

Reference list of basic works performed by PETON Holding over the past 20 years to revamp the existing oil and gas processing and petrochemistry industrial facilities and commission new ones.



Oil & Gas Production	<p>* Abbreviations: M – Marketing study R&D– Research & Design JI – Justification of Investments) E – Engineering P – Procurement C – Construction EPSS – Engineering, Procurement, Site Services HSE – Health Safety & Environment *PETON licenced technologies</p>			
Oil Refining and Gas Treatment				
Petrochemical Applications				
Facility	Contract	Scope of work	Delivered equipment	Status
NZNP JSC				
Novoshakhtinsk, NZNP ENGINEERING LLC, Novy Shakhty Petroleum Product Plant				
Advanced oil feed and middle distillate refining facilities	E	Collect input data, carry out engineering surveys. Develop design, detailed design and cost estimate documentation, pass the state expert review (GGE) and state environmental expert review (GEE) for the facility including: <ul style="list-style-type: none"> • Kerosene and diesel fuel hydro treating unit with the capacity of 2,160 ktpa; • Combined hydrocracking unit with the capacity of 2,571 ktpa with hydrogen production section with the capacity of 70 ktpa; • Delayed coking unit with the capacity of 1,860 ktpa; • Sulphur Unit with the capacity of 95 ktpa. • UI&O. 		In progress
Automobile gasoline production facilities	E	Collect input data, carry out engineering surveys. Develop design, detailed design and cost estimate documentation, pass the state expert review (GGE) and state environmental expert review (GEE) for the facility including: <ul style="list-style-type: none"> • hydrotreatment unit for gasoline cuts with rated output of 893 ktpa; • gasoline isomerization unit with rated output of 461 ktpa; • UI&O. 		In progress
	C	Complete the facility construction and commissioning work package.		In progress
VDU-CDU-2,5 Unit. Liquefied petroleum gas production unit	C	Complete the facility construction and commissioning work package.		In progress
Construction site and temporary buildings and structures for preparatory stage	C	Complete construction and installation for land use engineering to prepare construction site, and deploy temporary buildings and structures for preparatory stage.		In progress

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Petrochemical Applications				
Utilities, Infrastructure & Offsites Construction as part of: • production boiler house • cooling water supply unit • nitrogen and air station.	EPC	EPC contract project execution: - Development of design and cost estimate documents; - Equipment and material supplies; - Construction and pre-commissioning work package; - Commissioning.	EPC Contract	In progress
RUSGAZDOBYCHA JSC				
Kingisepp District, Leningrad Region, Ust-Luga, ECGPF				
Ethane-containing gas processing facilities	M	Manage taking a comprehensive independent marketing study for the Ethane-containing gas processing facilities. Develop an initial marketing strategy concept for the Ethane-containing gas processing facilities.		This project was implemented in 2019.
	JI	Pre-investment study "Feasibility of investment in construction of gas processing facilities based on the hydrocarbon reserves and resources of Gazprom PJSC across the Nadym-Pur-Taz area and Yamal Peninsula".		This project was implemented in 2018.
	JI	Pre-investment study "Feasibility of investment in construction of gas and chemical processing facilities, including an ethane-containing gas processing facilities".		This project was implemented in 2019.
	E	Development of a Pre-FEED for "Ethane-containing gas processing facilities. Gas processing plant".		This project was implemented in 2019.
	E	Development of a Pre-FEED for "Ethane-containing gas processing facilities. Gas and chemical plant".		This project was implemented in 2019.
	E	Development of a Pre-FEED for "Ethane-containing gas processing facilities. Gas and chemical processing facilities".		This project was implemented in 2019.
E	Development of a Pre-FEED for "Ethane-containing gas processing facilities. Utilities, Infrastructure & Offsites Construction".		This project was implemented in 2019.	
RUSKHMALYANS LLC				
Kingisepp District, Leningrad Region, Ust-Luga, ECGPF				
Ethane-containing gas processing facilities	JI	Feasibility of investment in the construction project "Ethane-containing gas processing facilities".		This project was implemented in 2018.

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Petrochemical Applications			
GAZPROM PJCS			
Regulatory framework for GAZPROM PJSC	R&D	Research engineering: Drafting standards for maintenance and repairs of process equipment in gas processing facilities, gas condensate treatment facilities, and oil refining facilities of Gazprom PJSC.	In progress
Gas and liquid hydrocarbons processing facilities of GAZPROM PJCS	JI	Pre-investment study "Prospective strategic development planning for Gazprom Neftekhim Salavat". Planning of the development strategy for the oil refining and petrochemical facilities.	In progress
	JI	Feasibility of investments for the revamp project of Novy Urengoy Gas and Chemical Facilities.	This project was implemented in 2019.
	JI	Feasibility of investments for construction of LNG plant in proximity to the Black Sea shoreline (Krasnodar Krai).	This project was implemented in 2018.
	JI	Pre-investment study "Feasibility of investment in construction of gas processing facilities based on the hydrocarbon reserves and resources of Gazprom PJSC across the Nadym-Pur-Taz area and Yamal Peninsula".	This project was implemented in 2018.
	R&D	Research engineering: "Analysis of the composition of separated gas, unstable gas condensate and reservoir gas".	This project was implemented in 2017.
	R&D	Research engineering: "Development of renovation and upgrading program for gas and liquid hydrocarbons processing facilities for the years of 2016–2020".	This project was implemented in 2016.
	R&D	Research engineering: "Drafting proposals for helium fine purification process using PSA heat-free method. Development of basic engineering solutions for engineering energy-saving heat exchangers".	This project was implemented in 2014.
	R&D	Research engineering: "Draft proposals for basic heat exchangers of gas liquefaction process".	This project was implemented in 2014.
Gas pre-treatment facilities at gas condensate fields of GAZPROM PJSC	R&D	R&D: "Research and designing of equipment for intensive degassing and initial separation of liquid-gas mixtures for gas pre-treatment facilities at gas condensate fields".	This project was implemented in 2018.
GAZPROM PJSC gas condensate fields	JI	Value engineering of prospective development of high-molecular raw materials at gas condensate fields and oil/gas condensate fields (using Orenburg oil/gas condensate field as a typical example).	This project was implemented in 2017.

