



شرکت پالایش نفت امام خمینی (ره) سازنده (سای مام)

آگهی فراخوان مناقصه عمومی دو مرحله ای شماره RND-0318001-MH تحت عنوان

خرید کانالیست ایزومریزاسیون با پایه زیرکونیومی

شرکت پالایش نفت امام خمینی (ره) سازنده در نظر دارد تامین کالای موضوع صدرالاشاره را از طریق مناقصه عمومی طبق اسناد مناقصه به تامین کننده واجد شرایط واگذار نماید. شرکتهای متقاضی می توانند جهت دریافت اطلاعات بیشتر و شرایط شرکت در مناقصه به سایت WWW.IKORC.IR مراجعه نمایند.

۱- موضوع مناقصه :

الف) شرح مختصر:

ردیف	شماره مناقصه	موضوع مناقصه	مقدار	مبلغ برآورد	مبلغ تضمین شرکت در مناقصه (ریال)
01	RND-0318001-MH	کانالیست ایزومریزاسیون با پایه زیرکونیومی	۶۴ مترمکعب	۸,۰۳۰,۴۹۰,۸۰۰,۰۰۰	۸۰,۵۶۵,۹۰۸,۰۰۰

ب) تضمین مورد قبول شامل : ضمانتنامه بانکی / چک تضمینی / چک بین بانکی / واریز وجه نقد (ج) شرکت در رد یا قبول هر یک یا تمام پیشنهادها بدون آنکه محتاج به ذکر دلیل باشد مختار است.

۲) کلیه اشخاص حقوقی واجد شرایط میتوانند مطابق تاریخ های ذیل جهت دریافت اسناد استعلام ارزیابی به آدرس اینترنتی فوق الذکر مراجعه نمایند و پس از دریافت اسناد و مطالعه آن ، مستندات ارزیابی کیفی را در قالب لوح فشرده در مهلت مقرر به آدرس ذیل ارسال نمایند. بدیهی است پیشنهاد هایی که با شرایط مندرج در فراخوان اختلاف داشته و ارسال مدارک مناقصه از سوی متقاضیان بعد از مهلت مقرر قابل پذیرش نمی باشد. پس از ارزیابی کیفی از متقاضیان تأیید شده جهت ادامه فرآیند مناقصه دعوت بعمل خواهد آمد.

۳) مهلت دریافت اسناد :

۳-۱- مهلت دریافت اسناد استعلام ارزیابی کیفی: دوشنبه مورخ ۱۴۰۳/۰۲/۱۷

۳-۲- مهلت ارسال پاسخ استعلام ارزیابی کیفی: شنبه مورخ ۱۴۰۳/۰۲/۲۹

۴) نام و نشانی دستگاه مناقصه گزار: اراک، کیلومتر ۲۰ جاده بروجرد- دو راهی سازنده- شرکت پالایش نفت امام خمینی (ره) سازنده- اداره تدارکات کالا- اتاق ۱۱۸

تلفن تماس: ۰۸۶-۳۳۴۹۲۸۴۲ (آقای عظیمی) و یا ۰۸۶-۳۳۴۹۲۸۴۰

فکس: ۰۸۶-۳۴۱۶۶۲۴۳ یا ۰۸۶-۳۴۱۶۶۰۱۳

*آخرین مهلت اعلام آمادگی: ۱۴۰۳/۰۲/۱۷ (از طریق فاکس یا ایمیل)

*آخرین مهلت تحویل CD مدارک ارزیابی کیفی، پایان وقت اداری روز شنبه مورخ ۱۴۰۳/۰۲/۲۹ اعلام می گردد. (از طریق پست)

آدرس پست الکترونیکی: PROCUREMENT@IKORC.IR شماره تلفن تأییده فاکس و ایمیل: ۰۸۶-۳۳۴۹۲۸۳۵

روابط عمومی شرکت پالایش نفت امام خمینی (ره) سازنده



شرکت پالایش نفت امام خمینی (ره) سازند (سهامی عام)

شرکت / فروشگاه محترم مناقصه عمومی دو مرحله‌ای شماره : RND-0318001-MH

لطفاً به منظور انجام ارزیابی کیفی آن شرکت / فروشگاه ، طبق جداول و محاسبات پیوست مدارک و مستندات ذیل را

ارائه فرمایید:

۱- جهت ارزیابی توان مالی

الف : مدارک مورد نیاز جهت ارزیابی حداقل یکی از موارد ذیل:

۱-الف : مالیات متوسط سالانه پرداخت شده (برگ تشخیص / قطعی مالیات عملکرد ۱۰ سال اخیر).

۲-الف : فروش یکسال گذشته (لیست خریداران شامل نام خریدار ، شرح کالا، مبلغ کالا) مستند به قراردادهای و اسناد فروش با صورت های مالی تأیید شده.

۳-الف : مالیات متوسط سالانه مستند به اسناد مالیات های قطعی و علی الحساب پرداخت شده .

۴-الف : حداکثر تائیدیه کتبی اعتبار از طرف بانکها.

۵-الف : دارائیهای ثابت.

۶-الف متوسط بیمه سالانه (برای قراردادهای پیمانکاری).

امتیاز	فرمول
۱۰۰	$1/2 \times ES \leq RI$
۹۰	$ES \leq RI < 1/2 \times ES$
۸۰	$.8 \times ES \leq RI < ES$
۷۰	$.6 \times ES \leq RI < .8 \times ES$
۶۰	$RI < .6 \times ES$

۲- جهت ارزیابی حسن سابقه / مشتریان قبلی / تضمین کیفیت و تضمین خدمات محصولات مدارک ذیل مورد نیاز است :

الف : کیفیت کالای مورد نظر (ارائه مدارکی مبنی بر فروش کالای مورد نظر به خریداران / ارائه مدارکی مبنی بر تطابق مشخصات فنی ارائه شده از سوی فروشنده با کالای مورد نظر)

ب : ارائه استانداردها و گواهی تضمین کیفیت ساخت کالای مورد نظر فروخته شده (در صورت موجود بودن)

ج : ارائه مدارک مربوطه در خصوص دارا بودن نمایندگی

د : ارائه تائیدیه کالای فروخته شده

۳- جهت ارزیابی تجربی مدارک ذیل مورد نیاز است :

الف: ارائه اساسنامه شرکت یا پروانه کسب

ب : ارائه شماره اقتصادی / کد ملی



تاریخ:

شرکت پالایش نفت امام خمینی (ره) نازند (سهامی عام)
فرم ارزیابی تأمین کنندگان ~~سازنده کالا~~ ~~تولید کننده کالا~~

