





КРАТКИЙ ОБЗОР ФЕРГАНСКОГО НПЗ

BRIEF INFORMATION ABOUT THE FERGANA OIL REFINERY

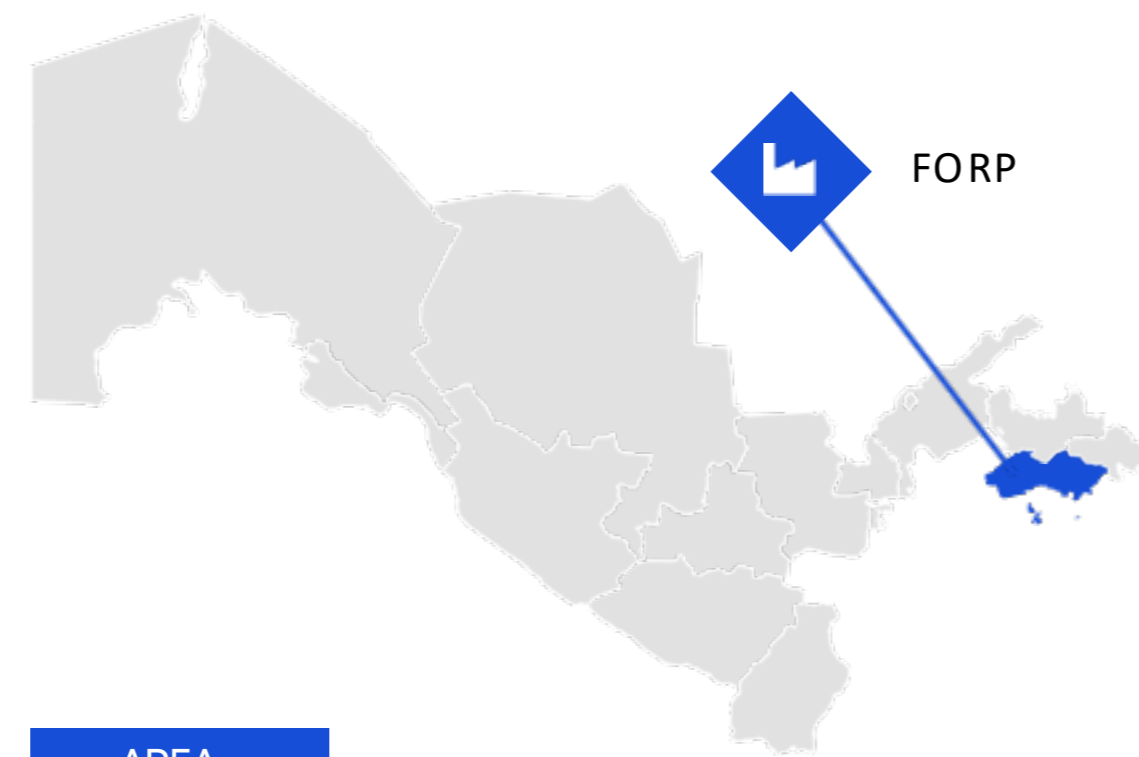
HISTORY OF THE PLANT

- Commissioned – **27.01.1959**. The FORP includes the Altyaryk fuel production facility and the oil depot in Angren.
- Main technological units – **35 units** built in **1960-1980**.
- Current production capacity – up to **3,0 mln tons/year**
- The last reconstruction of the plant (fuel unit) was carried out in **1997-1999**

 Number of staff – **3780** people

 PRODUCTS: Today, the Fergana Oil Refinery produces over **60 types** of petroleum products

PLANT INFRASTRUCTURE



AREA

- The area of the FORP site is **346 ha**
- The total area of the Altyaryk fuel production facility, Angren oil depot, Tashlak water intake, etc. is **127 ha**

POWER SUPPLY

- Power is supplied from the 110 kV Uzbekenergo power line and 6 kV cable lines from the GDU of the Fergana Thermal Power Plant. Total MSS capacity: **40 MW**, current annual electricity consumption is **21 MW/h**.

GAS SUPPLY

- Supplied from the South-Eastern gas distribution station and the new Kuchkorchi gas distribution station.
- The length of the gas pipelines to the plant's gas distribution station is **17.5 km** (D-150 mm) and **12.5 km** (D-350 mm), with a throughput capacity of **8,000 m3/hour** and **32,000 m3/hour**, respectively.

WATER SUPPLY

- Technical and domestic drinking water is supplied from artesian wells in the Fergana and Tashlak water intakes.
- The total design capacity of the water blocks is 31,000 m3/hour, technical water from artesian wells is **2,000 m3/hour**, and domestic and drinking water from artesian wells is **1,500 m3/hour**. The volume of firefighting water reserves is **18,250 m3**. The total water reserve is **48,946 m3**.



RAILROADS

- Inside the FORP, there is a railway branch line with loading racks.
- The nearest railway station, Akhunbabaeva, is located **3 km** from the FORP.

STEAM SUPPLY

- Steam is supplied at 40 atm and 13 atm from the Fergana Thermal Power Plant and the plant's own steam boiler.
- The total capacity of the steam pipes is **1,000 tons per hour**.

TREATMENT FACILITIES

- There are public sewerage networks. In 2019, new treatment facilities with a capacity of **1,826 m3/hour** were put into operation, consisting of three stages of wastewater treatment: mechanical, physical and chemical, and biological.

