

تاریخ: ۱۴۰۱/۰۶/۰۸

شماره: ۲۲۴۱۹

پیوست: دارد

جناب آقای سردار عابد

مدیر عامل محترم هلدینگ نفت گاز و پتروشیمی قرارگاه سازندگی خاتم الانبیاء (ص)

با سلام و احترام

موضوع: پیشنهاد واحد دست دوم پتروپالایشگاهی

عطف به جلسه برگزار شده مورخ ۱۴/۰۶/۰۸ با حضور جناب آقای مهندس فرج شهیر و جناب آقای مهندس گودرزی با موضوع بررسی و ارزیابی واحد دست دوم پتروپالایش با ظرفیت ۴۰ هزار بشکه در روز، موارد ذیل به اختصار به استحضار جنابعالی می‌رساند:

- پترو پالایشگاه دست دوم مورد پیشنهاد در سال ۲۰۰۷ راه اندازی شده است و در سال ۲۰۲۱ به دلیل محدودیت اعمال شده از سمت دولت چین مبنی بر تعطیلی واحدهای با ظرفیت پایین، از مدار تولید خارج شده است.
- این پتروپالایشگاه دارای شاخص پیچیدگی نلسون ۱۰ می باشد که از حیث الگوی فرایندی یک پتروپالایشگاه به روز محسوب می شود و دارای واحدهای مهم و کلیدی از جمله RFCC جهت کاهش سهم ترکیبات سنگین می باشد.
- دو محصول بنزین و گازوئیل تولیدی در این پتروپالایشگاه دارای استاندارد یورو ۴ می باشد.
- با توجه به پیشنهاد اولیه ارسالی از سمت مالک واحد، ۶۶ میلیون دلار جهت خرید واحد دست دوم پتروپالایشگاهی اشاره شده است. به صورت تخمین کاملاً اولیه پیش بینی می شود که خرید، انتقال و بازمهندسی و تامین و ساخت تجهیزات مورد نیاز و نصب و راه اندازی این واحد در محدوده ۱۵۰ تا ۲۰۰ میلیون دلار سرمایه گذاری نیاز داشته باشد. (معادل ۵ هزار دلار به ازای هر بشکه)
- برآوردهای اولیه از شاخص های مالی و اقتصادی و با در نظر گرفتن **۴ دلار حاشیه سود** برای هر بشکه پالایش نفت، به **طور متوسط ۵۰ میلیون دلار در سال سود این طرح پتروپالایشگاهی خواهد بود که با احتساب ۱۵۰ میلیون دلار سرمایه گذاری ثابت این طرح دارای بازگشت سرمایه گذاری کمتر از ۳ سال** می باشد.
- شرکت مهندسی HOTO به عنوان یکی از شرکت های صاحب صلاحیت، مسئولیت (Process guarantee) ساخت، نصب و راه اندازی کلیه واحدهای فرایندی این پتروپالایشگاه را بر عهده خواهد گرفت.
- شایان ذکر است که امکان پرداخت هزینه های خرید واحد دست دوم پتروپالایشی از طریق نفت خام امکان پذیر است.

مشخصات واحد پتروپالایشگاهی و برآورد هزینه های سرمایه گذاری مورد نیاز به شرح پیوست ارائه می گردد. این شرکت آمادگی خود را جهت پاسخ گویی به سوالات همکاران جنابعالی و فرایند ارزیابی واحد دست دوم اعلام می دارد. خواهشمند است دستورات لازم جهت بررسی این موضوع را مبذول فرمایید. پیشاپیش از حسن اعتماد آن مجموعه به این شرکت کمال تشکر را داشته و امید است؛ این شروع زمینه گسترش و تعمیق همکاری های دو جانبه را فراهم نماید.

با تشکر
رضا مهدوی پور
مدیر عامل



2MTA completed secondhand crude oil refinery plant Quotation (COR-3)

Summary of the report

Hicho is a company specializing in second-hand factory relocation. We have rich experience in information collection of second-hand factories in China, technical and commercial docking, protective dismantling, transportation and export of all kinds of equipment out of China. Following up on the specific situation of the user, Hicho can integrate the powerful technical force in China to assist the relocated second-hand factory in the range of construction, engineering, commissioning, and performance guarantee if required by user during the whole relocating process both in technical and business support.

The second-hand oil refinery in this project is a relatively well-known private enterprise in China. Because of the government's restraint on the scale of the refinery, the scale of 2MTA is too small, and it is required to stop production. After the parent company plans to stop the refining business, it will use its existing personnel, funds and venues to carry out other projects. Now the whole equipment was dismantled and packed. This plant was original sold to other buyer, Due to the financial reason, the buyer stopped further purchasement.