منافسه عمومی دو مرحله‌ای شماره: RND-0318001-MH نام شرکت:

تحت عنوان: خرید کاتالیست ایزومریزاسیون با پایه زیر کونیومی

A: توان مالی

ارزیابی بر اساس یکی از پارامترهای ذیل انجام می شود:

<input type="checkbox"/> در آمد / فروش سالانه	<input type="checkbox"/> اظهار نامه مالیاتی	<input type="checkbox"/> متوسط مالیات سالانه
<input type="checkbox"/> دارائی های ثابت	<input type="checkbox"/> تأیید کتبی اعتبار بانکی	<input type="checkbox"/> متوسط بیمه سالانه
<input type="checkbox"/> صورتهای مالی حسابرسی شده: دارد <input type="checkbox"/> ندارد	میزان توان عالی	میلیارد ریال
اعتیاز کسب شده: <input checked="" type="checkbox"/> ۲۰ <input type="checkbox"/> ۳۰ <input type="checkbox"/> ۴۰ <input type="checkbox"/> ۵۰ <input type="checkbox"/> ۶۰ <input type="checkbox"/> ۷۰ <input type="checkbox"/> ۸۰ <input type="checkbox"/> ۹۰ <input type="checkbox"/> ۱۰۰		

حداقل امتیاز لازم: ۷۰

B: ارزیابی مشتریان قبلی، حسن سابقه و تضمین کیفیت و خدمات محصولات

بارامترهای ارزیابی	مورد تأیی نیست		
	عالی اعتیاز ۵	بسیار خوب اعتیاز ۴	خوب اعتیاز ۳
کیفیت کالای مورد نظر مندرج در اسناد فنی ارائه شده		*	
خدمات و پشتیبانی			*
انجام تعهدات (گارانتی)			*

اعتیاز ۹۷

$(10 \div 15) \times 100 = 67$

C: ارزیابی تجربی

سال تأسیس:

اعتیاز	سابقه	
۱۰۰	بیش از ۱۰ سال سابقه	تولید کننده / سازنده کالا
۹۰	۵ سال تا ۱۰ سال سابقه	
۸۰	با کمتر از ۵ سال سابقه	
۸۰	بیش از ۱۰ سال سابقه	تأمین کننده کالا
۷۰	۵ سال تا ۱۰ سال سابقه	
۶۰ *	با کمتر از ۵ سال سابقه	

اعتیاز سازنده کالا: —

اعتیاز تأمین کننده کالا: ۹۰

اولویت معیارها:

۲	A
۱	B
۲	C

فرمول: $0.7 \times (A + C) + 0.3 \times B =$ اعتبار کل

اعتیاز سازنده / تولید کننده کالا: —

اعتیاز تأمین کننده کالا: ۹۰

$0.7 \times 90 + 0.3 \times 90 = 84$

بر اساس ارزیابی مدارک فوق شرکت مذکور مورد تأیید می باشد

به دلیل عدم مدارک ذیل، شرکت مذکور مورد تأیید نمی باشد

۱- عدم ارائه مدارک مالی

۲- عدم ارائه مدارک حسن سابقه و ..

۳- عدم ارائه مدارک تجربه و سوابق مربوط

۴ - قیمت تراز شده به نحوه زیر محاسبه میگردد و تعیین برنده پس از بررسی قیمت تراز شده انجام خواهد شد:

$$L = \frac{100 \times C}{100 - [i \times (100 - t)]}$$

L = قیمت تراز شده

C = قیمت پیشنهادی (درج شده در پاکت قیمت)

i = ضریب تاثیر (بین ۰.۱ تا ۰.۴) ۰.۲

t = امتیاز کل فنی بازرگانی (بین حداقل امتیاز فنی بازرگانی قابل قبول تا صد)

مشخصات فنی و اطلاعات مربوطه:

خرید کاتالیست ایزومریزاسیون

ردیف	شرح :	واحد	مقدار
۱	کاتالیست ایزومریزاسیون با پایه زیر کونیومی	مترمکعب	۶۴

تامین کننده های داخلی می بایست کاتالیست را از شرکت های تولید کننده بین المللی مورد تایید به

شرح ذیل تامین نمایند:

۱- UOP

۲- NEFTEHIM

۳- PROMO CATALYST

کاتالیست می بایست بصورت استاندارد در پوشش نایلونی و داخل بشکه فلزی بسته بندی گردد.

میزان جریمه تاخیر معادل دو دهم درصد از مبلغ کل قرارداد به ازای هر روز تاخیر

دو سال گارانتی و شش سال گارانتی شرکتی

ظریب تاثیر جهت قیمت تراز شده: ۰.۴

حداقل امتیازات پیشنهادات فنی قابل قبول: ۷۰

Technical Specifications of ISOMERIZATION Catalyst(Zirconium Sulfate Catalyst Base Type)

«»

1. Definition
2. Introduction
3. Prequalification Criteria
4. Process Description
5. Feed and products Specification
6. Catalyst Performance
7. Operating Constraints
8. Scope of Services
9. Evaluation Criteria
10. Guarantees
11. Penalties

Section 1: Definition

1. **Buyer:** shall mean Imam Khomeini Oil Refining Co. (hereinafter referred as IKORC), incorporated and existing under the laws at Islamic Republic of Iran is located at 20Km.BroojerdRoad-Arak-Iran.
2. **Supplier:** shall mean any supplier/vendor who shall be responsible for supply catalyst.
3. **ISOM:** Isomerization unit is designed to process Light Naphtha received from the Naphtha Splitter in NHT2 to improve RON of light naphtha employing platinum catalyst to convert low quality light naphtha in the presence of hydrogen. The unit is designed for a capacity of 8500 BPSD of low octane hydrotreated light naphtha.
4. **Purchase order, P.O** means the binding agreement between buyer and catalyst supplier for the supply of Isomerizationcatalyst and additional services as described in the “Purchase order documents”.

Section 2: Introduction

The technical specification is being released for procurement of suitable catalysts for Isomerization Unit (ISOM) of Imam Khomeini Oil Refining Company. The feed basis, terms of reference, product yields & qualities, general description, constraints

definition, scope of supply & services, performance guarantees and penalties etc. follow in the subsequent sections of the document.

The Product quality and yield pattern and RON of Isomerate to be submitted with the technical bid.

Imam Khomeini Oil Refining Company (IKORC) require 64 m^3 of catalyst (Zirconium Sulfate Catalyst Base Type) for Isomerization unit (ISOM), which was originally designed and licensed by RIPI (Research Institute of Petroleum Industry) with one reactor to process 8500** BBL/day of Light Naphtha and guaranteed Isomerate product RON (RON= Min. 86). Bidders are required to submit 1 KG sample of Main/Active Catalyst to IKORC. The sample is required to be submitted before the due date of tender. Offer, without the sample is liable to be rejected.