RECONSTRUCTION 1997-2000

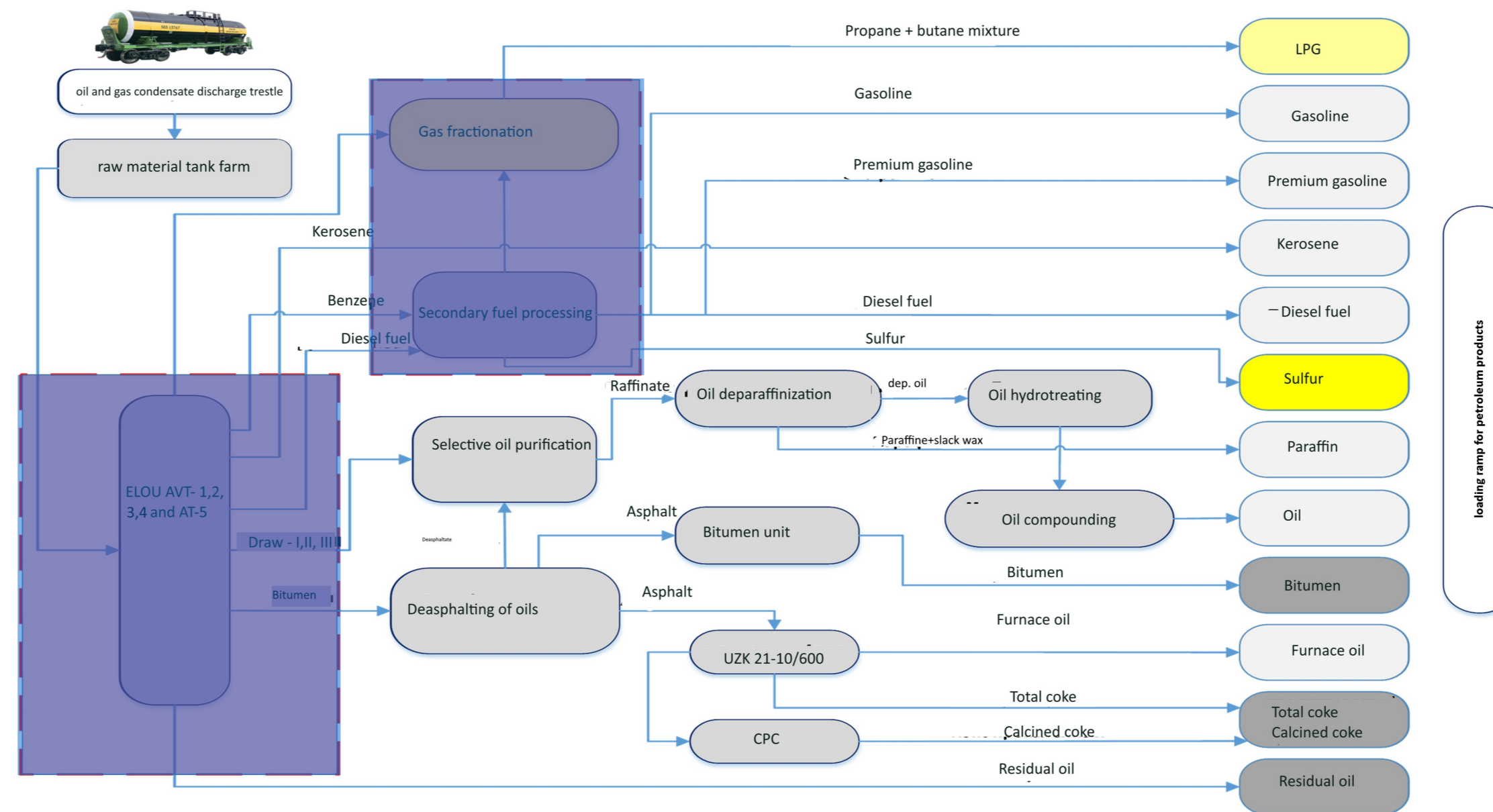
- The fuel unit of the plant was reconstructed in 1997–2000 by Resolution No. 397 of the Cabinet of Ministers of the Republic of Uzbekistan dated November 12, 1996, resulting in the commissioning of the following new facilities:
 - ◆ Hydrodesulfurization of diesel fuels (HDF) unit with a capacity of **1,700,000 tons per year**;
 - ◆ Nitrogen production unit (PSA) with a capacity of **1,350 nm3 per hour**;
 - ◆ Spot filling station (SFS);
 - ◆ Selective reconstruction of the L35/11-300 and LCh35/11-600 gasoline catalytic reforming units and the ELOU AVT-2,3 primary raw material processing units was also carried out.

INFORMATION ON THE FORP IN TERMS OF EXISTING FACILITIES

CURRENT SITUATION

- Over the past 10 years and to date, due to a shortage of hydrocarbon feedstock, the units have been operating at less than their design capacity:
- primary processing up to 30%
- processing of naphtha and gases up to 70%
- processing of middle distillates up to 25%

PRIMARY PROCESSING



HYDROCARBONS

The total design capacity of primary processing facilities is 4.450 million tons per year.

Units	Year of commissioning	Actual capacity, thousand tons per year			
		Designed capacity, thousand tons per year	Commissioning date, years	Level of wear	2024
ELOU-AVT-1	1959	600	65	35%	-
ELOU-AVT-2	1962	1000	62	28,3%	364,409
ELOU-AVT-3	1965	1000	59	22,2%	785,792
ELOU-AVT-4	1972	1000	52	17%	-
AT-5	1994	600	30	15%	31,624 (naphtha)
gas condensate treatment unit	1984	250	-	-	-

NAPHTHA AND GASES

Units	Year of commissioning	Actual capacity, thousand tons per year			
		Designed capacity, thousand tons per year	Commissioning date, years	Level of wear	2024
L 35-11/300	1965	300	59	30,2%	7,242
LCH 35-11/600	1978	600	46	13%	301,770
35/2	1964	24	60	17%	40,465
GFU	2006	150	18	1,8%	168,881
Ethanol unit	1968	3	56	18,4%	14,869

MIDDLE DISTILLATES

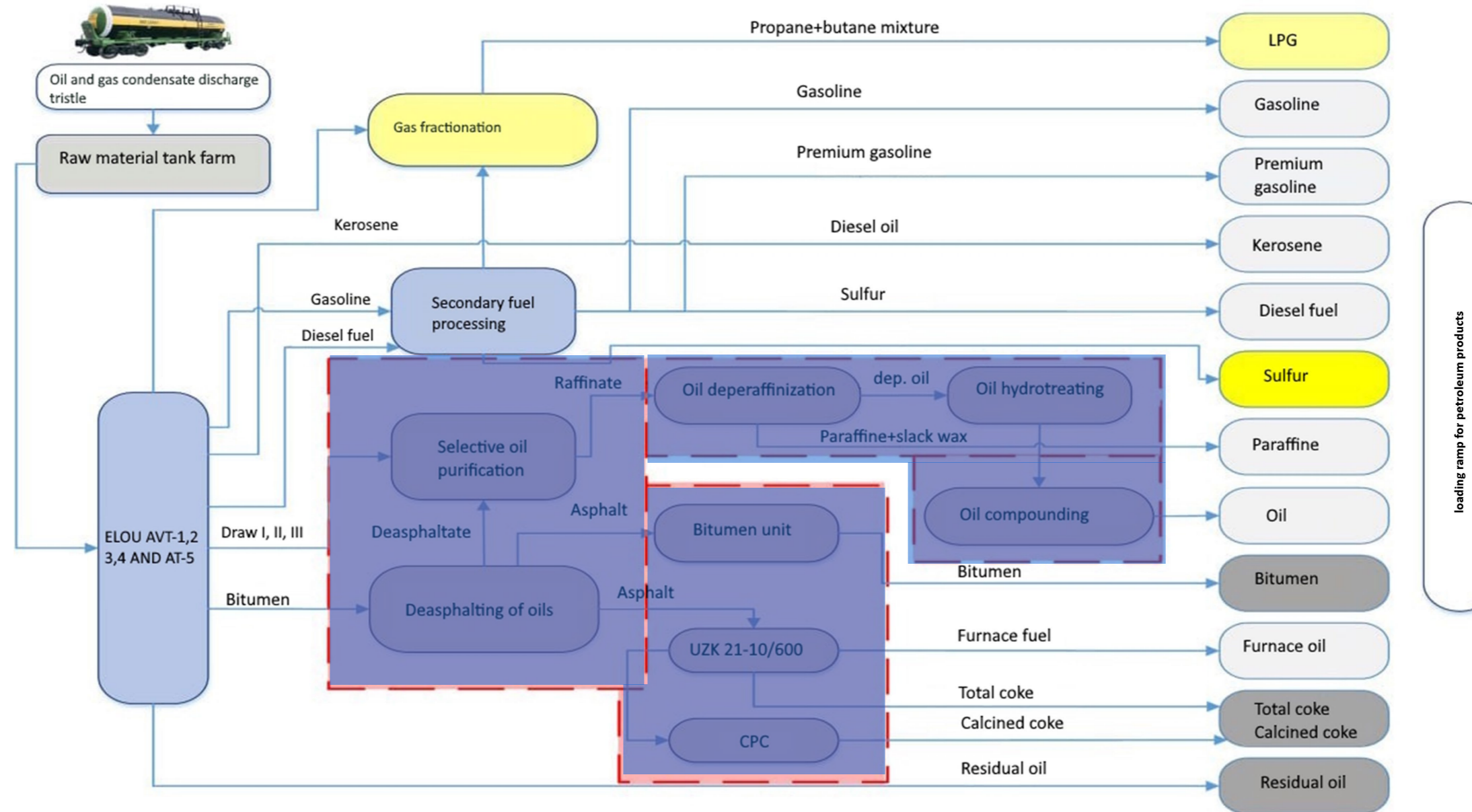
Units	Year of commissioning	Actual capacity, thousand tons per year			
		Designed capacity, thousand tons per year	Commissioning date, years	Level of wear	2024
GDS	1999	1 700,0	25	10%	358,769
G-24	1966	117,53	58	8,6%	148,035