In this report, some basic information of this factory is introduced. The factory is a complete oil refinery, which starts from crude oil and goes through various processes to finally obtain gasoline and diesel that meet the Euro 4 standard. The name, size and basic equipment of each unit are introduced. A commercial quotation was given, including whole plant procurement, shipment, engineering, and EPC on this whole relocation project.

Hoto is a well-known oil refinery design institute in China. Some units of the current plant are designed by Hoto. Hicho has contacted with Hoto, Hoto expresses his willing to provide a full range of technical support according to buyer's requirements. Hoto participated in the overall design of another Chinese oil refinery's with similar scale overall relocation to Africa last year.

Regarding language, this project is a purely Chinese project, and all original technical materials are in Chinese. All contracts, technical documents, etc. formally submitted by Hicho in the future will be in English, or bilingual both Chinese and English. Hicho has obtained a large number of original technical materials, but the translation of massive technical materials is a huge workload and will take lots of time. At this stage, Hicho usually translates the main technical content to confirm and connect all technical indicators before signing the project. The translation of all technical documents as a whole needs to wait until the contract is signed, and then entrust a translation company to do the translation.

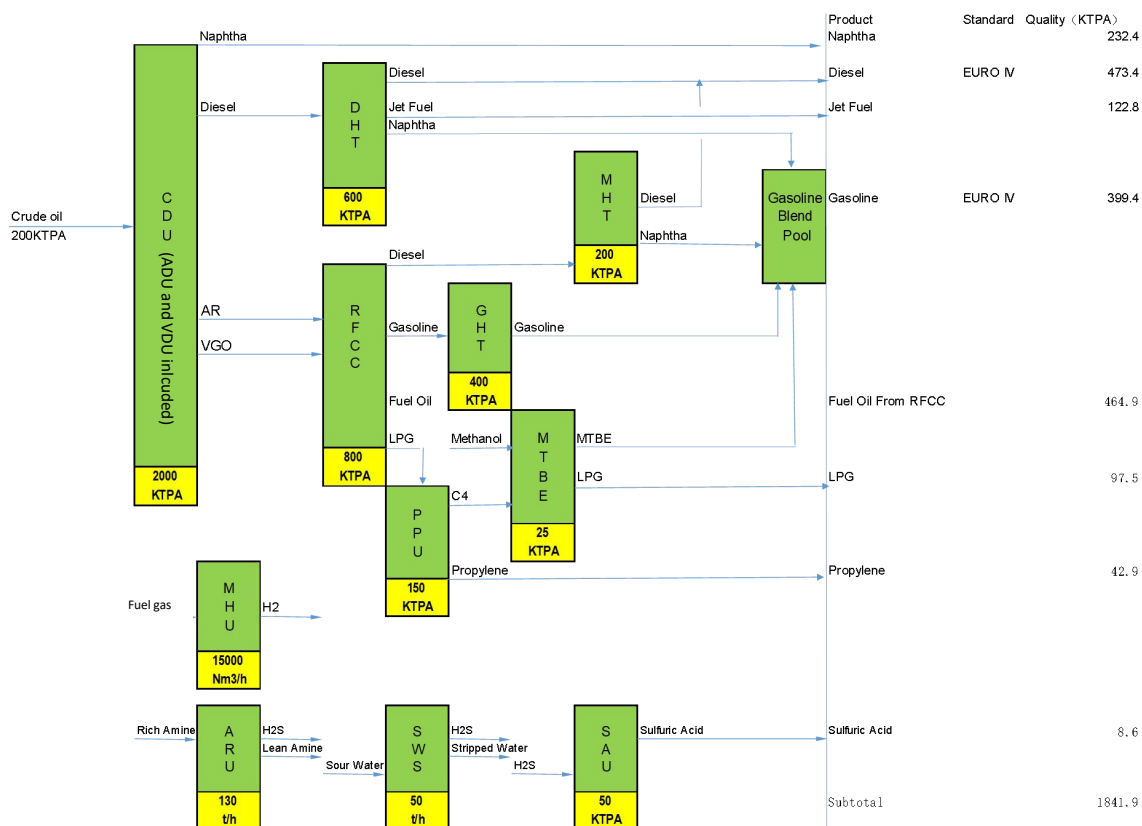
Plant introduction:

This company is a Chinese private enterprise, which was established in 2007. The equipment units were gradually increased to 2 MTPA capability of crude oil refinery, and the cumulative equipment investment was about 3.1 billion CNY. Today, the plant has been shut down on 2021, and all of the equipment is in good conditions.