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<i>Power of Siberia main gas pipeline</i>	<i>JI</i>	Value engineering of modular units construction for helium separating from fuel gas supplied to compressor stations of the main gas pipeline Power of Siberia.		This project was implemented in 2016.
	<i>HSE</i>	Draft the environmental monitoring project for Power of Siberia gas pipeline booster compression stations.		This project was implemented in 2020.
Leningrad Region, Vyborg, Gazprom Invest LLC, LNG facilities near compressor station Portovaya				
<i>LNG facilities near compressor station Portovaya</i>	<i>EPC</i>	EPC contract project execution: - Development of design and cost estimate documents; - Equipment and material supplies; - Construction and pre-commissioning work package; - Commissioning.	EPC Contract	In progress (Pre-commissioning underway)
YNAO, Novy Urengoy, Gazprom pererabotka LLC, Novy Urengoy condensate pre-transportation treatment plant				
<i>Booster compressor station</i>	<i>EPC</i>	EPC contract project execution: - Development of design and cost estimate documents; - Equipment and material supplies; - Construction and pre-commissioning work package; - Commissioning.	EPC Contract	This project was implemented in 2018.
<i>Condensate stabilization unit for Achimov formation deposits of Nadym-Pur-Taz region</i>	<i>EPC</i>	EPC contract project execution: - Development of design and cost estimate documents; - Equipment and material supplies; - Construction and pre-commissioning work package; - Commissioning.	EPC Contract	In progress (Pre-commissioning underway)

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Deethanization gas treatment unit	EPC	<p>EPC contract project execution:</p> <ul style="list-style-type: none"> - development of design and cost estimate documents; - equipment and material supplies; - construction and pre-commissioning work package; - commissioning. 	EPC Contract	This project was implemented in 2018.
Svobodny, Gazprom Dobycha Blagoveshchensk LLC, Amur Gas Processing Plant				
Process units for gas pre-treating and processing. UI&O and Equipment and Material Supply basic facilities. (nameplate gas capacity of up to 42 bln cubic mpa)	EPSS	<p>Development of AGPP production procedures and specifications for all manufactured marketable products (in cooperation with Gazprom VNIIGAZ).</p> <p>Development of the GPP gas processing project, NGL purification and fractionation on the basis of the PETON licensed technology. Development of project documentation for off-site facilities (including logistics of marketable products shipment and equipment and material supply facilities (including railway branch, station, loading/unloading rack, berth for reception of equipment with weight of up to 1000 t, roads, bridges, etc.)</p> <p>Development of FEED documentation on the basis of licensed technology PETON-LINDE for ethane, NGL and He-Product Plant</p> <p>Development of the regulatory documentation for the plant environmental concerns.</p>	EPSS Contract	In progress
Astrakhan, Gazprom invest Yug LLC, Gazprom Dobycha Astrakhan LLC field facilities				
Field facilities: 1. 35/6 kV substation @ PGPT-1, PGPT-2 2. Start-up facilities of 2015–2017.	E	Development of the detail design documentation for Reconstruction of 35/6 kV Substation at PGPT-1, PGPT-2 and Start-up Facilities in 2015–2017 under the project 'Reconstruction of Astrakhan Gazprom Dobycha LLC Field Facilities'.		This project was implemented in 2014.
Astrakhan, Gazprom Dobycha Astrakhan LLC, Astrakhan GPP				
Automated process control system	E	Development of detailed design documentation, engineering surveys and initial data collection for the project: "Reconstruction of the Automated Process Control System (APCS) of Astrakhan GPP (Phase II)".		This project was implemented in 2019.