INFORMATION ON THE FORP IN TERMS OF EXISTING FACILITIES

CURRENT SITUATION

- Over the past 10 years and to date, due to a shortage of hydrocarbon feedstock, the units have been operating at less than their design capacity:
- processing of petroleum residues by up to 30%
- processing of oil distillates by 25%

PRODUCTION OF BASIC OILS AND PROCESSING OF HEAVY RESIDUES



HEAVY RESIDUES

Units	Year of commissioning	Actual capacity, thousand tons per year			
		Designed capacity, thousand tons per year	Commissioning date, years	Level of wear	2024
Uzk 21-10/300	1964	344	55	75%	under conservation
Uzk 21-10/600	1975	600	49	10%	199,9
CPC	1987	123	32	9%	-
Bituminous 19/3	1960	251	64	10%	56,2

OIL DISTILLATES

Units	Year of commissioning	Actual capacity, thousand tons per year			
		Designed capacity, thousand tons per year	Commissioning date, years	Level of wear	2024
3 oil deasphalting units	1960-1977	832,9	47 - 64	10 - 30%	69,2
4 selective oil purification units	1960-1966	Distal. 1 092 Resid. 574	47 - 58	8,6-14,7%	191,7
3 oil deasphalting units	1960-1977	710,3	47 - 64	7,3 - 10,8%	126,6
2 oil compounding units	1960 (57/1) 1967 (57/2)	502,2	64	12,1%	131,4
1 paraffin production unit	1964	63	60	19,0%	-
1 oil hydrotreatment unit	1966	235	58	8,6%	148,0
1 contact cleaning unit	1961	290,8	63	11,7%	-

INFORMATION ON THE PROJECT “MODERNIZATION AND RECONSTRUCTION OF THE FERGANA OIL REFINERY”

BASIS FOR THE IMPLEMENTATION OF THE PROJECT

- Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 67 dated 07.02.2020. The feasibility study for the project was approved by Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 751 dated 14.12.2021. Resolution of the President of the Republic of Uzbekistan No. 46 dated 14.12.2021.

PROJECT CLIENT	 
GENERAL CONTRACTOR	
GENERAL DESIGNER	

PROJECT REVIEW

PASPORT

Project goal	Construction of new and reconstruction of existing technological facilities, launch of production of modern types of petroleum products, increase in the depth of raw material processing, optimization of operating costs, creation of 194 new jobs for FORP employees.
Implementation period	2020-2026
Design capacity	Ensuring profitability when processing 2 million tons of hydrocarbon raw materials per year
EPC contract cost	\$399.92 million (including VAT).
General contractor	Enter Engineering Pte. Ltd.

LICENSORS AND TECHNOLOGY PROVIDERS

				
Hydrocracking unit	Conversion of the L-35-11/300 reforming unit to isomerization mode	HPU installation (Hydrogen)	PSA Block	Steam boiler room with chemical water treatment

PARTNERS

-  Early design work, basic design of licensed hydrocracking and isomerization plants – 100% complete
-  Development of the expanded Basic Project (FEED) and Project Design Package (PDP) for non-licensed facilities – 100% complete
-  General designer - Detailed design of new installations
-  Detailed design of reconstructed installations and off-plot facilities
-  Developed a marketing research report on the petroleum products market
-  Developed a technical audit report on the re-approval of the plant's capacity.
-  Implementation of licensed PIMS software (implemented in 2022)

OVERALL PROJECT IMPLEMENTATION STATUS

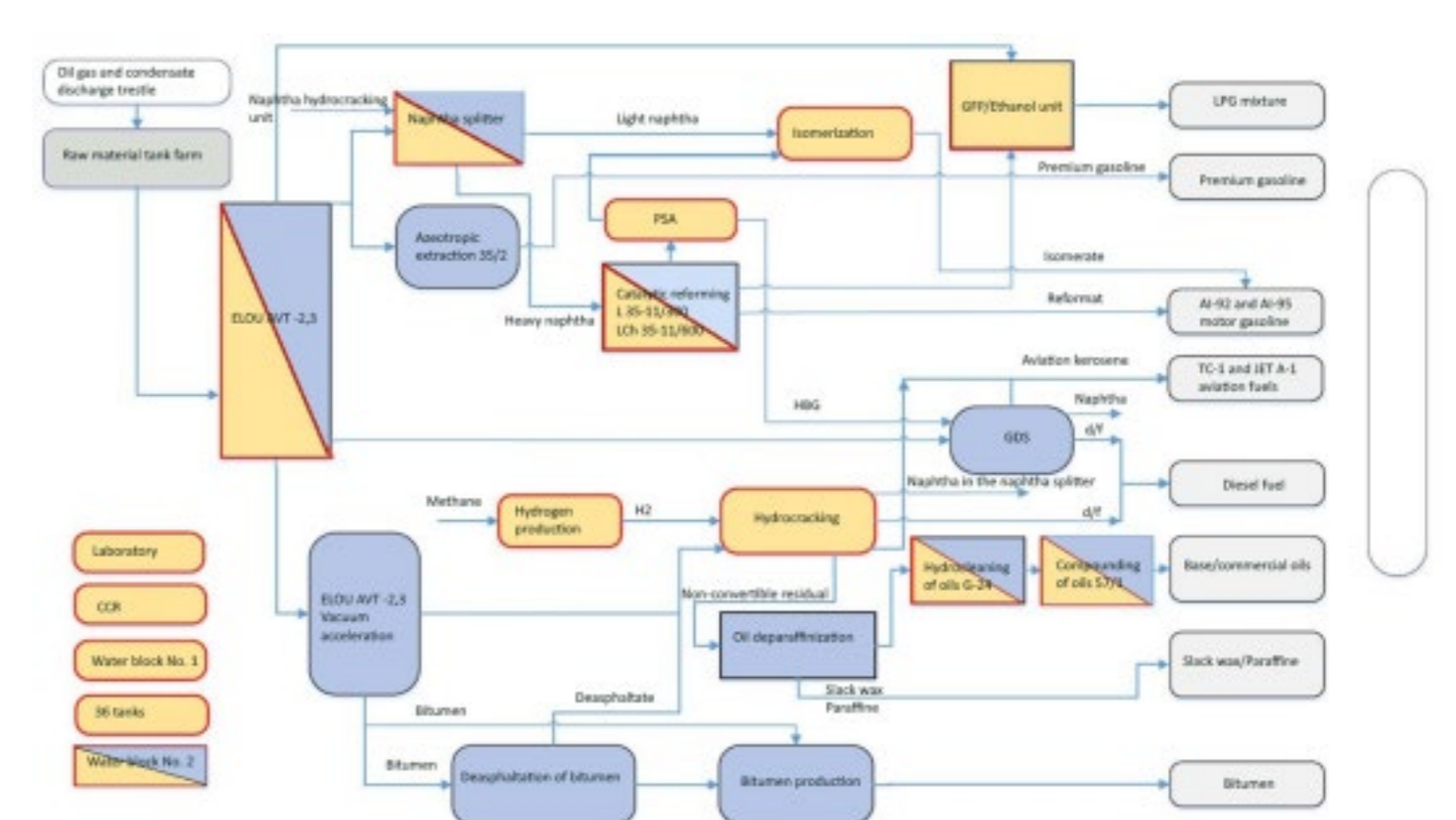
EPC contract	Signed	Enter Engineering Pte. Ltd.
E-Design:	In progress	ONHP PJSC UZLITI ENGINEERING LLC»
P-Supply:	In progress	Enter Engineering Pte. Ltd.
C-Construction:	In progress	Enter Engineering Pte. Ltd.

