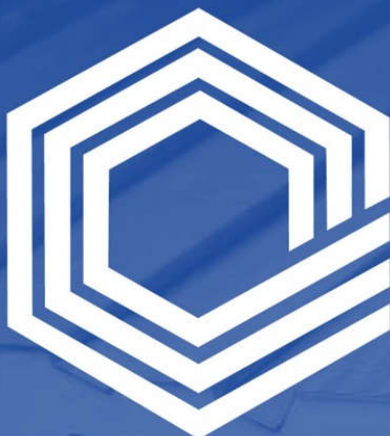


TECHNICAL PROPOSAL



<i>Project</i>	N2 Package (Compressor)
<i>For</i>	Karoon Petrochemical Company
<i>Service</i>	Reciprocating Compressor
<i>Item Number</i>	72711A/B
<i>Revision</i>	01
<i>Date</i>	September 21, 2025



C.S.T
کمپرسور سازی تبریز

Dear Madam and Sir,

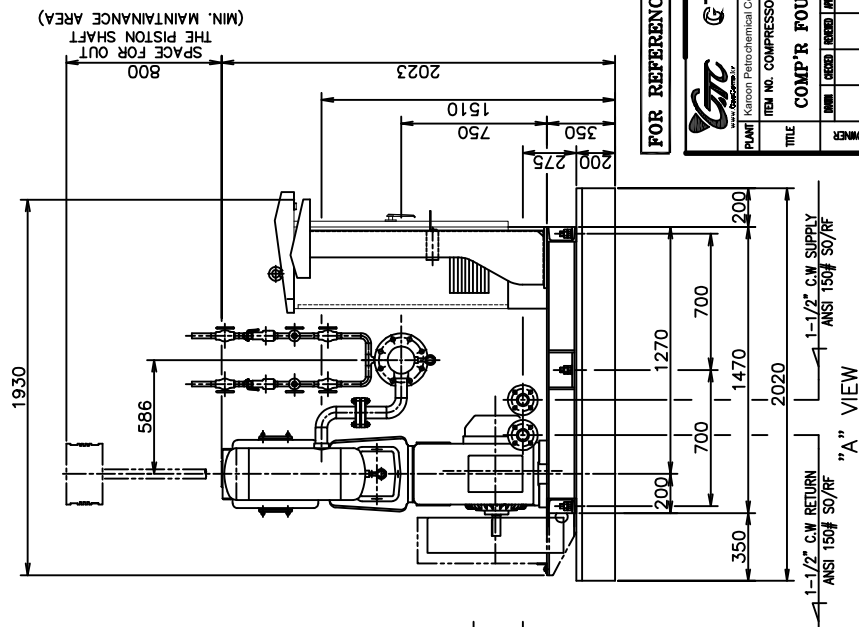
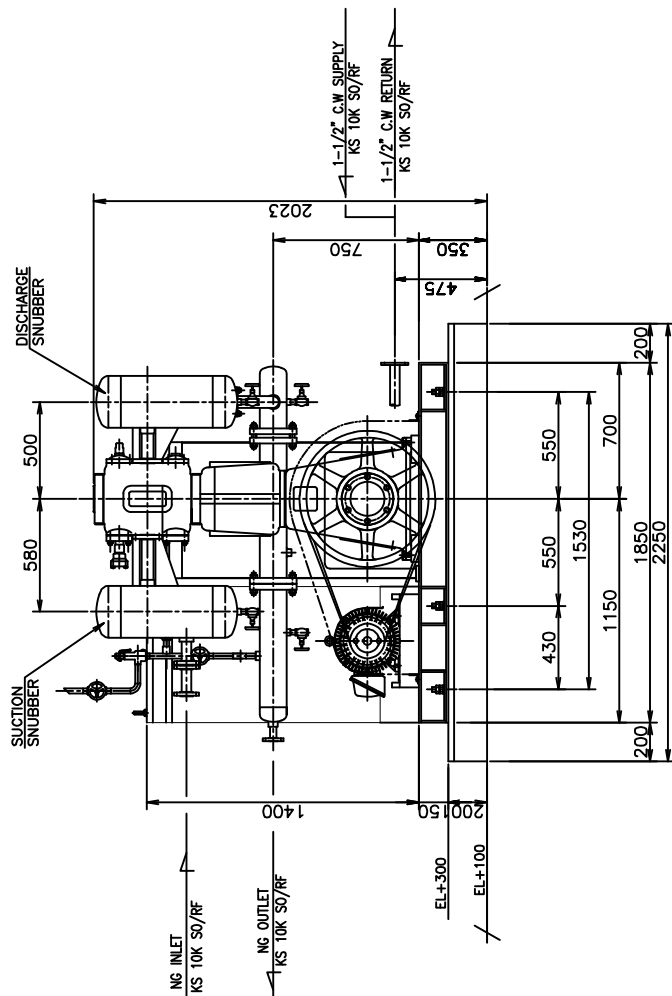
With reference to your enquiry, we are pleased to submit our quotation of CST's reciprocating compressor. Please see our comments in the proposal.

We are looking forward to cooperate with you during this project. If there are any questions, don't hesitate to contact us.

CST Sales Manager

 RECIPROCATING COMPRESSOR DATA SHEET						DOC. NO.			REV.	0				
						PAGE NO.	1 OF 3							
1	CUSTOMER					M/O NO.		-						
2	PJT. NAME					PREPARED BY :		KIM						
3	PJT NO.		ITEM NO.		72711A/B	REVIEWED BY :		CHOI						
4	SERVICE N2 COMPRESSOR					REVIEWED BY :		-						
5	NO. REQ'D	WORKING	4	STAND-BY	0	TOTAL	4	APPROVED BY :		Y.T LEE				
6	OPERATION CONDITIONS													
7	NO. OF STAGE(S)		ONE(1)											
8	GAS HANDLED (VOL. %)		N2 100%											
9	BAROMETRIC PRESSURE (mmHg)		760											
10	CAPACITY (DRY) (WET) (kg/hr)		93.75 (MFR. RATED CAPACITY = 93.75 / 0.97 = 96.65)											
11	(DRY) (WET) (Nm ³ /hr)		75.0 (MFR. RATED CAPACITY = 75.0 / 0.97 = 77.32)											
12	INLET VOLUME (Am ³ /hr)		16.86 (MFR. RATED CAPACITY = 16.86 / 0.97 = 17.38)											
13	SUCTION CONDITIONS													
14	STAGE		1st						S.V SET PRESS.					
15	PRESSURE (CYL. INLET) bar A		5.00											
16	TEMPERATURE (°C)		30											
17	RELATIVE HUMIDITY (%)		0											
18	MOLECULAR WEIGHT (Kg/Kmol)		28.000											
19	Cp/Cv (K1)		1.400											
20	COMPRESSIBILITY (Zs)		1.0000											
21	DISCHARGE CONDITIONS													
22	PRESSURE(PUL. OUTLET) bar A		17.00						18.7					
23	TEMPERATURE (ADIABATIC) (°C)		156.8											
24	TEMPERATURE (ADIABATIC) (°C)		145.0											
25	Cp/Cv (K2)		1.400											
26	COMPRESSIBILITY (Zd)		1.000											
27	INTER STAGE PRESS. DROP bar		-											
28	COMPRESSION RATIO (Rc)		3.4											
29	BHP OF EACH STAGE (kw)		7.1											
30	TOTAL BHP (kw)		7.3						7.9					
31	ROTATIONAL SPEED OF COMP'R (rpm)		400											
32	OTHER CONDITIONS													
33	COMP'R TYPE	☐ "I" TYPE ☒ "Vetical" TYPE ☐ "Vee" TYPE ☐ "W" TYPE ☐ "B" TYPE												
34		☒ NON-LUBRICATED ☐ LUBRICATED												
35		☒ WATER COOLED ☐ AIR COOLED												
36	DRIVER	☒ V-BELT TYPE : C PCS : 5 LENGTHS : C = (730 mm), 120 inch.												
37		COMP' PULLEY DIA. : 700 mm MOTOR PULLEY DIA. : 155 mm.												
38		☐ DIRECT BY COUPLING : DISC TYPE COUPLING DIA. : mm												
39	COMP'R ROTATION (view comp'r pulley side) ☒ CW ☐ CCW													
40	ELECTRIC MOTOR SPEC.	TYPE	TEFC, IP54					MANUFACTURER	HYOSUNG or HHI or HIGEN					
41		SPEC.	15	kw	400	volts	3	phase	50	Hz	4	poles	1450	rpm
42		STARTING METHOD	☐ STAR DELTA		☒ D.O.L		☐ REACTOR							
43	CAPACITY CONTROL	INSULATION CLASS	☐ B ☒ F / B		LOCATION		☐ INDOOR ☒ OUTDOOR							
44		☒ SUCTION VALVE UNLOADER : FINGER		☒ ON AIR/POWER FAILURE : UNLOADED										
45		☒ START-STOP ☒ 2-STEP ☐ 3-STEP ☐ 5-STEP		☒ BY-PASS CONTROL(0~100%)										
46	☒ BY DISCHARGE PRESSURE		☒ BY MANUFACTURE INSTRUMENT		☐									
47	COMP'R LOCATION		☐ INDOOR ☒ OUTDOOR ☒ UNDER ROOF											
48	ELECTRIC AREA		☐ HAZARDOUS ☒ NON-HAZARDOUS ☐											
49	CONTROL POWER		☒ AC 220 volts 1 phase 50 Hz											
50	PAINTING COLOR (Munsell No.)		☒ REFER TO SPEC.		☐									
51	APPLICABLE CODE		☒ MANUFACTURER'S STANDARD ☒ KS ☒ ANSI,ASME, API618 & MFR. STD.											
52	REMARKS :													
53														
54														
55														