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Petrochemical Applications				
Orenburg Region, Gazprom Dobycha Orenburg LLC				
<i>Gas condensate field facilities</i>	<i>E</i>	Development of design and detailed documentation for the facility 'Revamp of Deteriorated and Obsolescent Equipment of Gas Production directorate, Gazprom Dobycha Orenburg LLC'.		This project was implemented in 2016.
Orenburg, Gazprom Dobycha Orenburg LLC, Orenburg GPP				
<i>Phase 1 of Orenburg GPP (nameplate capacity of 15 billion Nm³/year)</i>	<i>E</i>	Development of basic technical solutions and design documentation for the project 'Revamp of Orenburg GPP Phase I.'		In progress
<i>Orenburg GPP</i>	<i>E</i>	Development of design documentation for "Revamp of deteriorated and obsolescent equipment of gas processing and helium plants of Gazprom Dobycha Orenburg LLC".		This project was implemented in 2018.
	<i>E</i>	Development of separate Karachaganak and Orenburg OGCF gas processing project at Orenburg GPP (for the needs of KazRosGaz LLP).		This project was implemented in 2015.
	<i>EP</i>	Development of the project (Basic design, design documentation and detailed design documentation) for revamp of amine gas treatment vessels of Phase 1 and Phase 2 units with the use of PETON contact devices in 24 vessels and on 12 half-lines of gas treatment and dehydration units, with the capacity of 2.5 billion m ³ /year each, with the objective to produce sales gas treated from CO ₂ with the maximum value of 3 ppm, for delivery to the helium refinery under the condition of increase in gas processing by KOGCF from 200 to 2 billion m ³ /year, resulting in excess of CO ₂ and H ₂ S contents in the feed gas by 9%.	Performed supply of the PETON internal contact devices.	This project was implemented in 2008.
Orenburg, Gazprom Dobycha Orenburg LLC Helium Plant				
<i>NGL separation plant No. 26 (nameplate capacity of 750 ktpa)</i>	<i>EP</i>	Development of a new technology to increase capacity and improve quality of marketable liquefied gases*. Columns revamp technical design.	Performed delivery of the PETON packing for depropanizer K-01, section 540 (D = 3800/3000), and debutanizer K-01, section 560 (D=3600/3000).	This project was implemented in 2005.
<i>Helium unit 6 (nameplate capacity of up to 3 bln m³/year)</i>	<i>EP</i>	Development of design and detailed documentation for replacement of internal contact devices.	Performed supply of the PETON packing for the new demethanizer K-4/2 (D = 1400/1800 mm).	This project was implemented in 2002.
Tatarstan, Gazprom Invest YUG LLC				

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Petrochemical Applications				
<i>Arbuzovsk Underground gas storage</i>	<i>E</i>	Development of detailed and cost-estimate documentation.		This project was implemented in 2016.
Salavat, Gazprom Neftekhim Salavat JSC, Monomer Plant				
<i>Fractioning unit of propane-propylene cut (nameplate capacity of 85 ktpa)</i>	<i>E</i>	Development of design documentation and obtaining state expert board approval in FAE Glavgosexpertiza of Russia. Detailed design documentation development.		This project was implemented in 2016.
<i>Units CDU-VDU-4</i>	<i>EP</i>	Development of the detailed engineering documentation to replace the K-310 vacuum distillation column internal contact devices.	Performed supply of PETON cross-flow packing for K-310 vacuum distillation column.	This project was implemented in 2016.
<i>Carbon oxide and hydrogen mixture recovery unit</i>	<i>EP</i>	Revamp of the potassium carbonate purification of synthesis gas to increase performance of the column from 50 to 78 thousand Nm ³ /h through the use of the PETON cross-flow packing.	Performed supply of the PETON cross-flow packing for K-100 column (D = 3200 mm).	This project was implemented in 2015.
<i>Vacuum gasoil hydrotreatment and light hydrocracking unit L-16-1 (nameplate capacity of 1.5 MTPA)</i>	<i>EP</i>	Development of the technology and revamp of the MDEA-absorption unit for gas treatment with a high proportion of hydrogen sulphide through the use of the PETON* cross-flow packing.	Performed delivery of the PETON cross-flow packing for K-6 absorber (D = 1200 mm), K-3,4 absorber (D = 1800 mm) and K-7 amine strip column (D = 3000 mm).	This project was implemented in 2010.
<i>Gas condensate hydrotreatment unit GO-4 (nameplate capacity of 1.8 MTPA)</i>	<i>EP</i>	Development of technology of MEA-absorption transfer into MDEA-absorption and revamp of the gas treatment unit through the use of the PETON* cross-flow packing* .	Performed supply of the PETON cross-flow packing for K-8 absorber (D = 1800 mm) and K-9 absorber (D = 1200 mm).	This project was implemented in 2010.
	<i>EP</i>	Revamp of the condensate stripper to reduce the content of benzene-creating components in reforming feed from 3 to 0.6% through the use of the PETON packing.	Performed delivery of the internal contact devices (PETON trays and packing) for stripper K-4 (D=3200 mm).	This project was implemented in 2008.
<i>Unit EP-300 (ethylene nameplate capacity of up to 300 KTPA)</i>	<i>EP</i>	Revamp of primary pyrolysis gas separation column through the use of cross-flow packing PETON* .	Performed supply of the PETON cross-flow packing for K-1 cracked gas primary separation column (D = 7000 mm).	This project was implemented in 2001.