Overall progress on project development: Detailed design – 71%

Overall progress on supply: LLI and SI equipment installed.
 ♦ Supply P1 – 81.4%
 ♦ Supply P2 – 48.9%

Overall construction progress: Construction – 61%

GENERAL TECHNOLOGICAL SCHEME



MAIN OBJECTIVES AND ACHIEVEMENTS FROM THE IMPLEMENTATION OF THE PROJECT

The planned volume of processed raw materials will reach 2.0 million tons by 2030.

Production of fuel and lubricants that meet the highest international quality standards at competitive prices

Providing consumers with energy resources and improving the energy dependence indicators of the Republic of Uzbekistan

Increasing the export potential of the company

Depth of processing of raw materials and petroleum products

Current state	After modernisation
Euro 2 fuel class: gasoline with octane rating AI-80, AI-91, and diesel fuel	Euro 5 fuel class: Gasoline with an octane rating higher than AI-92 and diesel fuel
Aviation fuel: TS-1	Aviation fuel: Jet A-1 and TS-1
Base and motor oils: API Group I	Base and motor oils: API Group II+/III
Depth of processing: ~82% - 86%	Depth of processing: > 92%
Oil production from fields: 700 th. t/y	Oil production from fields: 1.6 million tons per year

Production volume (th. tons/year)

Euro 5 automotive gasoline (including LPG and premium gasoline)	552 (57)
Jet F-1 and TS-1 jet fuel	294
Euro 5 diesel fuel	533
*API Group II+/III base/engine oils	175
Bitumen (road/construction)	290
Other products	66

* It is possible to increase production to 220,000 tons/year due to the flexibility of the hydrocracking unit depending on market demand

NEW PRODUCTION FACILITIES AT THE FERGANA OIL REFINERY

FIRST STAGE OF THE START-UP COMPLEX

The project is being implemented on the basis of Resolution No. 67 of the Cabinet of Ministers of the Republic of Uzbekistan dated February 7, 2020. The technical and economic feasibility study for the project was approved by Resolution No. 751 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 14, 2021.

EXPECTED RESULT: Increased depth of raw material processing, improved quality of manufactured products, elimination of dependence on imported gas condensate.

PROJECT CLIENT



GENERAL CONTRACTOR



GENERAL DESIGNER



The owner of the facility is Air Product

NEW JOBS – 32 positions (using existing human resources).
COMMISSIONING – February 2025.

HYDROGEN PRODUCTION UNIT



PROJECT GOAL

Production of pure hydrogen with a concentration of 99.9% with an annual production capacity of 9.3 thousand tons for the needs of hydrocatalytic processes.

DESIGN – 100 %



The developer of the Basic Project (FEED) and the Process Design Package (PDP) is WOOD (Italy). In January 2021, the basic project and process design package were developed and submitted – 100% progress.



Development of a 3D model with 90% readiness – 100% progress. Release of 465 WD copies – 100% progress.

SUPPLY – 100 %



Dynamic and static equipment, 20 units – 100% complete. Equipment with a long manufacturing cycle, 2 units – 100% complete

CIW – 100 %



Earthworks – 100% complete.
Foundation work – 100% complete.
Metal structure installation – 100% complete.
Mechanical installation work – 100% complete.

SAW – 100 %



Engaging ENTALPIYA to prepare a technical report on the results of commissioning tests of the steam reforming furnace at the hydrogen production plant – 100% complete



EXPERTISE – 100 %



WD review by the State Unitary Enterprise “ Urban Planning Documentation Review” - 100% complete.
EIS review - 100% complete.
Industrial safety review - 100% complete.
Conclusion from the Institute of Seismology - 100% complete.

WORKING COMMISSION



The Working Commission was held on November 29, 2024.

NEW PRODUCTION FACILITIES AT THE FERGANA OIL REFINERY

FIRST STAGE OF THE START-UP COMPLEX

- The project is being implemented on the basis of Resolution No. 67 of the Cabinet of Ministers of the Republic of Uzbekistan dated February 7, 2020. The technical and economic feasibility study for the project was approved by Resolution No. 751 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 14, 2021.

EXPECTED RESULT: Increased depth of raw material processing, improved quality of manufactured products, elimination of dependence on imported gas condensate.

PROJECT CLIENT



GENERAL CONTRACTOR



GENERAL DESIGNER



The owner of the facility is Air Product

NEW JOBS – 14 positions (using existing human resources)
COMMISSIONING DATE – November 2025.

SHORT-CYCLE ADSORPTION INSTALLATION



PROJECT GOAL

The PSA variable pressure hydrogen purification system allows 11,000 Nm³/h of hydrogen with a purity of up to 99.9% to be extracted from hydrogen-containing gas.

DESIGN – 90 %



The developer of the Basic Project (FEED) and the Process Design Package (PDP) is WOOD (Italy). In January 2021, the basic project and process design package were developed and submitted – 100% progress.



Development of 3D models for 90% complete blocks 401 and 404 – progress 100%. Development of 3D models for blocks 402 and 403 – in progress. Release of WD (364 copies) – progress 88%

SUPPLY – 85 %



On March 5, 2023, Air Products ensured the manufacture and delivery of the RK-401 unit and equipment. LLI equipment (2 units) – 75% complete (delivery of the K-401 compressor is expected). SI equipment (8 units) – 100% complete.



CIW – 49 %



Earthworks – 100% complete.
Foundation work – 100% complete.
Metal structure installation – 57% complete.
Mechanical installation work – 72% complete.



SAW – 100 %



Work has not begun

EXPERTISE – 100 %



WD review by the State Unitary Enterprise "Urban Planning Documentation Review" – 100% complete
EIS review – 100% complete
Industrial safety review – 100% complete
Conclusion from the Institute of Seismology – 100% complete

WORKING COMMISSION



Receipt of equipment passports from the general contractor for registration with Sanoatkontechnazorat is in progress.

Preparation of all necessary documentation for the Working Commission in accordance with clause 3.5 of SNQ 3.01.04-19 "Acceptance into operation of completed construction projects" – in progress.

NEW PRODUCTION FACILITIES AT THE FERGANA OIL REFINERY

FIRST STAGE OF THE START-UP COMPLEX

- The project is being implemented on the basis of Resolution No. 67 of the Cabinet of Ministers of the Republic of Uzbekistan dated February 7, 2020. The technical and economic feasibility study for the project was approved by Resolution No. 751 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 14, 2021.

EXPECTED RESULT: Reduction in production costs. Generation of steam and chemically treated water for new processes.

PROJECT CLIENT



GENERAL CONTRACTOR



GENERAL DESIGNER



NEW JOBS – 30 positions (using existing human resources)

COMMISSIONING DATE FOR ALL BOILERS (2 of which have been commissioned) – October 2025.

STEAM BOILER HOUSE WITH CHEMICAL WATER TREATMENT SYSTEM



PROJECT GOAL

The steam boiler house with the chemical water treatment unit is designed to produce high-quality steam and chemically treated water for the needs of existing and new facilities at the FORP. The total capacity is up to 250 t/h, including:
medium pressure (13 kgf/m²) – 200 t/h of steam (3 boilers);
high pressure (40 kgf/m²) – 25 t/h of steam (2 boilers)

DESIGN – 100 %



Development of 3D model - 100% complete. 1,107 copies of WD - 100% complete.

SUPPLY – 100 %



MACCHI ASSEMBLING YARD MARGHERA (Italy) – manufacturer of steam boilers – progress 100%
Dynamic and static equipment, 20 units – 100% complete. Long-cycle manufacturing equipment, 6 units – 100% complete. The equipment was supplied from China, Italy, and Russia.



WORKING COMMISSION



The Working Commission was held on February 28, 2024. The act is currently being signed.



CIW – 99 %



Earthworks – 100% complete.
Foundation work – 100% complete.
Metal structure installation – 100% complete.
Mechanical installation work – 97% complete.



SAW – 90 %



Pre-commissioning work – 84% complete.
Commissioning work – 86% complete. In April this year, the chemical water treatment plant and one medium-pressure boiler were put into operation.

EXPERTISE – 100 %



WD review by the State Unitary Enterprise "Urban Planning Documentation Review" - 100% complete.
EIS review - 100% complete. Industrial safety review - 100% complete. Conclusion from the Institute of Seismology - 100% complete.

EXPECTED RESULT

- Optimization of OPEX (through the use of own natural gas and fuel oil) in the amount of up to USD 24 million per year.
- Continuous operation of boilers and HPU.

NEW PRODUCTION FACILITIES AT THE FERGANA OIL REFINERY

SECOND STAGE OF THE START-UP COMPLEX

- The project is being implemented on the basis of Resolution No. 67 of the Cabinet of Ministers of the Republic of Uzbekistan dated February 7, 2020. The technical and economic feasibility study for the project was approved by Resolution No. 751 of the Cabinet of Ministers of the Republic of Uzbekistan dated December 14, 2021.

EXPECTED RESULT: Obtaining a wide range of high-quality products (Jet A-1 aviation fuel, Euro-5 diesel fuel, API Group II+ /III base oils) from various types of hydrocarbon feedstock.

PROJECT CLIENT



GENERAL CONTRACTOR



GENERAL DESIGNER



NEW JOBS – 47 positions (using existing plant human resources)
Completion of mechanical and assembly work – Q2 2027.

HYDROCRACKING UNIT



PROJECT GOAL

Processing of petroleum distillates and residues at elevated hydrogen pressures on multifunctional catalysts. This will enable the production of a wide range of high-quality products (Jet A-1 aviation fuel, Euro-5 diesel fuel, API Group II+ /III base oils) from various types of hydrocarbon feedstocks.

DESIGN – 42 %



In December 2020, the French company Axens developed a package of process documentation (PDP) for a licensed unit—100% progress.



In January 2021, the Italian company WOOD developed a basic design (FEED) – 100% complete.



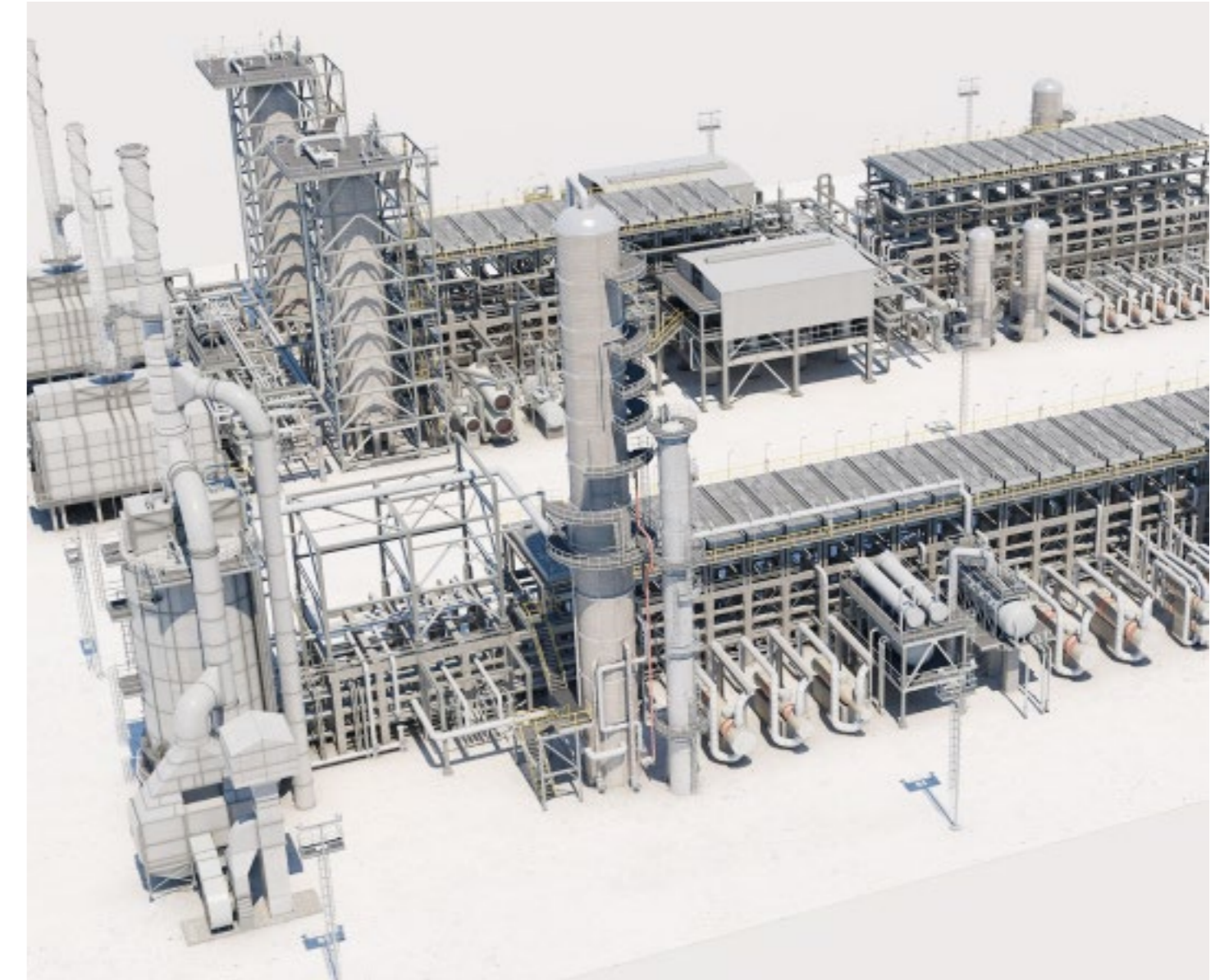
In 2021, the Russian company ONHP began developing a detailed design:

- ◆Development of a 3D model – 30% complete
- ◆Production of 1,520 WD copies – 33% complete.
- ◆Release of WD in the amount of 1,520 copies – progress 19%.

SUPPLY – 59 %



Dynamic and static equipment: 117 units – 54% complete. Equipment with a long manufacturing cycle: 6 units – 71% complete. The equipment is being delivered from China, Italy, and Russia.



CIW – 13 %



Earthworks – 100% complete.
Foundation work – 24% complete.
Reinforced concrete structures – 25% complete.
Metal structures – 15% complete.

SAW – 0 %



EXPERTISE – 25 %



WD review by the State Unitary Enterprise “ Urban Planning Documentation Review” - in progress.
EIS review - 100% complete
Conclusion from the Institute of Seismology - in progress

OIL BLOCK MODERNIZATION AT THE FERGANA OIL REFINERY

INVOLVED INSTALLATIONS AND KEY ISSUES

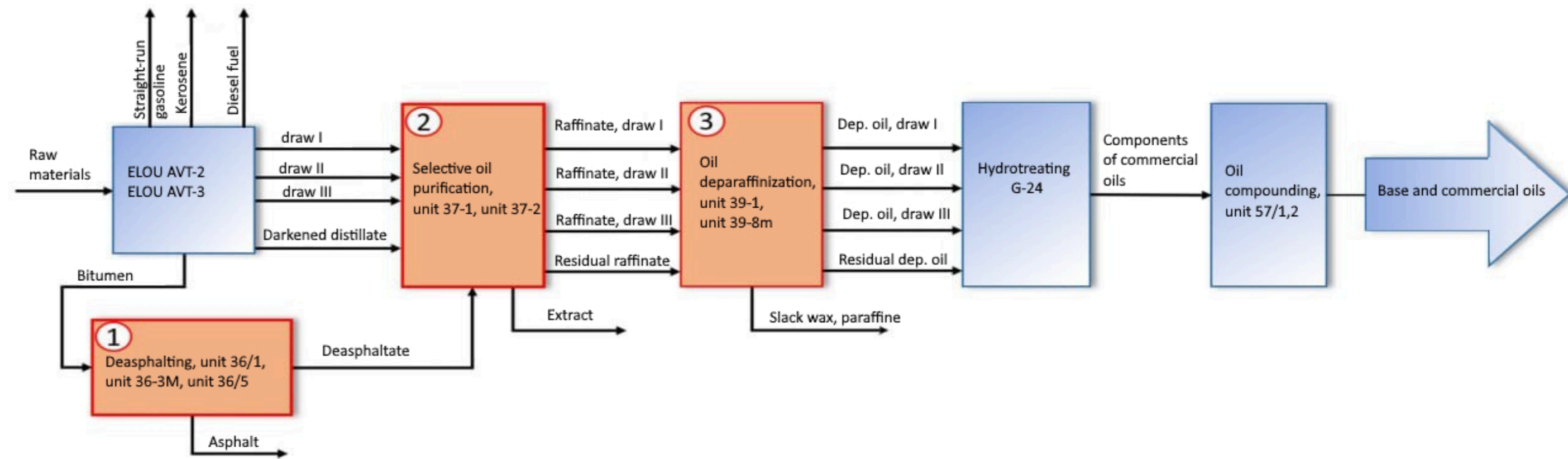
- Installation of a 36-3M, 36/5 bitumen deasphalting unit
- ◆ Low efficiency of deasphalting process equipment

- Selective oil purification units 37/1, 37/2
- ◆ Low efficiency of extraction process equipment

- Oil deparaffinization units 39/1, 39/8m
- ◆ High equipment wear
- ◆ Inefficient solvent regeneration system from oil and slack wax solutions

PROJECT OVERVIEW

BLOCK DIAGRAM OF THE OIL CIRCUIT



AMOUNT OF WORK

- Installation of a 36/5 type bitumen deasphalting unit.
- ◆ Replacement of low-efficiency K-1, K-3, and K-5 ICD columns with modern mass transfer devices.
- ◆ Modernization of the propane cooling system by replacing heat exchange equipment.

- Type 37/1 and 37/2 selective oil purification units.
- ◆ Replacement of low-efficiency K-1, K-2, K-3, K-4, K-5, and K-6 ICD columns with efficient modern-type trays.
- ◆ Modernization of the phenol cooling system.

- -39/1, 39/8m oil deparaffinization units.
- ◆ Replacement of filtration and compressor equipment.

EXPECTED RESULT

Increase in deasphaltate recovery at unit 36/5 from 27.9% to 30.9% and residual raffinate recovery at unit 37/1.2 from 55.3% to 59.5%

Improvements in the quality of dep. oils I, II, III after modernization of the 37/1,2 selective oil purification units.

Low operating costs and high technical reliability of oil deparaffinization processes.

Possibility of involving distillate oils that meet RICH standards in production at the plant in Bari up to 20 thousand tons per year and sales on the European market up to 40 thousand tons per year.

OVERVIEW OF THE PROJECT “CONSTRUCTION OF A COMPLEX FOR THE PRODUCTION OF AROMATIC HYDROCARBONS”

PROJECT GOAL

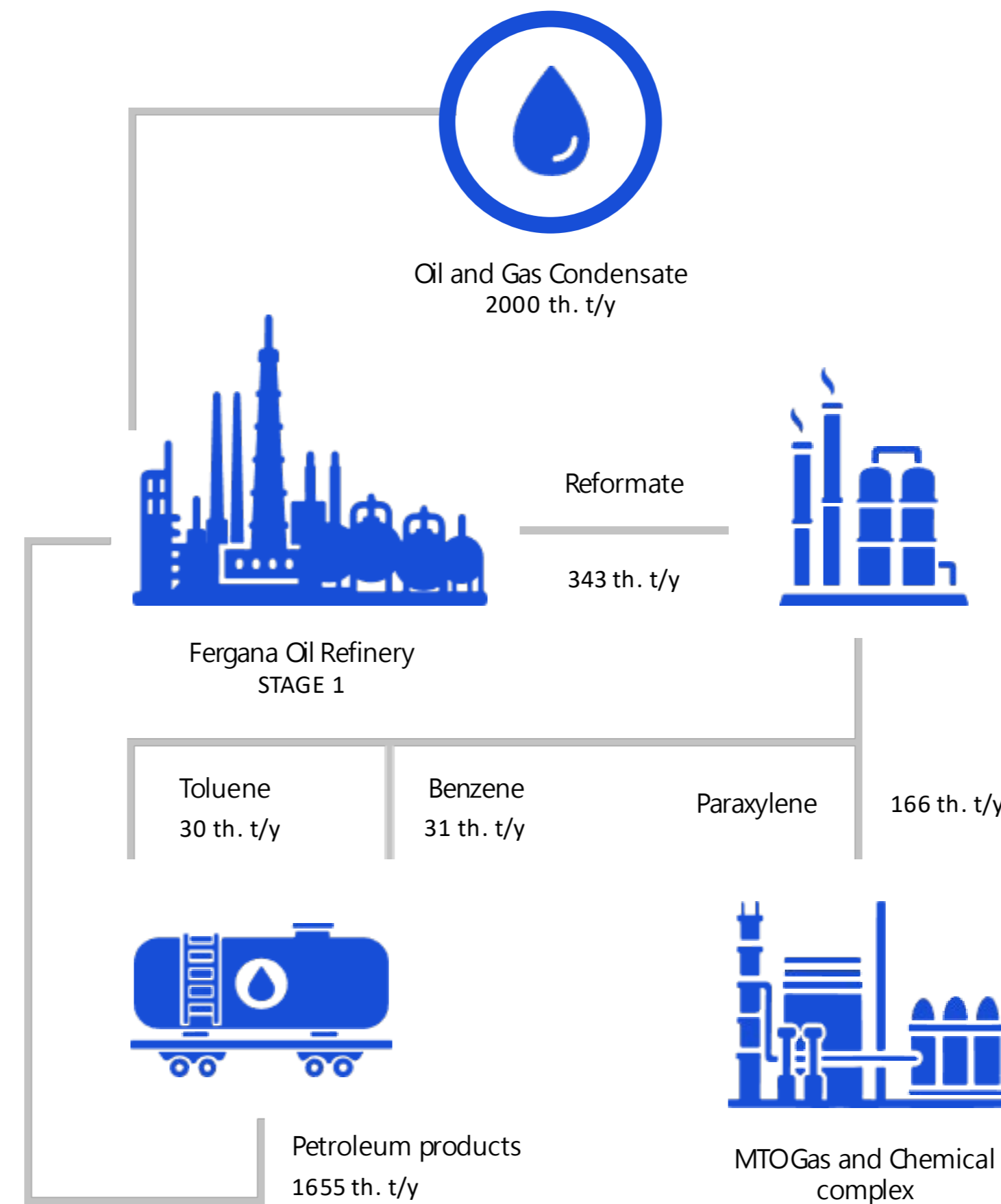
- Construction of an Aromatics complex at the Fergana refinery for the production of paraxylene for the needs of the MTO Gas Chemical complex in the Bukhara region

SPECIAL STATUS FOR THE FERGANA REFINERY

- The issue of obtaining special status for the Fergana Oil Refinery is being considered.

PROJECT IMPLEMENTATION TIMELINE

- 2024–2028



PROJECT INITIATOR



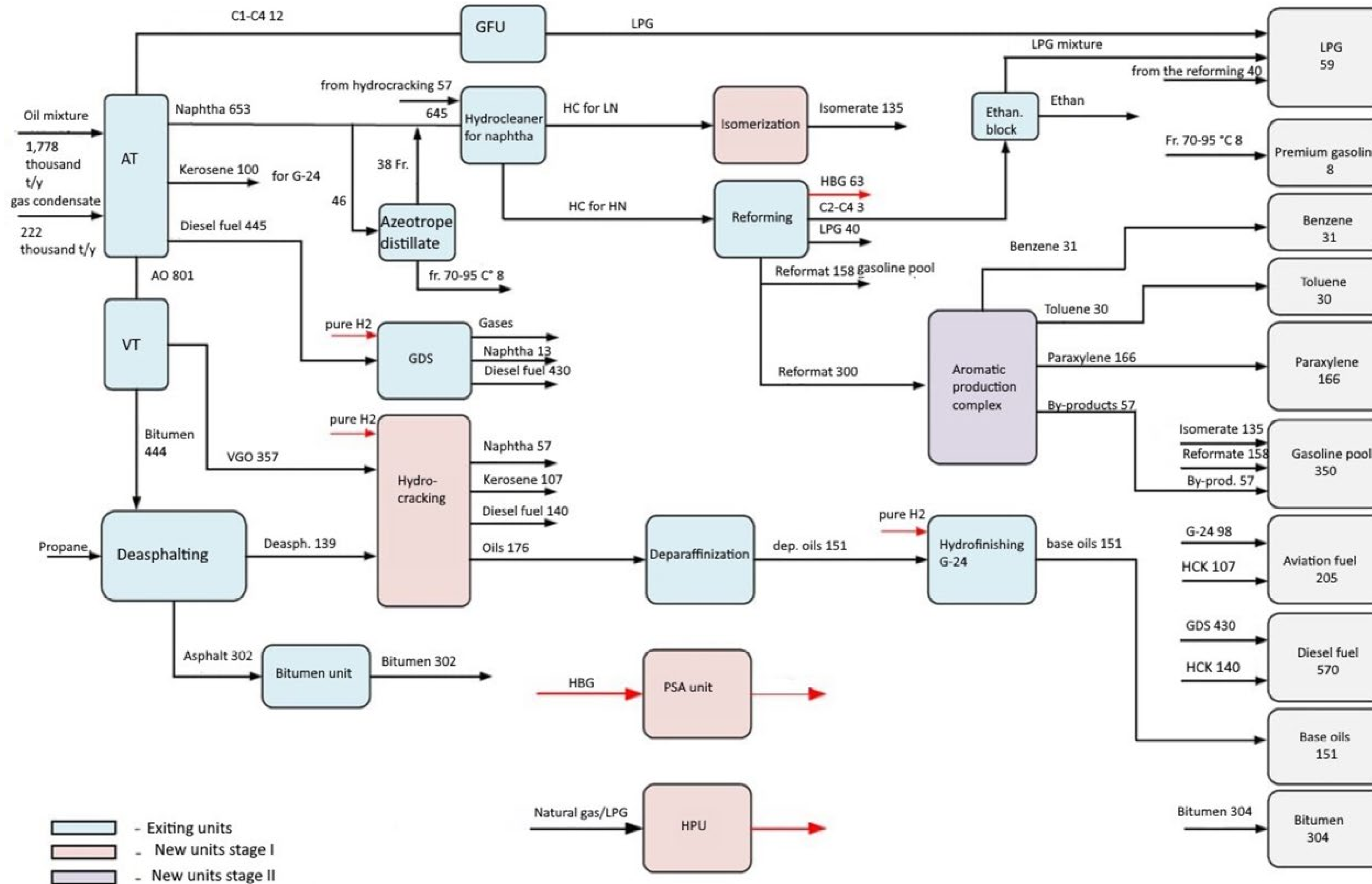
LICENSOR AND DEVELOPER OF PDP



FEED CONTRACTOR



CONFIGURATION AFTER MODERNIZATION OF THE FERGANA OIL REFINERY (STAGE 2)