  RECIPROCATING COMPRESSOR DATA SHEET		DOC. NO.	0				
		PAGE NO.	2	OF 3			
1	CUSTOMER	SERIAL NO.					
2	PJT. NAME	ITEM NO.	72711A/B				
3	SERVICE	N2 COMPRESSOR					
4	CYLINDER DATA						
5	STAGE	1ST					
6	NO. OF CYLINDER PER STAGE	ONE(1)					
7	SINGLE / DOUBLE ACTING	DOUBLE					
8	CYLINDER LINER YES / NO	NO					
9	CYLINDER LINER WET / DRY	-					
10	OUTSIDE DIA. LINER (mm)	-					
11	BORE (mm)	90					
12	STROKE (mm)	100					
13	PISTON DISPLACEMENT (m ³ /hr)	27.52					
14	VOLUMETRIC EFFICIENCY (%) AVE.	65.00					
15	NO. OF PISTON RING PER STAGE	4EA					
16	NO. OF RIDER RING PER STAGE	2EA					
17	NO. OF SUC. / DIS. VALVE PER STAGE	2EA/2EA					
18	TYPE OF VALVES	RING PLATE					
19	PISTON SPEED (m/s)	1.333					
20	ROD DIAMETER (mm)	40					
21	ROD LOAD-C (kg)						
22	ROD LOAD-T (kg)						
23	DESIGN TEMP. (°C)	200					
24	DESIGN PRESS. bar A	18.70					
25	HYDRO. TEST PRESS. bar A	28.05					
26	SUCTION FLANGE SIZE	1-1/2"					
27	RATING / FACING	ANSI300LB / R.F					
28	DISCHARGE FLANGE SIZE	1"					
29	RATING / FACING	ANSI300LB / R.F					
30	TYPE OF MAIN BEARING	■ SPHERICAL ROLLER BEARING					
31	COMPRESSOR MATERIALS						
32	CYLINDER (S)	CAST IRON	VALVE SEAT (S)	SS304			
33	CYLINDER LINER (S)	-	VALVE PLATE (S)	STS420 J2			
34	PISTON (S)	ALUMINUM	VALVE SPRING (S)	STS420 J2			
35	PISTON RING (S)	PTFE	CRANK SHAFT	FORGED STEEL			
36	RIDER RING (S)	PTFE	CROSS HEAD (S)	CAST IRON			
37	PISTON ROD (S)	FORGED STEEL + Cr. COATING	CRANK CASE	CAST IRON			
38	COMP'R PACKING	☒ NON-LUBRICATED ☐ LUBRICATED					
39		☒ SELF COOLED ☐ WATER COOLED					
40		☒ PTFE ☐ BRONZE ☐ CARBON ☐ METALLIC					
41		☒ STANDARD ☒ EXTRA LONG SINGLE COMPARTMENT ☐ TWO COMPARTMENT ("D" TYPE)					
42	LUBRICATION	☒ SPLASH SYSTEM					
43		☐ PRESS. SYSTEM OIL PUMP DRIVEN					
44		☐ COMP'R SHAFT FOR MAIN PUMP					
45		☐ ELECTRIC MOTOR FOR AUX. PUMP					
46		☐ MANUAL FOR START					
47		CRANK CASE OIL CAPACITY 25 (ℓ) ☐					
48		☒ ELECTRIC HEATER (W/THERMOSTART) ☐ STEAM					
49	WEIGHT	COMP'R :	1500 KG	DRIVER :	500 KG	MAX. MAINTENANCE :	500 KG
50	SPACE REQUIREMENTS	L :	2100 MM	W :	1500 MM	H :	2100 MM
51	ROD REMOVAL DISTANCE : 1000 MM						
52	REMARKS						
53							
54							
55							



FOR REFERENCE



GTC CO., LTD.

PLANT Karoon Petrochemical Company - N2 Compressor

PLANI	KATOON PETROCHEMICAL COM
	ITEM NO. COMPRESSOR

TIME COMP'S FOUNDATION DRAWING

[illegible]

OWNER	ISSUED	RECEIVED	APPROVED	GTC	ISSUED	RECEIVED	APPROVED


C.S.T.

[illegible]



ELECTRICAL LOAD LIST

PROJECT NAME : Karoon Petrochemical Company - N2 Package (Compressor)
INQUIRY NO. :
ITEM DESCRIPTION :

PAGE : 1 OF 1
DATE :
VENDOR : GTC Co.,Ltd.

Sr. No	Equipment No.	Equipment Description	Volt (V)	Rated Power (KW)	BHP (KW)	Q'ty per Unit			PF (%)	EFF. (%)	Remarks
						Continuous	Interm.	Stand-By			
1	72711A/B	Compressor motor	400	15	7.3	4			Later	Later	
2	72711A/B	Local Operating Panel	230	0.1		4					
3	72711A/B	Lub-oil heater	230	0.1			4				
4	72711A/B	MAIN C.W PUMP MOTOR	400	1.5	1.2	2			Later	Later	
5	72711A/B	AUX. C.W PUMP MOTOR	400	1.5	1.2			2	Later	Later	
6	72711A/B	AIR COOLER FAN MOTOR	400	1.5	1.2	2			Later	Later	

Notes :

- 1) Above electric loads are based on the one (1) set / Unit
 - 2) BHP : Break Horse Power
 - 3) Power Factor(PF) and Efficiency(EFF) shown on the above are estimated value. Actual PF & EFF. Shall be modified after receiving of vendor document.
 - 4) The Essential Loads feeding the power from the Emergency Diesel Generator in case of normal power failure shall be indicated in the remarks column.
- ** Note: Vendor to fill up and submit the data for all electrical loads in attached "Electrical load list" format.**

Vendor :
Rev. No. :
Page : 0 of 0

Notes :

1. Indicate the method of lubrication. (e.g. Grease, Flooded, Pure Oil Mist, Purge Oil Mist, Forced Lubrication, etc.)
2. 'g' (gram) shall be used for grease applications.
3. The estimated annual consumption or loss which requires make-up shall be specified. The amount of complete change shall not be included.

NO	EQUIPMENT	VENDOR LIST		REMARKS
		MANUFACTURE	ADDRESS	
1	COMPRESSOR ASSY	GTC CO., LTD.	KOREA	
2	LOCAL CONTROL SWITCH / JUNCTION BOX	NAMBUK E&C	KOREA	
3	SAFETY VALVE	JOKWANG I.L.I	KOREA	
4	PRESSURE & TEMPERATURE TRANSMITTER	AZBIL	JAPAN	
		YOKOGAWA, HONEYWELL	JAPAN	
		EMERSON, YOKOGAWA	JAPAN	
5	PRESS. DIFF. GAUGE	WISE	KOREA	
6	PRESSURE GAUGE TEMPERATURE GAUGE & ELEMENT	WISE	KOREA	
7	SOLENOID VALVE	ASCO(EMERSON)	KOREA	
8	LUBE. OIL ELECTRIC HEATER	DAELIM ELETCTRIC HEATING.CO	KOREA	
9	SUCTION / DISCHARGE VAVLE	GTC CO., LTD.	KOREA	
10	PISTON RING / RIDER RING	GTC CO., LTD.	KOREA	
11	VALVE	DONGKANG METAL	KOREA	
		KPL	KOREA	
		WOOSUNG	KOREA	
12	MOTOR	HYUNDAI, HYOSUNG, HIGEN	KOREA	
13	VIBRATION SENSOR	METRIX, VIBRO-METER, GE	INTERNATIONAL	
14	PRESSURE CONTROL VALVE	FISHER, GE, AZBIL	INTERNATIONAL	
15	ELECTRIC EQUIPMENT	NAMBUK E&C, EATON	INTERNATIONAL	
16	PLC PANEL	SIEMENS, AB	INTERNATIONAL	
17	COUPLING	GTC CO., LTD.	KOREA	
18	BEARING	GTC CO., LTD.	KOREA	
19	PRESSURE VESSEL AND EXCHANGERS	GTC CO., LTD.	KOREA	
20	UNLOADER	GTC CO., LTD.	KOREA	
21	MAIN LUBE OIL PUMP	GTC CO., LTD.	KOREA	
22	AUX. LUBE OIL PUMP	SHINSHIN PUMP	KOREA	
23	LUBE OIL FILTER	WOOSUNG FLOWTEC	KOREA	
24	TCV	THERM OMEGA TECH	USA	