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Petrochemical Applications				
Sakhalin Region, Yuzhno-Kirinsk Gas and Condensate Field				
<i>Central gas processing unit at the Yuzhno-Kirinsk GCF Development facility</i>	EP	Development and approval of technical designs for non-standardized process plant equipment of central gas processing unit as a part of the facility.	Performed supply of the non-standardized processing equipment for the central gas processing unit.	This project was implemented in 2016.
Lena Area of Yakutiya, Tchayandinskoye Oil and Gas Condensate Field				
<i>Development of Tchayandinskoye Oil/Gas Condensate Field</i>	E	Development of the detail design documentation for the field solid waste landfill. Development of the detail design documentation for the field industrial environmental monitoring.		This project was implemented in 2016.
GAZPROM NEFT PJSC				
Gazpromneft-Moscow Refinery JSC, Moscow				
<i>Unit L-24-5</i>	EP	Development of detailed engineering documentation to replace the K-4, K-5 vacuum distillation column internal contact devices.	Performed supply of the PETON valve trays.	This project was implemented in 2017.
<i>Atmospheric – visbreaking unit</i>	EP	Development of the detailed engineering documentation to replace the K-3, K-3a vacuum distillation column internal contact devices.	Performed supply of the PETON valve trays.	This project was implemented in 2016.
<i>Unit G-43/107</i>	EP	Development of the detailed engineering documentation to replace the K-108, K-109, K-203, E-303 KOD vacuum distillation column internal contact devices.	Performed supply of: the PETON valve trays and packing for column K-108, PETON valve trays for columns K-109, K-203. Performed supply of the PETON demister of the gas separator installed upstream E-303 compressor.	This project was implemented in 2016.
Noyabrsk, Gazpromneft-Noyabrskneftegaz PJSC				
<i>Booster pump station of Yaraynerskoye field</i>	EP	Development of detailed design documentation to replace GS-1 separator's internal contact devices.	Supply of PETON packing is underway.	In progress

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Petrochemical Applications				
<i>Booster compressor station of Yety-Purovskoye field</i>	<i>EP</i>	Development of detailed design documentation to replace the C-2 separator's internal contact devices.	Performed supply of the PETON packing.	This project was implemented in 2019.
Omsk, Gazpromneft-ONPZ JSC				
<i>Catalytic reforming unit L/35-11-600</i>	<i>EP</i>	Development of detailed design documentation to replace the 63K-7 column's internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2019.
<i>Lube oil dewaxing unit 39/1 No.2</i>	<i>EP</i>	Development of detailed engineering documentation to replace the K-8 vacuum distillation column's internal contact devices.	Performed supply of the PETON packing.	This project was implemented in 2018.
<i>Process Condensate Treatment Unit (nameplate capacity of 876 ktpa)</i>	<i>E</i>	Development of design and detailed design documentation.		This project was implemented in 2018.
<i>Unit L-24-7</i>	<i>EP</i>	Development of detailed design documentation to replace the K-1 and K-2 column's internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2017.
<i>Reconstruction of KT-1/1. Section 200/300</i>	<i>EP</i>	Development of detailed design documentation to replace the internal contact devices.	Performed supply of the PETON internal contact devices for column K-303/1.	This project was implemented in 2015.
<i>Unit L-24-9</i>	<i>E</i>	Development of design documentation and detailed design to retrofit the unit (for heat recovery).		This project was implemented in 2013.
<i>CDU-8 (nameplate capacity of 3.5 MTPA)</i>	<i>EP</i>	Development of the technology to increase light cut extraction*. Development of the design and detailed design documentation to revamp the unit.	Performed supply of the PETON internal contact devices for the columns K-2, K-3, stripping columns K-3v, K-3c and K-3n.	This project was implemented in 2012.

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Petrochemical Applications				
CDU-7 (nameplate capacity of 3.5 MTPA)	EP	Development of the technology to improve light cut extraction*. Development of the design and detailed design documentation to replace the column internal contact devices.	Performed supply of the PETON valve trays and packing for the atmospheric column K-2, stripping columns K-3v, K-3s and K-3n.	This project was implemented in 2011.
CDU-6 (nameplate capacity of 1.7 MTPA)	E	Development of the technology to improve light cut extraction*.		This project was implemented in 2011.
ANK BASHNEFT PJSC				
Ufa, Bashneft-Novoil subsidiary				
Unit Jeksa of gas treatment, MEA unit	E	Development of the detailed designs for erection of additional heat exchangers E-101, 102, 103 to increase unit energy efficiency.		This project was implemented in 2013.
	EP	Development of the technical design to replace the C-403 column internal contact devices to increase production capacity of the column.	Performed supply of the PETON internal contact devices.	This project was implemented in 2013.
	EP	Development of the C-402 column technical design.	Performed supply of the PETON internal contact devices for the absorber C-402.	This project was implemented in 2010.
Commercial production	E	Development of the tank replacement detailed design.		This project was implemented in 2012.
Atmospheric gas fractionation unit 1	EP	Development of the technology with the use of columns of deiso- and depentanization in the section connected with isomerization unit to increase capacity and octane number of isomerizate; as well as recalculation of technology for propane-butane-pentane fraction separation in the AGFU section to improve product quality and to reduce energy consumption. Development of design and detailed design documentation.	Performed supply of the PETON valve trays for depentanizer K-40, deisopentanizer K-41, deisobutanizer K-8.	This project was implemented in 2011.
Unit LCh-24-7 of MEA gas treatment unit	EP	Development of the detailed design documentation for the plant fuel network revamp. Development of the column technical designs.	Performed supply of the PETON internal contact devices for the absorber columns K-103 and K-104.	This project was implemented in 2011.
Sulfuric acid alkylation unit	EP	Development of the technical designs to replace the PETON packing type internal contact devices to coalesce water from hydrocarbon streams.	Performed supply of the PETON internal contact devices for coagulators V-105, V-109, V-113, V-115.	This project was implemented in 2011.