This plant was originally sold to a company in Congo, and now the work of dismantling and cleaning has been completed, but the company in Congo stopped buying it due to financial problems.

This plant is mainly engaged in the production and sale of gasoline, diesel, liquefied petroleum gas, sulphur and other products. At present, the company has a primary processing capacity of 2 million tons per year of crude oil, a comprehensive processing capacity of over 2.5 million tons per year.

Brief Process Scheme



Abbreviation explanation

No.	Abbreviation	Unit Name
1	CDU	Crude Distillation Unit, include Atmosphere Distillation Unit (ADU) and Vacuum Distillation Unit (VDU)
2	RFCC	Residue Fluid Catalytic Cracking unit
3	DHT	Diesel Hydrogenation unit
4	HPU	Hydrogen Production Unit
5	PPU	Propane Propylene separate unit
6	MTBE	MTBE unit
7	GHT	Gasoline Hydrogenation Units
8	MHT	Middle pressure diesel hydrotreating units
9	SAU	Sulfuric Acid Unit
10	SWS	Sour Water Stripping Unit
11	ARU	Amine Treatment Unit



Feed and product list

	Name	Specification	Capacity (KPTA)
Feed	Crude oil		2000
	methanol		31.8
product	Naphtha		232.4
	Diesel	EURO IV	473.4
	Gasoline	EURO IV	399.4
	Jet Fuel		122.8
	Fuel Oil		464.9
	LPG		97.5
	Propylene		42.9
	Sulfuric Acid		8.6
	subtotal		1841.9

Feed type and analysis parameter:

The properties of crude oil of CDU is design parameters, the value of these properties can allow for fluctuations within a certain range

No	parameter	value
1	API	21.7
2	Density, kg/m ³ @20°C	920.0
3	Flash point (closed cup) °C	47
4	Acid value, mgKOH/g	<0.5
5	Carbon residue (CCR) , w%	3.48
6	Sulfur contents, wt%	1.5
7	Metal contents	
	Ni, µg/g	<20
	V µg/g	<2
8	TBP, °C	w%
	HK-180°C	6.0

No	parameter	value
	180°C-350°C	22.0
	350°C-540°C	35.0
	> 540°C	37.0

Reasons for suspension of production

The Chinese government is increasingly restricting the capacity of refineries, based on the consideration of environmental protection and economies of scale, small refineries are required to be shut down. The plant is within the scope of being shut down by the government.

Quotation

Price as below:

No	Item	Price (Million CNY)	Notes
1	Equipment (Ex-plant price)	460	Include equipment, dismantling and packing

2	Shipping	30	optional
3	Engineering service by Hoto	Discuss later if required	optional
4	The complete relocation EPC including performance guarantee by Hoto	Discuss later if required	optional
Total		490	Equipment and shipping

Equipment payment term:

5% deposit upon Signing of LOI,

55% down payment upon signing of the contract,

40% upon Equipment departure from the plant.

Unit included in the purchase list

No.	Abbreviation	Unit Name	Notes
1	CDU	Crude Distillation Unit, include Atmosphere Distillation Unit (ADU) and Vacuum Distillation Unit(VDU)	
3	RFCC	Residuel Fluid Catalytic Cracking unit	
4	DHT	Diesel Hydrogenation unit	
5	MHU	Fuel gas Hydrogen Unit	
6	PPU	Propane Propylene separate unit	
7	MTBE	MTBE unit	
8	GHT	Gasoline Hydrogenation Units	

10	MHT	Middle pressure diesel hytrotreating unit	
13	SAU	Sulfuric Acid Unit	
14	SWS	Sour Water Stripping Unit	
15	ARU	Amine Treatment Unit	
16		Gas cabinets and desulphurisation equipment	
17		Steam boiler unit 2x30t/h 1.0MPa steam boiler	
18		Steam Condensate Treatment unit	
19		Cooling water unit 9000m ³ /h of cooling water, including 1*4000m ³ + 1*3000m ³ + 1*2000m ³	
20		Substation 1 x 35KV substation	
21		Wastewater treatment unit 100t/h+200t/h oily wastewater treatment	
22		Demineralized water unit 80t/h water treatment capacity	
23		Plant Air, instrument Air and Nitrogen unit	