****This amount of feed is based on design condition of the unit. RON & yield of the product up to $70 \text{ m}^3/\text{h}$ (10566 BBL/day) should be calculated by catalyst suppliers too.**

Section 3: Pre Qualification Criteria (PQC)

1. The bidder should be original manufacturer of Catalysts for ISOM unit or official local agent and have supplied the catalyst anywhere in the world from 2015 onwards for ISOM unit with same type of catalyst.
2. The catalyst supplier shall provide references regarding successful and satisfactory performance of the offered same type of catalyst for the desired ISOM units operating under similar conditions and same or better guaranteed performance in Iran or abroad. The reference catalyst must have completed minimum one year of successful operation. Reference details including the copy of the purchase order to be attached. Offers, without any reference of same type of catalyst are liable to be rejected.
3. **IKORC** may at its discretion seek the performance details of the supplier's catalyst(s) from end users with similar plants who are using the same catalyst(s), which is offered to **IKORC**. In the event of receipt of no satisfactory performance, the catalyst(s) offered will be deemed to be technically disqualified and this offer will not be considered for further evaluation.

Section 4: Process Description

Isomerization unit is designed to process Light Naphtha received from the Naphtha Splitter in NHT2 to improve RON of light naphtha.

Unit design capacity is 8500 BPSD (10566 BBL/day at actual run). The unit turndown ratio is 50% of the design capacity.

There are two primary products from the unit:

- Isomerase routed to product storage.
- Stabilized LPG routed to product storage.

There are additionally:

- Stabilizer Deethanizer off Gas directly routed to the refinery fuel gas header.

ISOM consists of the following sections:

- (a) Reactor Section
- (b) Separation Section
- (c) Make-up hydrogen compressor.

Section 5: Feed and Products Specification

5-1-1 Feed Specification

a-Fresh Feed

The feedstocks of ISOM Reactor are Light Naphtha from the Naphtha Splitter in NHT2 and NC6 Recycle from Deisohexanizer column (Table 1, 2). Make-up hydrogen supplied from Octanizing and GHT Units (Table 3).

Table 1 - PROPERTIES OF ISOMERIZATION FRESH FEED *		
Source: Naphtha hydro treating unit (NHT2)		
Composition Data wt%	Design Condition	Actual Run**
N-C4	0	0.0
2,2Dimethylpropane	0	0.85
Iso-Pentane	8.82	12.86
N-C5	15.02	21.13
2,2DMC4	4.15	0.37
CC5	5.63	1.77
2,3DMC4	3.67	1.76
2MC5	8.02	11.68
3MC5	4.95	9.02
N-C6	18.27	21.83
2,2DMC5	1.13	0.22
MCC5	13.89	6.33
2,4DMC5	0.43	0.68
2,2,3TMC4	0	0.02
Benzene	5.7***	2.59
3,3DMC5	0.06	0.11
CC6	9.88	4.10
2MC6	0.29	1.73
2,3DMC5	0.02	0.74
1,1DMCC5	0	0.25
3MC6	0.07	1.09
cis-1,3DMCC5	0	0.32
trans-1,3DMCC5	0	0.2
3EC5	0	0.36
Trance-1,2DMCC5	0	0.0
N-C7	0	0.0
MCC6	0	0.0
EthylCC5	0	0.0
Toluene	0	0.0

Total		100	100.00
N-Paraffins		33.29	42.96
Isoparaffins		31.18	41.10
Aromatics		5.7	2.59
Naphthenes		29.4	13.33
Olefins		0.43	0.02
Total		100	100
Distillation Range, ASTM D- 86	IBP	...	41
	5%	...	50
	10%	...	53
	30%	...	56
	50%	...	62
	70%	...	70
	90%	...	80
	95%	...	85
	FBP	...	90
Total Sp. Gr		0.691	0.67
Molecular Weight, kg/kmol		80.76	...
Total Sulfur, ppm wt		<0.5	<0.5
Total Nitrogen, ppm wt		<0.5	<0.5
Viscosity, cP		0.2681	...
Water ppm		...	20
STD Volume Flow Rate, m3/hr		56.31	70.0 **

**Difference between Design and Actual condition due to changing in crude oil feed, Suppliers must take samples from Isomerization FreshFeed, NC6 Recycle from Deisohexanizer column and shall analyze it by their laboratory.*

*** RON & yield of the product for minimum 70 m³/h(10566 BBL/day)should be calculated by catalyst suppliers.(All calculation and guaranties must be based on the actual unit feed components)*

**** Benzene content of the product should be calculated and guaranteed by catalyst suppliers based on the fresh feed's benzene content of design condition (5.7 wt%).*

b- NC6 Recycle

Table 2- NC6 Recycle from Deisohexanizer column		
Item	Design Data	
Tem. °C	96	
Pressure, Barg	28.4	
Total mass flow ,Kg/hr	34658	
Molecular Weight, kg/kmol	85.55	
STD Volume Flow Rate, m ³ /hr	50.12	
Cycloheptane	0.011332	
22-Mbutane	1.009532	
23-Mbutane	3.926236	
2-Mpentane	21.02612	
3-Mpentane	22.0655	
N-Hexane	21.36678	
2,2-Dimethylpentane	-	
Mecyclopentan	25.35456	
2,4-Dimethylpentane	0	
Benzene	0.004507	
Cyclohexane	5.235436	
C7+	0	
Total	100	

5-1-2 Make Up Hydrogen

The make-up hydrogen for ISOM is supplied from the net gas compressor third stage discharge of Octanizingunit. The injection point of purified hydrogen is at the discharge of the recycle gas compressor.

Composition and specifications of the hydrogen is listed below:

Composition, mol%	Design Data	Actual Data
Hydrogen	94.49	94.84
Methane	2.02	1.86
Ethane	2.15	1.63
Propane	0.83	1.06
N-butane	0.16	0.2
I-butane	0.18	0.29
C5+	0.17	0.14
Total	100	100
Viscosity ,cp	0.01032	...

5-2 Products Specification

There are two primary products from the ISOM Unit, isomate product and Stabilized LPG which are routed to storage tanks. In addition, off gas from Deethanizer and Stabilizer is sent to the refinery fuel gas header.

