

## Justification

Project: Modernization and reconstruction of existing technological installations of Kyrgyz Petroleum Company CJSC refinery in Jalal-Abad.

Total cost of the project: 409,9 mln US dollars, the amount of applying for financing of the project: 309,9 mln US dollars.

Project initiator: Kyrgyz Petroleum Company CJSC.

Sole shareholder of the initiator company: Kyrgyzneftegaz OJSC.

The project envisages renewal of the refinery's production facilities on the basis of the current technological configurations. The current design capacity of the refinery is 500 thousand tons of oil per year, the total area of the refinery is 27.3 hectares. The current technological facilities of the refinery are not able to ensure the compliance of the products with the environmental standards, that is why the project initiates modernization in order to improve the quality of the products, to produce the fuel (gasoline and diesel fuel) complying with the technical regulations 013/2011, class K5, equivalent to the Euro V quality requirements. The main technological component to be implemented is a liquid-phase catalytic cracking (LPC) unit, which ensures deep refining of oil and production of lighter products.

The technical audit and feasibility study for the project were carried out by SPEC Engineering INC (SPEC Energy DMCC), and UOP Honeywell, an international oil refining licensor, was engaged as a subcontractor to help study the refinery upgrade configuration.

The Law of the Kyrgyz Republic "On State Procurement" of 14 April 2022, part 5, article 2 excluded procurement performed by the State and municipal enterprises, as well as joint stock companies, where 50 percent or more of the authorized capital is owned by the State, including their subsidiaries.

Therefore, according to the point 2 of the Resolution of the Cabinet of Ministers of the Kyrgyz Republic of June 10, 2022 No.301 "On Approval of the Standard Procedure of Organization and Execution of Purchases by the State and Municipal Enterprises, Business Companies, where 50 and more percent of the equity is owned by the State, including their subsidiary companies" the tender was held on the basis of the approved internal regulations of the Kyrgyz Petroleum Company CJSC.

As part of the modernization of CJSC Kyrgyz Petroleum Company's refinery, special attention was given to the companies with experience in performing similar works and services to perform the works specified in the Terms of Reference for the Feasibility Study for Modernization (Reconstruction).

Proposals were sent to the following companies: LLC "Maxton-Engineering" RF, LLC "SAPR-NEFTEORGHIM" Russian Federation, "SEG" (Swiss Engineering Group) RF, VERITAS DOO FZ-LLC (UAE), Spec Energy DMCC (UAE), "INKO-TEK" LLC, "IT-ENTERPRISE" Republic of Kazakhstan, "TAQAT AL SAMA" UAE.

Commercial proposals were received from these companies for audit and feasibility study development. The mentioned companies expressed their willingness to cooperate with the invitation of the working group members to get acquainted directly to the places of production and technical activities of the companies concerned.

During the negotiation process Maxton Engineering LLC and VERITAS DOO FZ-LLC (UAE) refused from further cooperation with Kyrgyz Petroleum Company CJSC.

<b>Nº</b>	<b>Name</b>	<b>Location</b>	<b>Time frame</b>	<b>Cost (som)</b>
1.	INCO-TEK LLC	Republic of Tatarstan	8-10 months	27 981 100
2.	«IT-ENTERPRISE»	Republic of Kazakhstan	6-8 months	31 304 400
<b>3.</b>	<b>Spec Energy DMCC</b>	<b>UAE</b>	<b>4 months</b>	<b>24 635 660</b>
4.	«TAQAT AL SAMA»	UAE	Not specified	26 463 240

In order to get acquainted with the activities and capabilities of the abovementioned companies on site, the Board of Directors of Kyrgyz Petroleum Company CJSC organized visits to the mentioned companies on protocol assignment.

Based on the results of the tender among the companies that submitted commercial proposals, by studying the cost, timing and technical capabilities of the participants, the working group recommended to the Board of Directors to engage Spec Energy DMCC.

The relevant protocol approved the decision of the working group on the selection of the company to audit and develop the feasibility study.

It should be noted that the company UOP did not participate in the tender, was engaged independently by Spec Energy DMCC as a subcontractor.

The process units under consideration are not separate equipment, but act as complete process units with pumps, heat exchangers, columns and catalyst-filled reactors. Each technology has a copyright license, implemented in metal and is in operation at large-scale refineries around the world. AXENS and UOP Honeywell are among the world leaders in this area and hold the licenses for deep refining technologies.

All process units are interconnected with each other and the exclusion of one of them will affect the quality of products. The contractor considered several options for deep oil refining with the involvement of heavy residues and increasing the depth of oil refining with a maximum yield of light petroleum products (79% for light) quality not lower than K5.

Without implementing the above-mentioned technologies, obtaining quality fuel and refining depth is not possible.

The company's products are designed to cover the needs of the domestic market of Kyrgyzstan. Domestic market consumption of light oil products according to the statistics is from 1 100 000 tons/year to 1 300 000 tons/year. 95% of all petroleum products are imported to Kyrgyzstan.

The quality of imported petroleum products does not always meet the necessary requirements. When the plant will reach its full capacity after the modernization and use oil extracted from domestic fields as raw material, it will cover the country's demand for high quality light oil products by 25-30%. The cost of production and transportation of oil to the plant is much cheaper than the cost of imported commercial petroleum products, which will eventually affect the price of petroleum products.

When calculating the economic indicators in the feasibility study, laid the purchase of oil on the side of quotations, in the ratio of 50% local and 50% purchased raw materials.



## Modernization of oil refinery CJSC «Kyrgyz Petroleum Company» Jalal-Abad

**Total project costs – \$ 409,9 mln.**

Initiator's input – **up to \$ 100 mln. (24%)**  
Investor's input – **\$ 309,9 mln. (76%)**

# General information:

The company's been operating since **1997**

Main shareholder is the state-owned company **OJSC "KYRGYZNEFTEGAZ"**



Oil refinery's total area: **67,5 acres (27,3 hectares)**

Number of employees: **218**

## Production capacity:

Estimated capacity **500 k tons/year**

Actual production up to **200 k tons/year**

Nowadays oil refinery is not capable of ensuring it's outputs compliance with environmental standards, since it requires modernization

## Current production capacity:

Names of output:	Production		Prices (within last 12 months) USD/ton
	Tons/day	%	
Naphtha – brought to AI-80 gasoline (≈fuel RON91)	152,4	11%	452
Diesel	490,5	35%	614
Fuel oil (mazut)	739,6	53%	277,5
Total:	1382,5	100%	

Main goal of modernization is to increase refining depth

from **44%** to **79,4%**

## After modernization:

Names of output:	%	Predicted prices USD/ton
AI-92 gasoline K5	43,4%	780
Diesel K5	36%	1 050
Fuel oil (mazut)	4,7%	379
LPG (liquefied petroleum gas)	8,9%	510
Losses	7,0%	-
Sulfur	0,14%	-
<b>Total:</b>	<b>100%</b>	

# MODERNIZATION'S SETUP:



**Liquid catalytic cracking (LCC)** – technological process, providing deep oil refining.  
At the output are the following products:

- **High-octane gasoline**,
- **Light liquid fuel**
- **light gases with a high olefin content such as propylene**

**More than 150 technologies operate under UOP license among more than 400 refining LCC technologies all over the world**



**\*SPEC Engineering INC (UAE)** – vertically integrated EPCC-supplier in oil and gas industry, providing solutions **on a turn-key basis**

**\*\*Honeywell UOP (USA)** - is the leading international supplier and technology licensor for the petroleum refining, gas processing, petrochemical production and major sectors of manufacturing industries

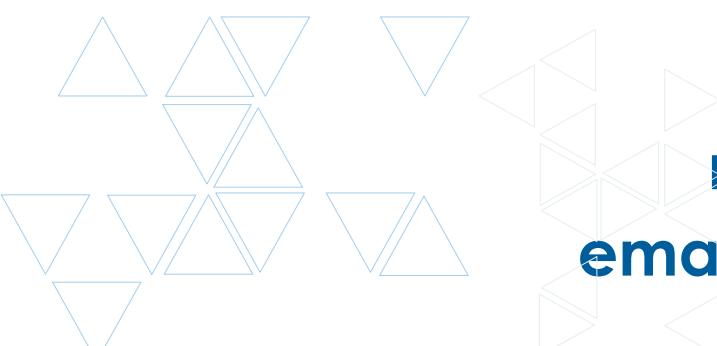


## SPEC Estimated CAPEX for refinery with capacity of 500 k tons/day (LCC technology)

ISBL (INSIDE BATTERY LIMITS)		Capacity	SPEC PRICE USD
Process Unit			
LPG MEROX		1700	4 388 929,46
ISOM – ONCE THROUGH		630	10 429 312,99
NHT (Naphtha Hydrotreating)		3000	14 185 497,73
NHT SPLITTER		3100	4 288 811,24
SRR (Semi-Regenerative Reforming)		2500	26 353 650,01
Diesel HDT (Hydrotreating)		4000	37 174 696,25
RFCC (Residue fluid catalytic cracking)		6000	100 296 558,64
FCC (Fluid Catalytic cracking)NHT		2000	21 278 246,59
Sulfur plant		2	5 613 680,63
H2 Plant		3	13 037 175,73
PSA (Pressure Swing Adsorption)		6	900 000,00
	<b>Subtotal</b>		<b>237 946 559,27</b>
OSBL (OUTSIDE BATTERY LIMITS)			
Utilities			40 450 915,08
Buildings (admin, shops, warehouse, lab)			10 272 000,00
Piperacks			17 412 000,00
Site Prep			3 960 000,00
Blending and Control			3 072 000,00
Raw Material Storage			2 400 000,00
Finished Product Storage			15 396 000,00
Waste Water Treatment Plant			4 800 000,00
	<b>Subtotal</b>		<b>97 762 915,08</b>
Ancillary			
Spare Parts			11 897 327,96
Ocean Freight and Insurance			14 276 793,56
Engineering Services			7 138 396,78
Construction Expense and Supervision			5 968 145,75
Training			1 800 000,00
Start up			9 984 000,00
Business and Finance			360 000,00
Fees (Process License)			15 600 000,00
Insurance and Liabilities			1 189 732,80
Site Prep/Construction/Start up (Mobilization)			2 700 000,00
Permitting and HSE (Health and Safety Executive) Issues (PPE and Signage)			300 000,00
Miscellaneous			600 000,00
Contingency			2 400 000,00
	<b>Subtotal</b>		<b>74 214 396,85</b>
	<b>TOTAL</b>		<b>409 923 871,19</b>



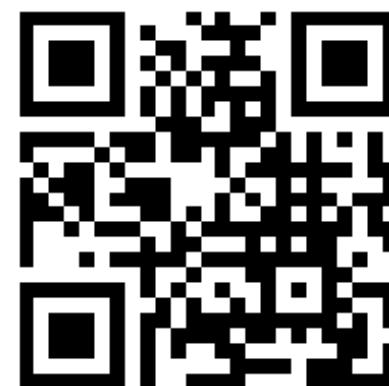
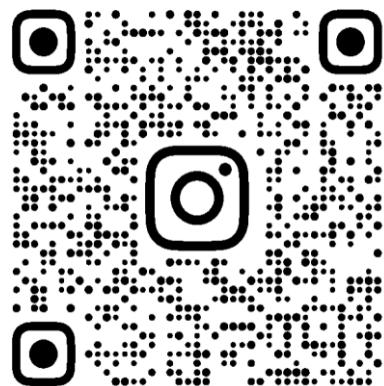
**Looking forward to cooperating  
and answering questions  
regarding presented project**



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