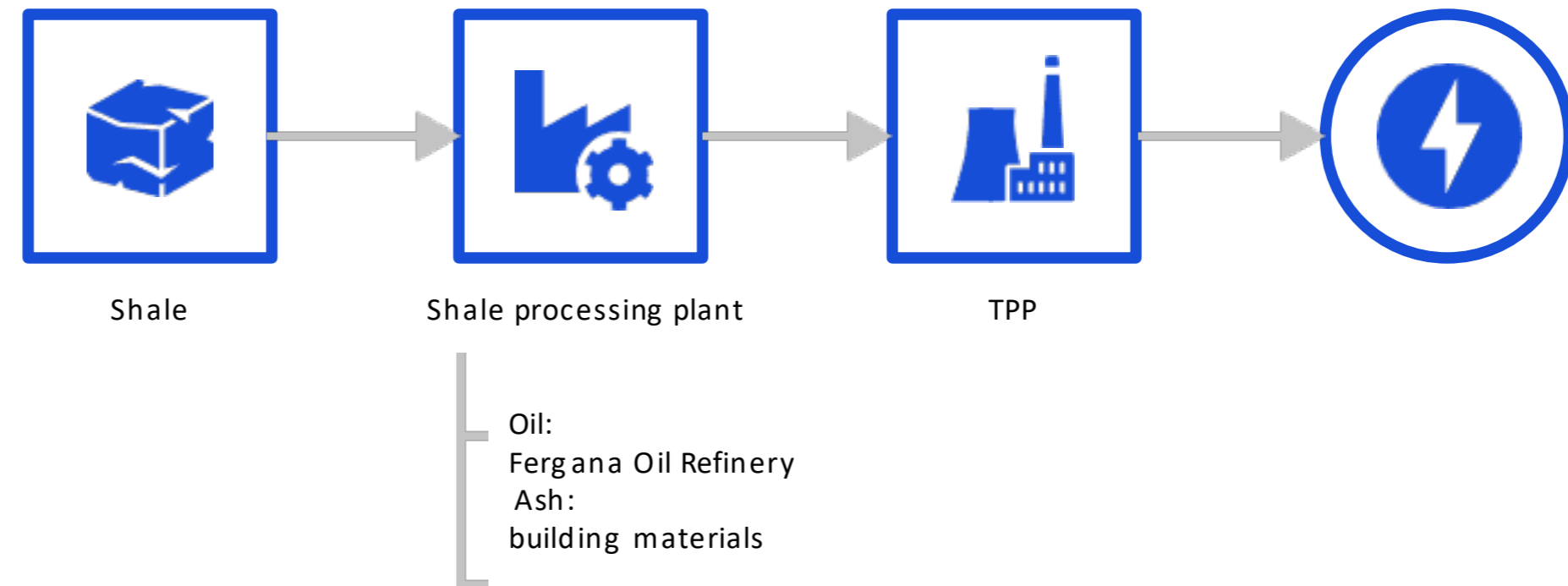


PROGRAM FOR THE EXTRACTION AND PROCESSING OF OIL SHALE IN UZBEKISTAN

FACILITY LOCATION

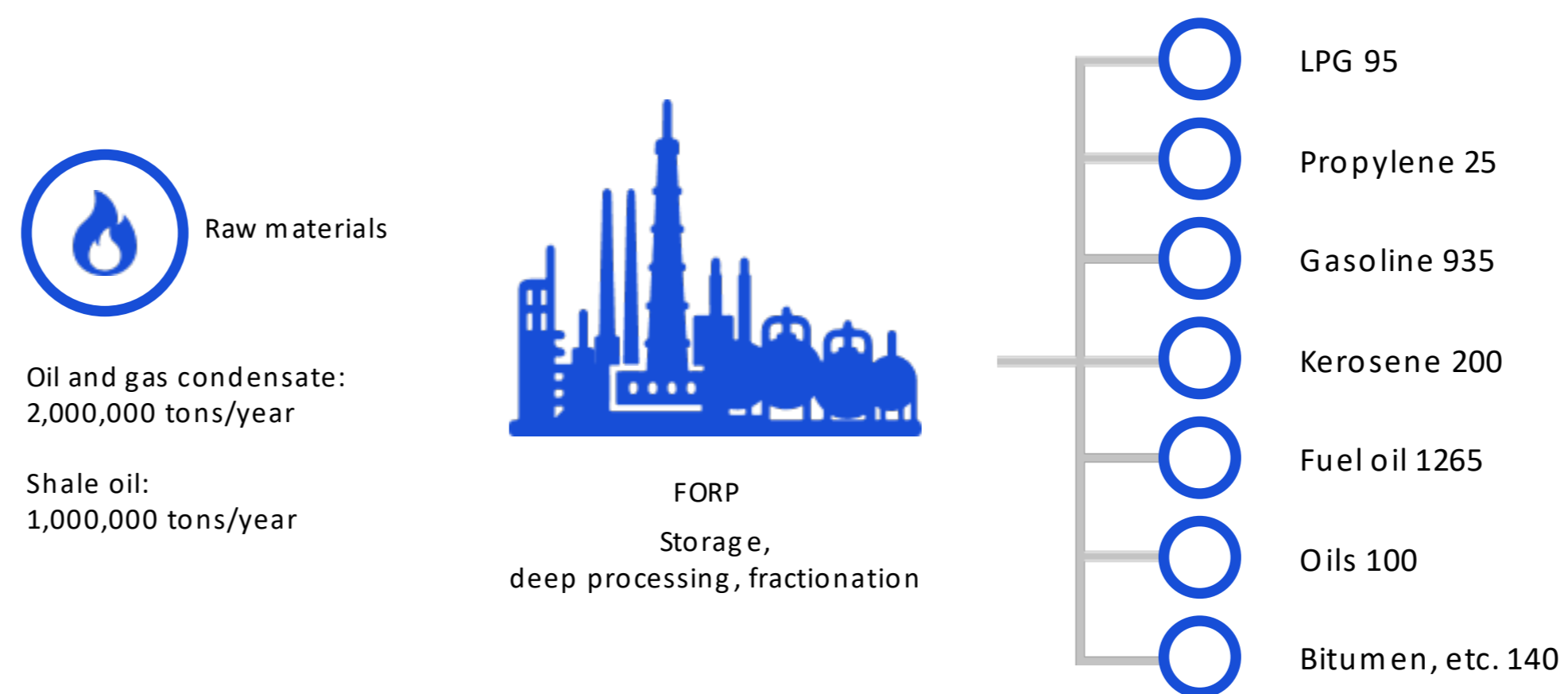


BASIC PRODUCTION PROCESS DIAGRAM



BASIC PRODUCTION PROCESS DIAGRAM

The volume of shale oil processing will be gradually increased from 1 million to 2 million tons per year between 2025 and 2030.



TOTAL:
2,760,000 TONS/YEAR

PROCESSING DEPTH:
> 92%