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Ufa, Bashneft-Ufaneftekhim subsidiary				
Crude distillation unit (CDU-3)	EP	Development of detailed design documentation to replace K-2 crude distillation unit's internal contact devices.	Performed supply of the PETON valve trays.	This project was implemented in 2018.
Vacuum gasoil hydrotreatment unit L-24-5	EP	Revamp of the columns to produce high quality products. Develop and deliver a trough distributor for K-5 column.	Performed supply of the PETON valve trays for hydrotreated vacuum gasoil stabilizers K-2 and K-3. Performed supply of a trough distributor for K-5 column.	This project was implemented in 2017.
Tar visbreaking and secondary residues unit	EP	Development of detailed design documentation to replace the K-6 absorber's internal contact devices.	Performed supply of PETON cross-flow packing.	This project was implemented in 2015.
Tar visbreaking and secondary residues unit	E	Development of technology to treat low-pressure gases for removal of hydrogen sulphide*. Development of design and detailed design documentation.		This project was implemented in 2014.
	E	Development of the technology to revamp the distillation visbreaking unit*. Development of the K-3 column technical design.		This project was implemented in 2011.
Gas catalytic production, Gas Fractionator	E	A new technology for operation of the section of butanes and pentanes separation at Gas Fractionator* was developed. Basic engineering and detail design for revamp of the plant unit, and technical designs of new shells for columns II-K-4 and II-K-5 using the PETON packing and trays.		This project was implemented in 2013.
	E	Re-estimation of the depropanization section technology and equipment. Development of technical designs for columns I-K-1 and II-K-1.		This project was implemented in 2012.
Gasoil hydrocracking unit (nameplate capacity of 1.35 MTPA)	E	Section 800 (cleaning of process condensate collected from several facilities of the unit). Development of the new technology to double capacity increase*. Design works for the unit revamp, including replacement of the contact devices, heat exchangers, boilers and use of the new ammonia incinerator. industrial safety expert review of the design documentation		This project was implemented in 2012.

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	E	Section 400 (rectification). Development of the revamp detail design to avoid diesel cut clouding. Development of the technical design for replacement of internal contact devices inside C-402 column.		This project was implemented in 2012.
Delayed coking unit (nameplate capacity of 1.2 MTPA)	EP	Section 200 (gas separation). Development of technical designs for non-standard equipment and columns K-201, K-205 internal contact devices. Development of equipment referencing projects.	Performed supply of the PETON trays and demisters for columns and separators.	This project was implemented in 2012.
	E	Re-estimation of the existing technology to eliminate the identified “bottlenecks” in the original draft project for processing of extra heavy feed and increase the plant capacity from 1.2 to 1.6 MTPA. Development of design and detailed design documentation. Performance of the design documentation industrial safety expert review.		This project was implemented in 2012.
	EP	Section 100 (coking). Development of technical designs for non-standard equipment and columns internal contact devices. Development of equipment referencing projects.	Performed supply of the PETON internal contact devices and non-standard equipment.	This project was implemented in 2012.
	E	Section 400. Re-estimation of the technology and equipment to enable operation of the existing equipment in the increased capacity conditions. Engineering of new coke pumping boxes, revamp of the underground tank.		This project was implemented in 2012.
	EP	Section 300 (treatment of fuel gas of the entire refinery). Development of technical designs for non-standard equipment of columns K-302, K-305 and K-307 internal contact devices. Development of equipment referencing projects.	Performed supply of the internal contact devices (PETON valve trays and demisters) and PETON filters.	This project was implemented in 2010.
Crude distillation units CDU-1, 2, 3 and 4 (total nameplate capacity of 9 MTPA)	EP	Development of a new technology of vacuum column decomposition gas treatment using PETON absorbers*. Development of the basic engineering and detailed design.	Performed supply of absorbers with the PETON internal contact devices.	This project was implemented in 2011.
	EP	Revamp of atmospheric column K-1.	Performed supply of the PETON valve trays.	This project was implemented in 2011.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
	EP	Development of the revamp technical design.	Performed supply of the new casing for K-4 gasoline stabilizer of CDU-4 unit with PETON internal contact devices.	This project was implemented in 2011.
Production of aromatic hydrocarbons (PAH) (nameplate capacity of 2 MTPA)	EP	Development of the new energy-saving technology*. Development of the basic engineering and detailed designs to revamp the existing facility and detail design of the new unit to increase capacity, extraction and product quality. Performance of the design documentation industrial safety expert review.	Performed delivery of the internal contact devices (PETON trays and packing) for the units of hydrotreatment, separation, reforming and isomerization of straight-run gasoline including: 10 DT-112 dehexanizer; 10 DT-121 rerun column; 10 DT-221 stripping column; K-601 depentanizer.	This project was implemented in 2011.
	EP	Development of technical and detail designs for Unit 35-5 furnace P-1. Construction design supervision (three-piece box type furnace with vertical radiant coil tubes, a top fume extraction and free vertical flame fuel combustion).	Performed supply of furnace P-1.	This project was implemented in 2010.
Ufa, Bashneft-UNPZ subsidiary				
Diesel fuel hydrotreatment unit LCh-24-7	EP	Development of the technical design to replace K-303, K-304, K-101 rectifiers' internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2011.
Cat-cracked gasoline hydrotreating unit	EP	Development of the technical design to replace the DA-105 catalytic distillation column's internal contact devices.	Performed supply of the PETON trays and distributors.	This project was implemented in 2011.
Ufa, Ufaorgsintez OJSC				
Production of phenol, acetone and alphas-methylstyrene	EP	Revamp of acetone production through the use of new columns K-80 and K-150. Development of revamp technical and detail designs. Performance of the design documentation industrial safety expert review.	Performed supply of the PETON trays and packing for the columns K-80 and K-150.	This project was implemented in 2012.
TATNEFT PJSC				
Almetyevsk, Minnibaev GPP OJSC				