5-2-1 Isomate

Specifications of product of ISOM unit (isomate) are as follows:

Properties	
Composition Data wt%	Design Data
N-C4	0
Neopentane	0
Isopentane	25
N-C5	1
2,2DMC4	21
CC5	7
2,3DMC4	7

2MC5	22
3MC5	10
N-C6	2
2,2DMC5	0
MCC5	2
2,4DMC5	0
2,2,3TMC4	0
Benzene	0.13
3,3DMC5	0
CC6	2
2MC6	
2,3DMC5	0
1,1DMCC5	0
3MC6	0
cis-1,3DMCC5	0
trans-1,3DMCC5	0
3EC5	0
Trance-1,2DMCC5	0
N-C7	0
MCC6	0
EthylCC5	0
Molecular Weight(kg/kmol)	80.89
RON	Guarantee 86
MON	Expected 85
Benzene Content	0.1 vol%
RVP	Max 80 kPa
YIELD	Guarantee 92 wt%

محل مهر خریدار:

محل مهر فروشنده:

5-2-2 Stabilizer Deethanizer off Gas

The off gas from Stabilizer and Deethanizer will be directly routed to the refinery fuel gas header.
Flow rates and characteristics of the off gas are presented as follows:

Properties	Design Data	
Composition , mol%		
Hydrogen	14.9	
Methane	10.3	
Ethane	24.7	
Propane	42.1	
I-butane	5	
N-butane	2.9	
C5+	0.0	
Total	100	
Viscosity , cP	0.00956	
Molecular Weight , kg/kmol	32.7	
Flowing Density , kg/m ³	6.24	

5-2-3 LPG Product

Table- 6 LPG Product Specification		
Composition mol%	Design data	
Hydrogen	0	
Methane	0	
Ethane	0.0145	
Propane	47.45	
I-butane	25.54	
N-butane	26.65	
I-pentane	0.043	
N-pentane	0.29	
Total molar flow rate (kmol/hr)	68.91	
Viscosity (cp)	0.11666	
Molecular Weight (kg/kmol)	51.51	
Flowing Density(kg/m ³)	514.5	

5-3 Design and operating conditions:

Table-7>Main Operation of Isomerization Unit					
Item	Design Condition	Actual Run	Item	Design Condition	Actual Run
Fresh Feed Rate,m ³ /h	56.31*	70	Reactor Inlet Temperature, °C	220(SOR)/270(EOR)**
Reactor Feed (Gas), m3/hr	3289	...	Max. Reactor Delta T, °C	30
LHSV,h ⁻¹	2	Reactor Outlet Temperature, °C	250(SOR)/ 290(EOR)
H ₂ /HC Ratio,mol/mol	1:2 (normally 1.05)	1.1	Recycle Gas Compressor (C-3301 A/B)		
Hydrogen Make up,Nm ³ /h	6214	2500	Suction Pressure, barg	21.7	22.5
Recycle Gas Flow,Nm ³ /h	21770	22500	Discharge Pressure, barg	29.8	27.3
Recycle Gas H ₂ Purity, mol%	82.5	93.67			
Make-up Gas H ₂ Purity, mol%	94.49	95.16			

*This amount of feed is based on design condition of the unit. RON & yield of the product for minimum 70 m³/h(10566 BBL/day) should be calculated by catalyst suppliers.

**These values are design data, the highest score will be given to the proposal that has the lowest inlet temperature(SOR & EOR) to the reactor.

5-3 Catalyst Loading:

Table 8-Catalyst loading	
Reactor	Volume of Catalyst, M ³
R-3301	60 (max)

5-4 Isomerization Heater:

Table 9- Isomerization Heater		
Heater	Max Duty , Kcal/h	Max Outlet Temperature °C
H-3301	3.2*10 ⁶	290

5-4 Inlet Pressure of Reactor:

	Design
R-3301	25.8

Section 6: Catalyst Performance

6.1 Catalyst Requirement:

Catalyst type and quantity must meet the following requirements:

1. Catalyst to handle fresh feed rate as mentioned in Section 5-1and under actual operating condition and Operating Constraints (section 7) the guaranteed items of table 11 shall be meet.
2. Catalyst offered should have proven commercial performance of minimum oneyear in operation.

6.2 Format for submission of yield guarantee:

Based on RPI design and guarantee for increase Light naphtha octane to 87 RON of Gasoline and below items should be guarantee with suppliers.

Parameter	Guarantee
RON of Product	≥ 86
Benzene content on product	<0.1% vol
RVP of product , KPa	Max. 80
Yield of Isomate Product, wt%	Min 92
Total life of Catalyst(min) , year	Min 2 +6 years corporate guaranteed

6.3 Catalyst life Guarantee:

The catalyst should be designed to meet the guaranteed quality, product yield, RON and specifications as per section 10 for a minimum period of 2 years operation while processing at feed specification as per section 5-1 and 6 years corporate guaranteed. Penalties as per section 11 will be applicable if the above is not met.

6.4 Performance Guarantee Test Run:

1-For establishing the above performance guarantees, test runs will be conducted either with design feed stock or feed stock having similar characteristics as those of design feed stocks. The performance guarantee test run for catalyst will be conducted within 6 months from the date of introduction of fresh feed after catalyst loading.

2. The catalyst will be accepted by IKORC only if the guarantees specified by the vendor & IKORC have been met in the PGTR (Performance Guarantee Test Run). Otherwise penalties shall be applicable as per the section 11.

3. Catalyst supplier shall provide details, any procedures, special conditions required for conducting performance guarantee run. The analysis obtained from IKORC laboratory shall be considered as final. These methods shall be in accordance with normal practice. (*No third party analysis is envisaged*).

4. The test run shall commence when the unit is operating under stable conditions and shall be conducted for a period of 72 to 168 consecutive hours based on feed availability. Based on mutually agreed and jointly collected measurements during the test run, Catalyst supplier and IKORC shall evaluate the results of the test run to confirm conformity with the performance guarantees.

7 Operating Constraints

Below operating constraints of ISOM unit to be considered by vendor while designing the catalyst and providing guarantees.

