMD-2 process</u> (plant for C₂-C₆ fraction demercaptanization)

Russia, Perm Oil Refinery In operation since 2000 Capacity - 300 000 t/yr (9 500 bbl/day)

24. <u>DMD-4 process</u> (plant for iso-pentane fraction treatment for dimethyl sulfide)

Russia, J.S. «Novokuibyshevskaya khimicheskaya kompaniya» In operation since 2000 Capacity - 40 000 t/yr (1 300 bbl/day)

25. DMC-1M process (plant for crude oil demercaptanization)

Kazakhstan, CNPC «Aktobemunaigaz» In operation since 2001 Capacity - 2.5 MM t/yr (50 000 bbl/day)

26. <u>DMD-2 process</u> (plant for NGL demercaptanization)

Russia, J.S. «Novokuibyshevsk petrochemical company» In operation since 2002 Capacity - 150 000 t/yr (4 700 bbl/day)

27. DMC-3 process (plant for gas condensate demercaptanization)

Lithuania, J.S. «Mazheiku Nafta» In operation since 2002 Capacity - 700 000 t/yr (14 000 bbl/day)

28. <u>DMD-1 process</u> (plant for kerosene demercaptanization)

Russia, Ukhta Oil Refinery In operation since 2002 Capacity - 50 000 t/yr (1 000 bbl/day)

29. DMC-1M process (plant for crude oil demercaptanization)

Kazakhstan, J.S. «Kazakhoil Aktobe» In operation since 2002 Capacity - 2.5 MM t/yr (50 000 bbl/day)

30. DMC-2 process (plant for condensate demercaptanization)

Latvia, J.S. «Stena» (crude oil tank farm) In operation since 2003 Capacity - 150 m³/hr (22 500 bbl/day)

31. <u>DMD-2 process</u> (demercaptanization plant for butane-butylene fraction)

Russia, Omsk Oil Refinery In operation since 2003 Capacity - 150 000 t/yr (4 700 bbl/day)

32. <u>DMD-2 process</u> (demercaptanization plant for propane-butane fraction)

Russia, Orenburg Gas Refinery In operation since 2003 Capacity - 550 000 t/yr (17 500 bbl/day)

33. DMC-2 process (plant for condensate demercaptanization)

Russia, Taganrog, J.S. «Neklinovsknefteproduct» (crude oil tank farm) In operation since 2004 Capacity - 150 m³/hr (22 500 bbl/day)

34. DMC-3 process (plant for crude oil demercaptanization)

Kazakhstan, J.S. «Kazakhoil Aktobe» In operation since 2004 Capacity - 3 300 t/day (24 000 bbl/day)

35. DMD-3 + DMD-2 processes

(pilot plant for gasoline and LPG demercaptanization)

Iran, Tehran, Iranian Research Institute of Petroleum Industry «RIPI» In operation since 2002 Capacity - 100 liters/hr (15 bbl/day)

36. <u>DMC-1MA process</u> (plant for heavy oil treatment for H₂S + RSH)

Tatarstan, JSC «Tatneft», NGDU «Nurlatneft» Commissioning in 2005 Capacity - 4 900 t/day (24 000 bbl/day)

37. Serox-W process (plant for sulfat-alkaline waste water treatment)

Belorus, Novopolotsk, J.S. «NAFTAN» In operation since 2005 Capacity - 0.25 m³/hr

38. DMC-1 process (oil demercaptanization plant)

Kazakhstan, Aktobe, J.S. «KDO» In operation since 2006 Capacity - 60 m³/hr (9 000 bbl/day)

39. <u>DMD-2 process</u> (demercaptanization plant for IBP-70 °C fraction of catalytic cracking)

Russia, Nizhnekamsk, Gasoline Plant. of J.S. «TAIF-NK» In operation since 2007 Capacity - 300 000 t/yr (9 000 bbl/day)

40. <u>DMD-2 process</u> (demercaptanization plant for butanes)

Bulgary, Burgas, «Lukoil Neftochim Burgas AD» In operation since 2007 Capacity - 100 000 t/yr (3 000 bbl/day)

41. Demercaptanization complex for naphtha and liquefied gases

Iran, Kharg island, KHARG Petrochemical Co.

- DMD-2 unit of propane treatment for 165 000 t/yr (6 300 bbl/day)
- DMD-2 unit of butane treatment for 165 000 t/yr (5 500 bbl/day)
- DMD-3 unit of naphtha treatment for 140 000 t/yr (4 000 bbl/day)
- Serox-W unit of sulfur-alkaline waste water treatment for 2 000 t/yr

In operation since 2009

42. <u>DMC-3 process</u> (Oil demercaptanization plant)

Kazakhstan, Uralsk, Chinarev NGKM, TOO "Zhaikmunai".

In operation since 2008.

Capacity - 400 000 t/yr (8 000 bbl/day)

43. DMC-1 (Oil demercaptanization plant)

Kazakhstan, Aktyubinsk region, "Kaspiy neft" company.

In operation since 2010.

Capacity - 1 500 t/day (11 000 bbl/day)

44. DMC-3 process (Gas condensate demercaptanization plant)

Iran, Assaluye, Pars Oil and Gas Company (POGC).

To be put into operation in 2016.

Capacity - 3 trains each of 4 MM t/yr (3x80 000 bb/day).

The design was developed by RIPI and PetroSina Aria" companies

45. DMD-2 ODORANT process

Iran, Assaluye, National Iranian Gas Company (NIGC).

To be put into operation in 2015.

Capacity:

- Gas condensate 600 000 t/yr (15 000 bbl/day)
- Odorant 800 t/yr.

The design was developed by "Iranian Engineering & Development Group", Teheran

46. Plant for propane-butane fraction treating for aerosol packings

Russia, TR, Almetyevsk, J.S. "Tatneft"

In operation since 2000

Capacity - 10 000 t/yr

The design was developed by PKO of "TNGP"

47. Plant for associated oil gas treating for hydrogen sulfide on Minnibaev USO

Russia, TR, Almetyevsk, J.S. "Tatneft"

In operation since 2004

Capacity - 100 MM nm³/yr

Hydrogen sulfide content:

before treatment - 6% mole

after treatment - <20 ppm

The design was developed by J.S. "Neftehimproekt", Kazan

48. Plant for flare gas treating

Russia, J.S. "Salavatnefteorgsintez" In operation since 2005

49. Plant for ethanolamine treatment of refluxes for hydrogen sulfide

Belarus, J.S. "NAFTAN" In operation since 2006

50. Plant for ethanolamine treatment of BBF for hydrogen sulfide

Russia, Nizhnekamsk, J.S. "TAIF-NK" In operation since 2006

51. <u>Plant for ethanolamine</u> treatment of gases for hydrogen sulfide of SMSGP oil field complex

Sirya
In operation since 2009
Capacity - 500 MM m³/yr of natural gas
Hydrogen sulfide content:
before treatment - 0.25% mole
after treatment - <0.0005% mole.

52. <u>Plant for ethanolamine</u> treatment of refinery gases and refluxes for hydrogen sulfide

Belarus, J.S. "NAFTAN" In operation since 2010 Capacity:

for gases

of both units - 280 MM m³/yr

for refluxes

of straight-run and hydrocracking - 328 000 t/yr of plant of delayed cocking - 62 800 t/yr

The design was developed by UNIS a.s. (AO) IOOO "UNIS nefteproekt"

53. <u>Plant of oil</u> treatment for hydrogen sulfide by purging with hydrocarbon gas equipped with a unit for ethanolamine treatment of purging gas

Russia, RT, UPVSN-2 NGDU "Nurlatneft", UKPN "Sheshma" The plant is planned to be put into operation in 2015. Capacity:

- Sales oil 2.1 MMt/yr
- Treated gas 10.6 MM nm³/yr

The design was developed by "Standartnefteproekt Ltd.", Kazan

54. Serox-W process (Plant for Sulfur-Alkaline Waste Water Treatment)

Russia, Ryazan oil refinery, Ryazan. In operation since 2014 Capacity 90 m³/hr

55. Desulfurization plant of liquefied petroleum gases (LPG)

Belarus, RUP PO «Belarusneft», Belarus gas refinery In operation since 2014.

Unit for adsorptive propane treatment

Capacity - 346 000 t/yr.

Unit for adsorptive butane treatment

Capacity - 205 400 t/yr.

Unit for adsorptive treatment of dry stripped gas

Capacity - 3 460 kg/hr.