List of the equipment

Unit explanation

No.	Unit	Abrv	Capacity: KTA	Briefly description	licensor
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1	Crude Distillation Unit	CDU	2,000	The crude oil is pretreated at this unit by desalination and dehydration, then is distilled by atmospheric and vacuum continuously to obtain straight distillation naphtha, straight distillation diesel, Atmosphere residual oil(AR), vacuum Gasoil (VGO) and vacuum residual oil(VR).	open art
2	Residuel Fluid Catalytic Cracking unit	RFCC	800	The riser reactor is applied. The feed is Atmosphere residual and Vacuum gasoil from CDU, This unit was designed by Hoto and has been successfully running for about 14 years.	HOTO
3	Diesel Hydrogen ation unit	DHT	600	The diesel from CDU will be desulphurized to produce clean diesel	FRIPP
4	Fuel gas Hydrogen Unit	MHU	15000Nm ³ /h	The feed is Fuel gas and the product is hydrogen	open art
5	Propane Propylene separate unit	PPU	150	The LPG from RFCC will separate to produce propane and propylene product, the remained C4 will be produce MTBE in MTBE unit	open art
6	MTBE unit	MTBE	25	The remained C4 from PPU and methanol will be reacted to produce MTBE	open art
7	Gasoline Hydrogen ation Units	GHT	400	Gasoline from RFCC will be hydrodesulphurized to produce clean gasoline	FRIPP
8	gasoline and diesel mixed hydrogen ation units	MHT	200	The diesel from DCU, RFCC will be hydro-desulphurized to produce clean diesel	FRIPP
9	Sulfuric Acid Unit	SAU	50	the technology is WSA process, the feed is H ₂ S, the product is sulfuric acid	Topsoe
10	Sour Water Stripping Unit	SWS	50t/h	the feed is sour water from other units, the product is H ₂ S and stripping clean water	HOTO

11	Amine Treatment Unit	ARU	130t/h	the feed is rich MDEA solution, the product is H ₂ S and Lean MDEA for circulation.	HOTO
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Public utility list

NO.	Name of Units	Design scale	Comments
1	Gas cabinets and desulphurisation equipment		
2	Steam boiler unit	2x30t/h 1.0MPa steam boiler	
3	Steam Condensate Treatment unit		
4	Cooling water unit	9000m ³ /h of cooling water, including 1*4000m ³ + 1*3000m ³ + 1*2000m ³	
5	Substation	1 x 35KV substation	
6	Wastewater treatment unit	100t/h+200t/h oily wastewater treatment	
7	Demineralized water unit	80t/h water treatment capacity	
8	Plant Air, instrument Air and Nitrogen unit		

More public utilities will be added in the later update

Unit photos



CDU -1



CDU -2



CDU -3

RFCC-1



RFCC-2



PPU



MTBE



GHT-1



GHT-2



GHT-3



DHT-1



DHT-2



MHU-1



MHU-2



MHT



SAU-1



SAU-2



SAU-3

Packed Pics of part of equipment



DHT reactor



The distillation tower



The instrument



Steel Structure



Furnace heat tube



1 INTRODUCTION

1.1 HOTO -- Shanghai Hoto Engineering Inc.

Shanghai Hoto Engineering Inc. (hereinafter the “HOTO”) specializes in providing whole process engineering solutions for the construction, innovation development in the refining, petrochemical coal to olefin industries.

HOTO, putting people first taking technology management as the core competitiveness, is a whole life-cycle project management service provider in the refining, petrochemical coal to olefin industries. With abundant professional engineer's management teams who experienced in small to mega projects, HOTO is capable of undertaking mega projects in the manner of project consultant, engineering design, EPC PMC. HOTO is also capable of providing owners with a variety of financing services channels. HOTO is developing the business both to the upstream and downstream.

HOTO has established advanced computer internet application system with internationally advanced application software engineering database for process technical, engineering design, project management office automation, is capable to the engineering design project management in the international practices. Especially in Fluid Catalytic Cracking, Hydrotreating, Desulfuring, Sulfur Recovery, Alkanes Dehydrogenation LPG comprehensive utilization, HOTO established its own engineering technical characteristic.

In the recent years, HOTO strengthens the management, pays attention to the essential technique, improves the business scope as well as implements reform innovation in design management form technical research aspects which achieved remarkable outcomes has been undertaken a lot of middle mega oil refinery petrochemical projects in the manner of consulting, engineering design, EPC PMC both in China overseas.

HOTO holds the engineering certificates including:

- 1) CLASS A engineering design qualification in engineering consulting
- 2) CLASS A engineering design qualification in chemical engineering, petrochemical