1. Max. Charge Heater Tube Skin Temp. is 520 °C
2. Maximum design heater outlet temperature is 270°C (End Of Run) (inlet temperature of R-3301)
3. Max. skin temp. of reactor at normal pressure 400 °C
4. Maximum recycle gas actual flow is 21.77 KNM³/hr.
5. Maximum C7+ content for design shall be 8.0wt% on total feed

8 Scope of services:

Vendor shall provide the following services:

8.1 Scope of Supply & Services

- i) Supply of necessary catalyst.
- ii) In price bid, the vendor has to quote total catalyst cost CFR bases.
- iii) Vendor should assist by deputing expert during catalyst loading, start-up assistance and Performance Guarantee Test Run activities. IKORC requires approximately 10 days on site service (24 hrs basis) as part of catalyst proposal i.e.3 days round the clock backup for catalyst loading and 7 days for start up and Test Run. Subsequent to the catalyst loading, vendor shall go back and come again during the start up. Above services must include all the travels, boarding, lodging, transport and miscellaneous allowances at vendor's scope. Vendor shall submit detailed catalyst loading, start-up and PGTR reports immediate after each activity. Time spent during transit will not be considered by IKORC.
- iv) In case IKORC requires more than 10 days vendor's service for this activity, vendor to quote per diem rates in price bids for services needed at site, which willnot be considered for evaluation of offers.
- v) Vendor has to certify and sign various stage wise documentary clearances during catalyst loading and reactors box up after inspection.
- vi) Catalyst supplier shall also provide a certificate of worthiness after the successful completion of the catalyst loading. (Prior to first start up with the catalyst).
- vii) Vendor should provide operating parameters for other modes of operations (design & check cases).
- viii) Vendor shall provide periodic evaluation of catalyst performance on quarterly basis for ISOM. unit and offer technical assistance for trouble shooting arising in the unit till the catalyst is in use even after the guarantee period exceeds. Necessary data enabling the above will be furnished by IKORC.

8.2 Data / Documents to be submitted with the offer

Following information shall be submitted as a part of the technical offer (as per the following table format, Table - 12):

- a. Minimum Information to be furnished in the Technical Proposal is defined in this section. Metric system of units shall be followed for all information.
- b. Catalyst wise : Name, Type, size, Density, Average bulk density, wt% metal of content ,crushing strength, surface area, pore volume, Attrition loss, Crushing Strength , Loss on Ignition, the properties of catalyst with their standard method of measurement.
- c. Catalyst supplier shall submit all the details and technical information including data with respect to Process Guarantees, duly signed and complete in all respects, along with the offer.

- d. Catalyst supplier to provide both the estimated values and guaranteed values at SOR and EOR.
- e. Catalyst supplier shall provide necessary procedure and loading diagram for the loading of catalyst in ISOM's reactor.
- f. Catalyst supplier to provide information on the following key operating parameters at SOR/EOR, as a minimum, in the proposal for all cases.
- *Overall mass balance
 - *Reactor yield
 - *Temperature/Pressure at inlet and outlet of the Reactor
 - *Pressure drop across the Reactor
 - *Weighted Average Inlet Temperature (WAIT)
 - *Weighted Average Bed Temperature (WABT)
 - *The Recycle gas to oil ratio (H₂/HC)
 - *C4+ Recovery Yield wt. (%)
 - *C5 Activity wt. (%)
 - *C6 Activity wt. (%)
- g. As the vendor will specify SOR / EOR inlet, WAIT & WABT temperature, they will specify catalyst deactivation rate at the design charge for the design feed.
- h. Vendor must quote catalyst quantity as packed basis in kg unit and mention volume in M³ unit.
- i. Catalyst should be able to handle tumdown with fresh feed at 50% of design.
- j. Precautions, emergency procedures to be followed during start-up / normal operation / upsets / turnarounds.
- k. Information regarding catalyst poisons.
- l. Catalyst packing, handling, storage, loading & unloading procedure.
- m. Detailed Catalyst Performance monitoring calculations/procedure.
- n. Catalyst reaction chemistry.
- o. Reference list of units where the catalyst has been in operation. Catalyst without proven one year commercial experience is not acceptable.
- p. All necessary technical information or the operating parameters that affect the catalyst performance i.e. SOR & EOR conditions with respect to temperature, temperature rise, pressure drop, product yield, product quality etc.
- q. Signed Statement of Deviations as per the Tender documents.
- r. Vendor to note that catalyst will be loaded at a time determined by IKORC Guarantees will hold from the time whenever feed is introduced for the first time.
- s. Vendor to provide catalyst technical details/ Material Safety Data Sheet & manufacturers specification with the bid documents / Manufacturers certificate of analyses incorporating all properties given in the specifications for each batch supplied.
- t. Catalyst to be packed suitably in steel drums on heavy-duty pallets.

- u. Vendor to indicate the estimated variation in inlet Temp. WABT, WAIT, H₂/HC, C₄+ Recovery Yield wt (%), C₅ Activity wt. (%), C₆ Activity wt.(%) and product qualities with respect to change in design case feed properties.
- v. Vendor to provide their catalyst deactivation details/WABT (WAIT) curve with respect to time for design case.
- w. Vendor to mention the list of documents required by vendor from IKORC at various stages.

All of the following items should be included in the technical offer clearly:

Table 12-ISOM CATALYST INFORMATION			
MANUFACTURE	CATALYST NAME		
	COMPANY NAME		
	FACTORY ADDRESS & E-MAIL		
CATALYST CHARACTERISTICS			UNIT DATA
SOR TEMPERATURE @ 87 RON			°C
EOR TEMPERATURE @ 87 RON			
H ₂ /HC mol. RATIO (MIN)			Mol/mol
TOTAL LIFE			year
NO OF REGENERATION			
C4+ RECOVERY YIELD			wt. (%)
C5 ACTIVITY			wt%
C6 ACTIVITY			wt%
BENZENE CONTENT IN ISOMERATE			vol%
CATALYST PHYSICAL PROPERTIES*			
SHAPE			
DIAMETER			mm
SURFACE AREA			m ² /gr
PORE VOLUME			cm ³ /gr
BULK DENSITY			kg/m ³
CRUSHING STRENGTH			N
ATTRITION LOSS			wt%
LOI @ 900°C, 6 hr			wt%
CATALYST CHEMICAL PROPERTIES*			
ACTIVE METAL CONTENT			wt%
NITROGEN POISON LEVEL			ppm wt
SULPHUR POISON LEVEL			ppm wt
WATER CONTENT POISON LEVEL			ppm wt
TECHNICAL SERVICES (INCLUDING TRAINING AND TECHNICAL SUPPORT)			
PERFORMANCE GUARANTEE**			
USER REFERENCE LIST (COMPANY NAME & COUNTRY & YEAR & ADDRESS)***			

محل مهر خریدار:

محل مهر فروشنده:

**Third party inspection certificate of the catalyst properties and delivery contents. The third party company must be approved by the refinery (IKORC) and all the expenses of site visit, sampling and catalyst tests, before delivery to be included in the catalyst price.*

***Catalyst supplier shall stand guarantee for yield, product specification, RON of product, Benzene content on product 0.1%vol throughout the life of catalyst.*