OIL PREPARATION AND PROCESSING, GAS FRACTIONATION

1. Technology of light hydrocarbon removal from oil without using compressors

At high-capacity AVT plants and LK-6u complexes in Ufa, Moscow, Kirishi, Nizhnekamsk,Omsk, Kstovo, Achinsk, Novokuibyshevsk, as well as on enterprises of Belarus, Ukraine, Kazakhstan, Lithuania - more than 20 plants in all. In operation since 1971

2. Modification of GO-4 plant

Russia, Salavat In operation since 1980

3. Plants for complex oil preparation (UKPN) of J.S."Tatneft"

Period of modification 1982-2005 Capacity - 1 800 000 - 3 300 000 t/yr

4. Modification of gas fractionation sections in LK-6U, G-43-107, KT-1 complexes

Refineries in Moscow, Pavlodar, Ufa, Mazheikai, Mozyr In operation since 2000

5. Modification of sections S-100 (AT) of Elkhov NPU of J.S. "Tatneft"

Russia, TR, Almetyevsk, J.S."tatneft" In operation since 2001 Capacity - 500 000 t/yr The design was developed by J.S."Neftehimproekt", Kazan

6. Plant for oil preparation (UPN) of "Irkutsk oil company Ltd"

Russia, Irkutsk region, Yaraktinsk oil field. In operation since 2004 Capacity -800 000 t/yr of sales oil The design was developed by J.S."Neftehimproekt", Kazan

7. Plant for oil preparation (UPN) of J.S."Bogorodskneft"

Russia, Saratov In operation since 2006 Capacity - 400 000 t/yr of sales oil

The design was developed by J.S."Neftehimproekt", Kazan

8. Plant for oil preparation (UPN) of J.S."Udmurtneft"

Russia, Udmurtia Republic, Votkinsk In operation since 2008 Capacity -1 400 000 t/yr of sales oil

The design was developed by J.S. "Neftehimproekt", Kazan

9. Plant for oil preparation (UPN) of NGDU "Suleevneft"

Russia, TR, Almetyevsk, J.S. "Tatneft"

In operation since 2009

Capacity - 1 000 000 t/yr of sales oil

The design was developed by J.S."Neftehimproekt", Kazan

10. Section for benzene removal from stable catalysate of reforming for production of sales gasoline with benzene content of no more than 1% on Elkhov NPU of J.S."Tatneft"

Russia, TR, Almetyevsk In operation since 2012

Capacity - 47700 t/yr of catalysate

The design was developed by J.S. "Tehnoproekt KNHP", Novokuibyshevsk

11. ELOU-AVT-2 plant (Technical re-equipment for oil capacity increase)

Russia, Tyumen, OJS "Antipinskiy NPZ" In operation since 2013. Capacity - 3.3 MM t/yr.

The design was developed by OJS "Neftekhimproekt", Kazan.

12. Modification of a plant for oil preparation of OJS "Udmurtneft"

Russia, Udmurtiya, OJS "Udmurtneft", Kiengop field. In operation since 2013. Capacity:

- Emulsion CDNG-1 6 787 000 m³/yr.
- Emulsion CDNG-2 1 737 000 m³/yr.

The design was developed by OJS "Neftekhimproekt", Kazan.

13. <u>Complex plant for primary oil processing</u>, bitumen production and a unit of afterburning furnaces for oxidation gases (scientific and technical re-equipment)

Russia, Surgut, OJS "Surgutneftegaz". In operation since 2013.



WE PROPOSE THE PROCESSES OF TREATMENT OF THE FOLLOWING ITEMS:

OILS AND GAS CONDENSATES FOR MERCAPTANS AND HYDROGEN SULFIDE - DMC

- Light oils and gas condensates (DMC-1)
- Heavy oils and gas condensates in oil fields (DMC-1M, DMC-1MA)
- Oils and gas condensates (DMC-2)
- Oils and gas condensates with high mercaptan content (DMC-3)
- Oils and gas condensates in oil fields using neutralizers (NSM)

LIQUEFIED GASES FOR HYDROGEN SULFIDE, MERCAPTANS AND CARBONYL SULFIDE - DMD

- IBP-62°C fraction and liquefied hydrocarbon C₂-C₆ gases (DMD-2)
- Gas condensates and gasolines with production of a mixture of natural mercaptans (DMD-2 «Odorant»)
- Pentane-hexane fraction for mercaptans and dimethyl sulfide (DMD-4)
- Gases for H₂S + CO₂
- Liquefied hydrocarbon C₂-C₄ gases according to EN-589 (adsorption)

FUELS (KEROSENE, GASOLINE) FOR MERCAPTANS AND HYDROGEN SULFIDE - DMD

- Kerosene and diesel fuel (DMD-1)
- Gasoline with decreased total sulfur content (DMD-3)

WASTE WATERS FOR SULFIDES, MERCAPTIDES, SULFITE over homogeneous IVKAZ-W catalyst (SEROX)

Russia, 420061, Kazan, N.Ershov str., 35-A, OJS «VNIIUS»

Tel.: + (843) 272-72-99 Fax: + (843) 272-40-93

General Director, academician of RAS & IAS, prof. A. Mazgarov

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