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Oil Refining and Gas Treatment				
Petrochemical Applications				
Associated gas amine desulphurization unit. settlement of Bavlly (nameplate capacity of 60,000 Nm³/year)	EP	Development of a new gas amine treatment technology**.	Performed supply of the PETON packing for the absorber K-200/1 and amine strip column K-202/1.	This project was implemented in 2009.
TAIF JSC				
Kazan, Kazanorgsintez PJSC				
Phenol and acetone separation unit	EP	Development of the technology to separate azeotropes by optimizing operation of the existing columns K-21-1 and K-21-2 for azeotropic distillation of acetone-phenol to reduce phenol content in drains.*	Performed supply of the PETON internal contact devices for the columns K-21-1 and K-21-2.	This project was implemented in 2009.
Nizhnekamsk, Nizhnekamskneftekhim PJSC				
Isoprene monomer production plant, workshop No. 1808	EP	Replacement of Kt-20 internal devices to ensure stable column operation and acceptable quality of isoprene-isobutylene separation in a load range of 70 to 140 t/h after implementation of the isoprene plant production scale-up program.	Performed supply of the PETON valve trays.	This project was implemented in 2015.
Isoprene monomer production plant, workshop No. 1806	EP	Replacement of Kt-24 internal contact devices to ensure stable column operation and acceptable quality of isobutylene cut separation from isoprene-containing hydrocarbon cut in a range of feed loads from 30 to 90 t/h.	Performed supply of the PETON valve trays.	This project was implemented in 2015.
	EP	Replacement of internal contact devices in columns Kt-130, Kt-150.	Performed supply of the PETON valve trays.	This project was implemented in 2014.
	EP	Replacement of internal contact devices in columns K-418 (gas absorber), K-420 (absorbent section)	Performed supply of the PETON valve trays.	This project was implemented in 2014.
Gas separation unit of AHU-3 section, workshop No. 1813	EP	Inspection of the gas separation unit with identification of "bottlenecks". Development of basic engineering design data. Technical design for replacement of the internal contact devices.	Performed supply of PETON cross-flow packing.	This project was implemented in 2014.
Isobutylene azeotropic drying unit	EP	Revamp of column Kt-53, workshop No. 1306, and column Kt-140 of PO azeotrope degassing. Development of the technical design for replacement of the internal contact devices.	Performed supply of the PETON cross-flow packing for columns Kt-53 and Kt-140.	This project was implemented in 2012.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
LUKOIL PJSC				
Construction of a new GPP with capacity of 120 mln m³/year at Alibekmola and Kozhasai Fields (Kazakhstan)	JI	Feasibility study of investments for disposal of flare gas waste at the field of 2 MTPA.		This project was implemented in 2006.
Budennovsk, Stavrolen LLC				
Ethylene production unit EP-350	E	Development of a basic design for replacing aluminium plate exchangers with new tube-and-shell exchangers to meet the space limitation requirements and maintain the original high-capacity operation of the propylene column.		This project was implemented in 2013.
Kogalym, LUKOIL-Zapadnaya Sibir LLC, Kogalymneftegaz TPE				
Refinery revamp	EP	Development of detailed design documentation to replace the internal contact devices.	Performed supply of the PETON internal contact devices for the columns K-301, K-302, K401, K-403-1,2.	This project was implemented in 2013.
Kstovo, LUKOIL-Nizhegorodnefteorgsintez LLC				
Hydrogen sulphide cracked heavy oil stripper	E	Development of detailed design documentation for upgrading the fractionation workflow in the stripper for stripping cracked heavy oil from hydrogen sulphide in the tar visbreaking unit.		This project was implemented in 2013.
Penex isomerization unit	EP	Development of the technical designs for the internal contact devices of the Penex unit columns.	Performed supply of the internal contact devices for columns 9-VC1001, 9-VC2001, 9-VC5001, 9-VC5002.	This project was implemented in 2013.
CDU-6	E	Verification calculations of equipment were performed (for heat exchangers, columns, furnaces, etc.) with identification of "bottlenecks" in the technology to increase productivity up to 9 MTPA. Development of the procurement documentation.		This project was implemented in 2012.
Langepas, LUKOIL-Zapadnaya Sibir LLC, Langepasneftegaz TPE				
Associated petroleum gas processing management	EP	Development of detailed design documentation to replace the internal contact devices.	Performed supply of the PETON internal contact devices for the column K-302.	This project was implemented in 2016.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
Perm, LUKOIL-Permneftegazpererabotka LLC				
Sulphur removal unit (refinery gas and APG amine treatment of 0.8 bln nm³/year)	E	Development of the MDEA-absorption technology for ultra-deep APG and refinery gas purification when increasing a capacity from 0.8 to 2 bln Nm ³ /year using new columns and PETON* packings.		This project was implemented in 2014.
	EP	Development of the technical designs for replacement of the internal contact devices.	Performed delivery of the PETON internal contact devices for the absorbers A-1, A-2, and amine strip columns D-1, D-2.	This project was implemented in 2013.
	EP	Development of the technical designs for replacement of the internal contact devices.	Performed supply of the PETON internal contact devices for the separators C-1, C-2, CO-1, CO-2, CK-1, CK-2, E-2.	This project was implemented in 2013.
Low-temperature condensation and rectification unit (LTCR-2)	EP	Development of the technical designs for replacement of the column-type apparatus internal contact devices.	Performed supply of the PETON internal contact devices for the LTCR unit columns 202.2C-1, 202.2C-2, 202.2C-3 and Gas Fractionator columns 203.3C-1, 203.3C-2, 203.3C-3.	This project was implemented in 2012.
Perm, LUKOIL-Permnefteorgsintez LLC				
Solvent regeneration skid of dewaxing unit 39-30	EP	Development of the technical designs for replacement of the ketone column K-11 internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2013.
Unit hydrotreater 35-11-600	EP	Development of the technical design for replacement of the column K-1 internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2012.
Ukhta, LUKOIL-Ukhtaneftepererabotka LLC				
CDU (nameplate capacity of 1.5 MTPA)	EP	Revamp of the column to increase viscosity of bitumen raw materials* .	Performed delivery of the PETON trays, demisters and packing for the stripping section and 3rd cut distillation zone of the vacuum column (D = 6400 mm).	This project was implemented in 2010.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