****If the suppliers do not submit the consumers list, removed from the tender and the bid will not be accepted.*

9 Evaluation Criteria

9.1 The commercially offer will be equal with the following formula (Table – 13) and each items score (Table 14):

$$L = (100 * C) / (100 - (i * (100 - t)))$$

L = equal price

C = offer price

t = technical privilege (for accepted must be $t > 70$)

i = coefficient effect (for catalyst $i = 0.4$)

Table – 13 (Selection Criteria)

Tender :ISOM Catalyst		Tender NO.:RND-9818225-MY			
No.	Criterion Of Technical Assessment	Weight Percent Coefficient	Special Criteria	Description Of Details	Attached
1	Operating Cost	30			
2	Life Of Catalyst	20			
3	Productivity Of Catalyst	25			
4	Technical Support	5			
5	User Reference List	20	*		
NO.	DESCRIPTION OF DETAILS				Privilege
1	OPERATING COST				
	Operating Cost:1) Energy Consumption. 2) H2/HC Ratio				Attached form
2	LIFE OF CATALYST				
	Catalyst Life:1) First Cycle Life 2)Total Life				Attached form
3	PRODUCTIVITY OF CATALYST				
	Quality & Productivity:1) RON of Isomate 2)C4+ Yield 3) C5 Activity wt% 4) C6 Activity wt%				Attached form
4	TECHNICAL SUPPORT				
	Technical Support 1) Technical Service				Attached form
5	User Reference List				
	User Reference List : 1) User Reference List				Attached form
OBLIGATIONS					
No.	Description				
1	Guarantee of Section 10				
2	Visit of vendors Factory at time of production				
Explanation:					
1- min technical privilege is 70 (t > 70)					
2- Coefficient effect for catalyst i = 0.4					
3- Special criteria: the criteria that if not get fully privilege . offer not acceptable					
4- The commercially offer must be equal with the following formula					
$L = (100 * C) / (100 - (i * (100 - t)))$					
L = equal price					
C = offer price					
t = technical privilege (for accepted must be t > 70)					
i = coefficient effect (for catalyst i = 0.4)					

Table – 14 (Technical Privilege Form)

Technical Privilege :Attached form for ISOM Catalyst			
OBJECTIVE	EFFECTIVENESS (%)	SUB.OBJECTIVE	EFFECTIVENESS BASED ON OBJECTIVE (%)
OPERATING COST	30	REACTOR INLET TEMPERATURE (SOR/EOR) & FURNACE ENERGY USE**	80
		H ₂ /HC	20
CATALYST LIFE	20	GUARANTEED CYCLE LENGTH (TOTAL LIFE)	90
		FIRST CYCLE LIFE	10
PRODUCTS	25	C4+ YIELD WT%	10
		C5 ACTIVITY WT%	5
		C6 ACTIVITY WT%	5
		OCTANE(X)BBL	80
TECHNICAL SUPPORT	5	TECHNICAL SERVICE	100
USER REFERENCE LIST	20	USER REFERENCE LIST ***	100

*** If the suppliers do not submit the consumers list, removed from the tender and the bid will not be accepted.

**** Important note:**

According to the energy consumption costs of each catalyst, which has a significant effect on the energy consumption in the refinery, these costs will be calculated during the SOR until EOR of the catalyst life by catalyst suppliers.

It should be noted that the optimal energy consumption shall be one of the important parameters in the evaluation of catalyst. (The highest score will be given to the proposal that has the lowest inlet temperature(SOR & EOR) to the reactor.)

9.2 Offer not meeting guarantees mentioned in the section 10 is liable to be rejected.

10 Guarantees

Catalyst supplied by the vendor shall be subjected to the following guarantee conditions:

IKORC expects following guarantees to be met by the catalyst vendor for fresh feed rate of 56.3 M³/hr. Minimum guarantees to be met for any feed specification within range mentioned in section 5-land under actual operating condition and Operating Constraints (section 7) and the guaranteed items of table 11 shall be meet.

Materials shall be guaranteed against manufacturing defects, materials, workmanship and design for a period of first cycle life. Warranty for replacement of material / accessories should be provided free of charges at our premises. The above guarantee/warranty will be without prejudice to the certificate of inspection or material receipt note issued by us in respect of the materials.

10.1 Minimum Yield Guarantees of Isomerase Product:

Yield must be \geq Min 92% by wt. & Benzene content max 0.1%vol, However vendor has to specify the estimated yield.

10.2 Minimum Product Quality Guarantees:

Product (Isomerase) must meet following minimum requirement quality:

- i) RON \geq 86
- ii) Aromatic Content of Gasoline, max 0.1%vol

However vendor has to specify the estimated above qualities.

10.3 Turndown Guarantees:

The targeted guaranteed turndown ratio is 50% of design feed for the unit. The turndown test run shall be for a period of 48 hours on continuous basis of operation while producing on-specification products with design feedstock. As per IKORC prerogative, turndown capacity test run or minimum possible capacity test run shall be carried out. However, it will be carried out within 6 months of start up.

10.4 Pressure drop Guarantee:

- i. Catalyst supplier has to provide the estimated pressure drop.
- ii. Catalyst supplier has to give maximum Pressure drop guarantee in the reactors. Guarantee includes reactors internals also.

10.5 Catalyst life/Cycle length Guarantees:

i) Cycle length shall be minimum 2 years at design and actual feed and 6 years corporate guaranteed after catalyst loading.

Notes:

i. As the Supplier/Vendor will specify SOR / EOR inlet temperature, WABT, WAIT temperature and pressure drop across the reactor, they shall specify catalyst deactivation rate/curve at the design actual case.

11 Penalties

Following penalties shall be applicable in the event of non-performance of the catalyst with respect to guaranteed performance and guaranteed life of the catalyst.

11.1 Product Quality:

Guaranteed Product quality has to be met for the range of feed specification mentioned in the section 5-1. In case of not meeting any of the products quality as guaranteed, penalty will be as follows:

- i) For every 1 Octane Number (RON) decrease in product as guaranteed, 5% of catalyst cost will be recovered. (Precious metal excluded)
- ii) For every 1% by wt decrease in yield as guaranteed, 5% of catalyst cost will be recovered. (Precious metal excluded)
- iii) For every 0.1% vol of benzene in Isomate product, 5% of catalyst cost will be recovered. (Precious metal excluded)

11.2 Turndown:

In case of not meeting turndown criteria, 5 % of total catalyst cost will be recovered.

11.3 Performance Bank Guarantee (PBG)

For the purpose of recovery of penalty, vendor has to provide performance bank guarantee of 10% of total catalyst cost.

11.4 Total Failure of Catalyst

For any one of the following reasons, the catalyst is treated as “ total failure ”,

1. SOR overall WAIT, WABT is 10 Deg °C higher than quoted by the vendor in the tender.
2. Following yield and product quality guarantees conditions at design charge 56.88M³/hr and feed specification range mentioned in 5.1.
 - i) Product yield is not achieved min 90 % by wt.
 - ii) Product (Isomerase)RON is not achieved 83.
 - iii) Benzene content in product more than 0.25 vol%
4. Restricts the continued operation of the unit at 106.44 m³/hr (inlet of reactor) reasons attributable to catalyst.

This will be assessed during Performance Guarantee Test Run (PGTR). If the catalyst is observed to be a 'Total Failure', Vendor will be given a maximum of onemonth from the last date of PGTR to correct the failure. Vendor will be allowed onemore PGTR at the end of maximum one month to prove the performance of catalyst. If second PGTR also proves to be unsuccessful and the catalyst is a 'Total failure', vendor has to reimburse the CFR cost of entire catalyst in the form of credit note valid for a period of one year which will be used for any purchase made by IKORC from the same vendor during the period of validity. In case of no such purchasetransaction, IKORC will cash the credit note.

11.5 Catalyst Life/Cycle length Guarantees liability:

The catalyst life will be evaluated during the cycle length. For any reduction in the life, the vendor has to repay the money equivalent to the cost in accordance with the formula given below.

i. In the event that any of the conditions specified in section 11.4 occur within first year, the vendor will take over the catalyst and the same amount of new catalyst must be delivered. (Precious metal included)

ii. If it fails after one year the value shall be calculated in accordance with the below formula.

$$RV=0.5*V*(GCLT - ACLT) / GCLT$$

Where:

RV= The compensated catalyst value
 V= Total value of the catalyst (Precious metal excluded)
 GCLT= Guaranteed CLT in month
 ACLT= Actual CLT in month