	E	Development of the basic transfer design for the new vacuum column K-203 intended to process Yaregsk heavy crude in the amount of 1 MTPA and heavy fuel oil of Usinskaya light crude in the amount of 2 MTPA.		This project was implemented in 2013.
NK ROSNEFT PJSC				
Angarsk, Angarsk Petrochemical Company PJSC				
<i>Lube oil solvent extraction unit A-37/3M, Lube Refinery workshop No. 101</i>	EP	Development of detailed engineering documentation to replace the K-1 extraction column internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2016.
<i>Sulfuric acid alkylation unit</i>	EP	Development of the technical designs for fabrication of columns and internal contact devices.	Performed delivery of the columns K-101, 102, 103, 301, 302 with the PETON internal contact devices.	This project was implemented in 2013.
Ryazan, RNPJ JSC				
<i>Unit TK-1</i>	EP	Development of detailed design documentation to replace the K-3 extraction column internal contact devices.	Performed supply of the PETON internal contact devices.	This project was implemented in 2015.
Novokuybyshevsk, Novokuybyshevsk Refinery OJSC				
<i>Hydrocracking complex 1</i>	EP	Development of detailed design documentation to replace column equipment T-404.	Performed supply of the column T-404 with the PETON internal contact devices.	This project was implemented in 2014.
Syzran, Syzran Refinery JSC				
<i>Unit L-24-8s (nameplate capacity of 350 ktpa)</i>	EP	Development of the technical design to replace the internal contact devices in the absorber K-103 and final separator C-105 of HBG amine treatment to double the existing apparatus capacity.	Performed supply of the PETON packing and demister.	This project was implemented in 2011.
<i>CDU-VDU-5 (nameplate capacity of 3 MTPA)</i>	EP	Development of the new technology to revamp the rectification* process and technical revamp project of the K-6 vacuum column.	Performed delivery of the PETON cross-flow packing for the vacuum distillation column K-6 (D=8000 mm).	This project was implemented in 2010.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
<i>Unstable gasoline catalytic cracking separation unit (nameplate capacity of 700 ktpa)</i>	EP	Development of the new technology for gas absorption purification.	Performed supply of the PETON trays and packing for columns K-1 and K-2.	This project was implemented in 2010.
<i>Industrial fuel gas amine scrubber (nameplate capacity of 300,000 Nm³/year)</i>	EP	Development of the technology* and technical design for the new MDEA unit apparatus to absorb plant gases.	Performed supply of the PETON packing for absorber K-1.	This project was implemented in 2005.
ROSNANO PJSC				
Usolye-Sibirskoe, Irkutsk Region, LLC Gruppa NITOL, Usolyekhimprom				
<i>Chlorosilane synthesis and rectification unit of workshop No. 94 (nameplate capacity of 10 ktpa in terms of treated trichlorosilane)</i>	E	Development of the technical design to increase capacity from 15 to 1 ktpa for trichlorosilane and treatment of trichlorosilane from boron to 1 ppb: phosphorus to 2 ppb and carbon to 2 ppm.		This project was implemented in 2013.
<i>Rectification unit TRICSI-2 (nameplate capacity of 25 ktpa in terms of treated trichlorosilane)</i>	EP	Development of basic engineering for the TRICSI-2 rectification unit.	Performed supply of the PETON packing and trays for rectification columns VK-405, VK-415, VK-425, VK-485, VK-436, VK-151.	This project was implemented in 2013.
SIBUR PJSC				
Pyt-Yakh, Tyumen Region, Yuzhny Balyk GPP				
<i>Propane-butane mixture production unit, (nameplate capacity of 3 bln m3/year)</i>	EP	Development of the technical design to replace the internal contact devices of the demethanizer 300.3S-1 column.	Performed supply of the PETON packing.	This project was implemented in 2016.
Vyngapur field, Purovsky District, YNAO, Vyngapur GPP				
<i>Propane-butane mixture production unit, (nameplate capacity of 2 bln m3/year)</i>	EP	Development of the technical design to replace the internal contact devices of demethanizer K-1 column.	Performed supply of the PETON packing.	This project was implemented in 2011.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
Joined Chemical Company URALKHIM JSC				
Berezniki, Azot Branch				
<i>Process condensate treatment unit (nameplate capacity of up to 300 ktpa)</i>	<i>EP</i>	Development of the technical design to replace the internal contact devices of the distillation column C-904 of the ammonium nitrogen waste water treatment unit.	Performed supply of the PETON packing.	This project was implemented in 2011.
Uzbekistan				
UZBEKNEFTGAZ NHC				
Mubarek, Mubarek GPP				
<i>Sour and sweet gas selective amine desulfurization unit (nameplate capacity of up to 2.5 bln Nm³/year)</i>	<i>EP</i>	Revamp of the desulfurization unit to increase the nameplate capacity and reduce energy consumption.*	Performed supply of absorber K-1 (D = 3600 mm) with PETON packing.	This project was implemented in 2011.
settlement of Shurtan, Shurtan Gas Chemical Facilities				
<i>Propane and butane mixture production Unit-3-1,2,5 trains</i>	<i>EP</i>	Development of detailed design documentation to replace internal contact devices in methane-ethane mixture separation columns K-1 in each train.	Supply of PETON packing is underway.	In progress
<i>Unit ASO-2</i>	<i>EP</i>	Development of detailed design documentation to replace internal contact devices in 20K-1 absorber, 20K-2 regenerator.	Supply of PETON packing is underway.	In progress
<i>Low-temperature separation unit (nameplate capacity of 12 bln m³/year)</i>	<i>EP</i>	Revamp of the equipment to improve gasoline extraction from gas and extend the LTS operation range.	Performed supply of the PETON packing.	This project was implemented in 2009.
<i>Natural gas low-temperature separation units No. 3 and 4 (nameplate capacity of 3 bln m³/year)</i>	<i>EP</i>	Development of design and detailed engineering documentation for the internal contact devices for the new columns K-1, K-2 and K-3.	Performed supply of the PETON packing.	This project was implemented in 2009.
<i>Unit ASO-1 (nameplate capacity of 1.5 bln m³/year)</i>	<i>EP</i>	Development of the gas treatment technology* and detail design of the unit for "wet" gas purification from dust supplied from the zeolite drying unit of 20 bln m ³ /year using the PETON packing.	Performed supply of the PETON packing and modular automatic two-stage filtration package PETON (filtration fineness of 10 microns).	This project was implemented in 2009.

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Oil Refining and Gas Treatment				
Petrochemical Applications				
Unit ASO-1 (nameplate capacity of 1.5 bln m³/year)	EP	Development of the new amine treatment technology*. Performance of research engineering for the unit revamp to increase the unit capacity by 50% and reduce energy consumption.	Performed supply of the PETON packing for the absorber 10K-1, regenerator 10 K-2, separator 10 E-1.	This project was implemented in 2009.
Unit ASO-2 (nameplate capacity of 3 bln m³/year)	EP	Development of the new amine treatment technology*. Performance of research engineering for the unit revamp to increase the unit capacity by 50% and reduce energy consumption.	Performed supply of the PETON packing for absorber 20K-1, regenerator 20 K-2, separators 20 E-1, 20E-2.	This project was implemented in 2009.
Republic of Turkmenistan				
TURKMENGAS SC				
Serachs City, Davletobad-3 gas field				
Davletobad-3 field sulphurous gas processing GPP (nameplate capacity of up to 25 bln m³/year)	EP	Development of a new sweet gas amine treatment technology and detail technical revamp designs of 8 amine treatment units at the GPP*.	Performed delivery of the PETON packing for absorbers of K-1. (D = 3400 mm), amine strip column K-2 (D = 2800/1800 mm).	This project was implemented in 2006.
Gazadzhak, Achak and Gugurtly gas field				
Sour gas processing facilities of Achak and Gugurtli fields	EP	Revamp of three natural gas desulphurization units*. Develop design and detailed design documentation.	Performed supply of the PETON packing.	This project was implemented in 2004.
Republic of Kazakhstan				
KONDENSAT JSC				
Aksay, Karachaganak gas field				
CDU to treat Karachaganak GCF unstable gas condensate (nameplate capacity of 600 ktpa)	EP	Revamp of the non-treated gas condensate treatment unit*.	Performed supply of the PETON packing.	This project was implemented in 2008.
	E	Development of the feasibility study and basic engineering of the new flare gas disposal unit of 8 thousand t/h (25% H ₂ S) to obtain fuel gas, LPG and sulphur.		This project was implemented in 2008.