CLT: Catalyst Life Time

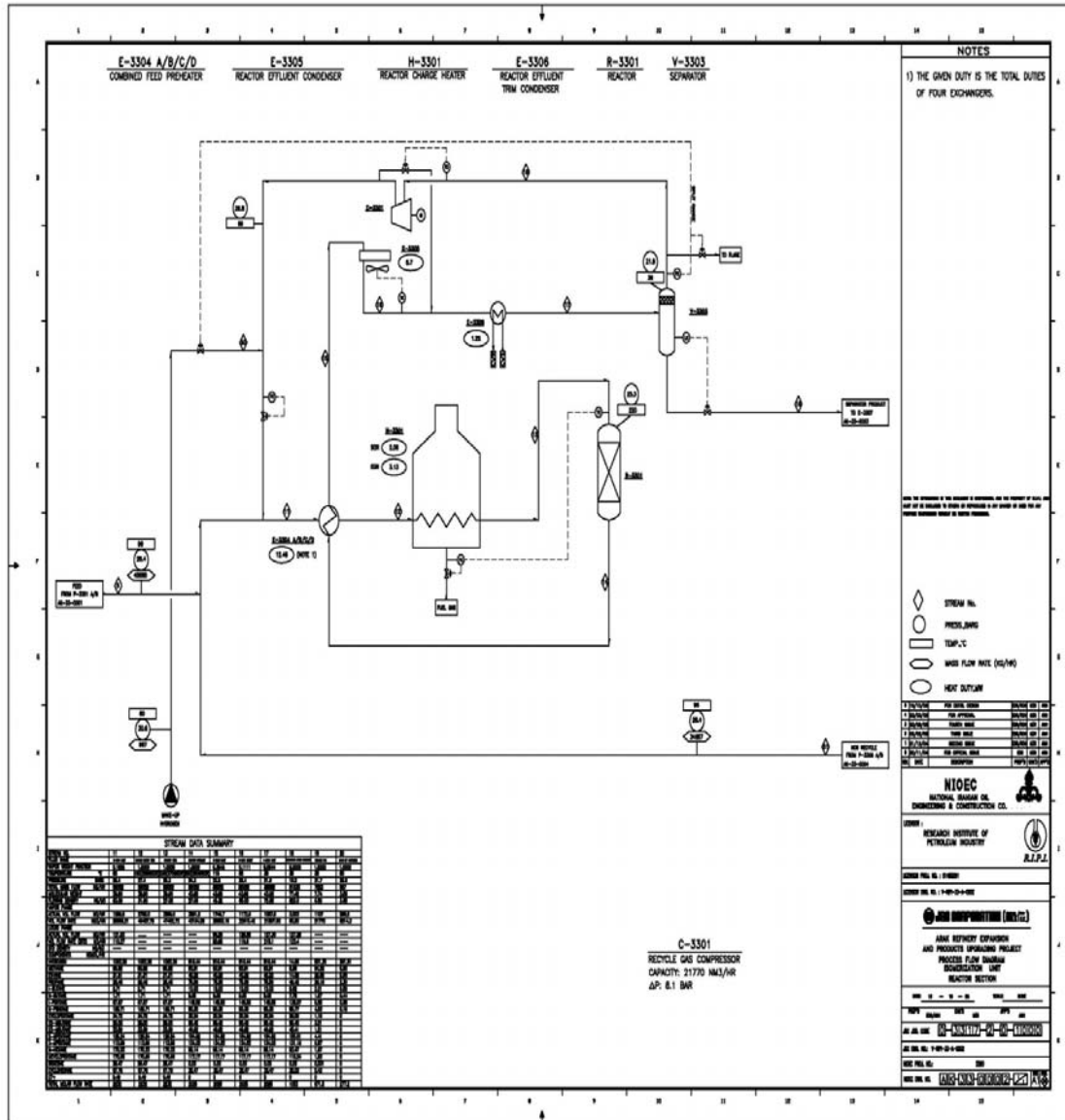


Figure 1-ISOM.unit Reactor

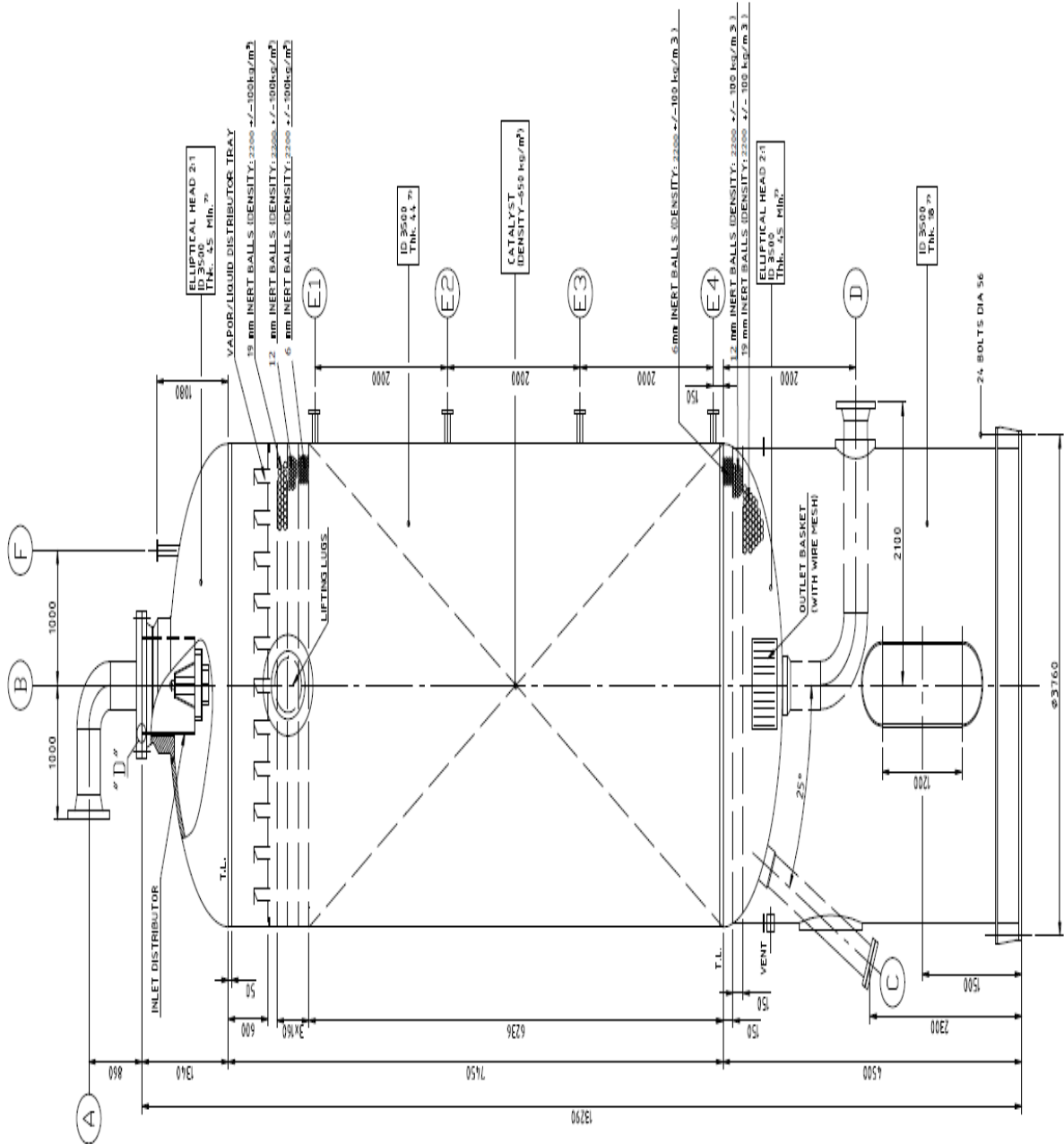


Figure 2-ISOM Reactor Specification

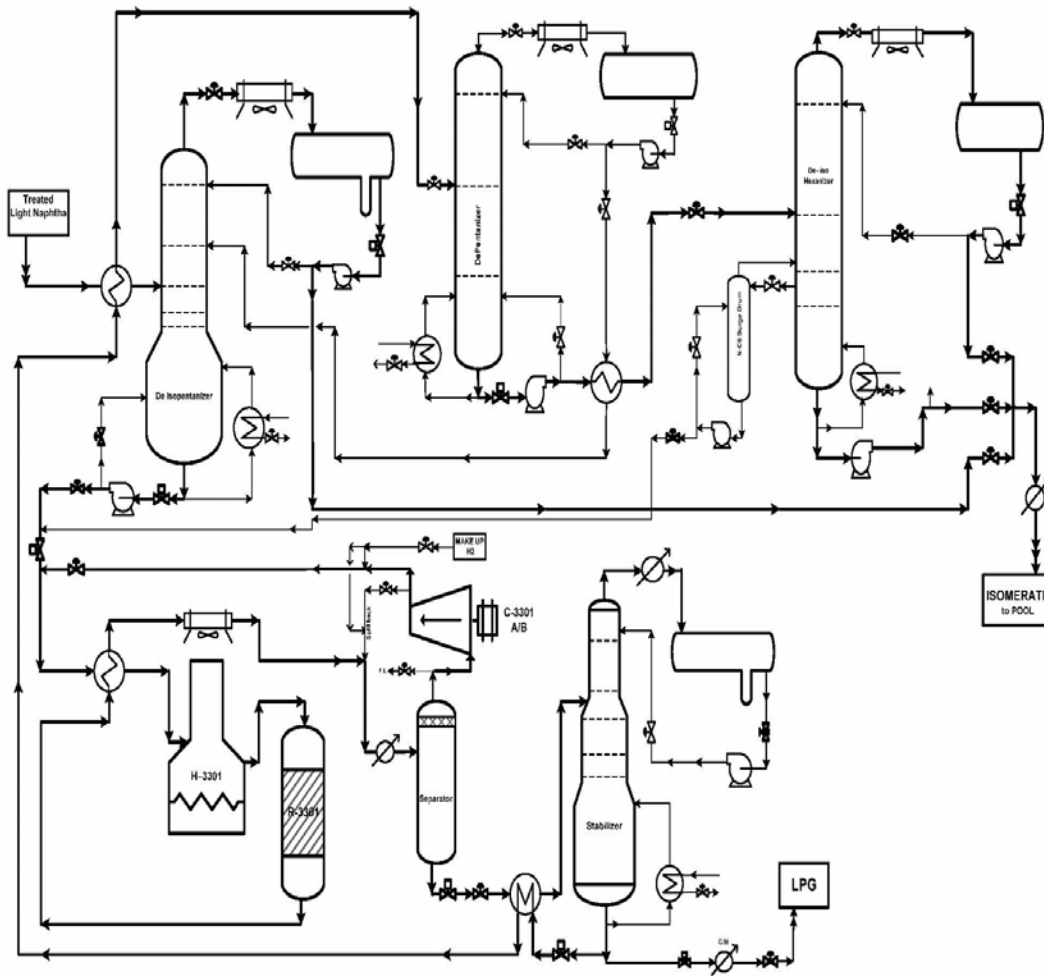


Figure 3-ISOM. unit

محل مهر خریدار:

محل مهر فروشنده: