



Technical Clarification Letter For Refrigeration Package



Project Name: DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT		Reference Material Requisition: DPIC98-12-001-000-ME-MR-4150-0001-D1
Vendor Name: KASRAVAND Co	Vendor's Quotation Reference No: 9906315 Rev.: 0 Dated: 14.09.2020	
Clarification Sheet Reference No: N299-0001-4150-0001-Refrigeration Package-KASRAVAND		Dated: 24.10.2020 Page: 1 of 1

NO.	1st PURCHASER'S COMMENTS	1st VENDOR'S REPLY	2nd PURCHASER'S COMMENTS	2nd VENDOR'S REPLY	3rd PURCHASER'S COMMENTS	Conclusion
A	GENERAL					
A.1	In case of conflict between this clarification including its attachments and other vendor's submitted proposals and letters before this sheet, this sheet and its attachments will govern.	Confirmed	Noted			closed
A.2	All document and drawing shall be based on "English".	Confirmed	Noted			closed
A.3	Refrigeration package including auxiliary systems shall be properly designed and be suitable for outdoor installation/operation under project site conditions DOC no. DPC-ENG-SPC-0001, without requiring any additional protection (like shelter). Please confirm.	Equipment is designed for outdoor	Noted			closed
A.4	Please confirm suitability of utility characteristics available at site as per DPC-PR-SPC-0003. Any further adjustment (regulation, filtration, etc.) may be required, shall be part of vendor scope. Please confirm.	Confirmed	Noted			closed
A.5	Based on "DPIC98-12-000-000-ME-LST-0000-0002 supplier documentation requirement schedule for rotary & package equipment", following items also shall be provided in bid stage: 1. Letter of conformity / deviation list (Annex A and B of MRQ) 2. Equipment data sheets in each standard format 3. Material selection table 4. Hydraulic calculations and performance data 5. Speed / torque starting curves for rotary items 6. Commissioning spare part list 7. Two years spare part list 8. Capitals spare part list 9. Main sub vendor reference list 10. Special tool list 11. ISO certificates	1.Deviation List of API has been attached. 2. Please find attached equipment datasheet related to Compressor Unit in Compressor Offer and relevant exchangers as attached. 3. Provided in respective documents 4. Engineering Phase documents 5. Engineering Phase documents 6. To be provided in next revision. 7. To be provided in next revision. 8. To be provided in next revision. 9. Please find attached for compressor Unit 10. Will be provided as option	1-Please see attachment#1 for comments of deviation list. 2-Items which will affect cost shall be specified in this stage in data sheet, otherwise cost impact after order is not acceptable. 3-Please specify material for compressor main parts, interconnecting piping with ASTM number. 4-Noted. 5-Noted. 6-Project requirement shall be followed. 7- Project requirement shall be followed. 8- Project requirement shall be followed. 9-Please provide sub vendor list for this package. 10-Special tool list for package if applicable are in vendor base scope of supply and works not option. 11-Please provide relevant certificates	1-Regarding comment of deviation list, as per JIS standard, the selected material can withstand -45C and in case of client insistence (and has been used in many similar projects in Iran and worldwide), LTCS for casing of compressor will be offered, rotor will be Forged steel and method of vibration analysis is based on plot of vibration vs time. This material change has a cost impact which will be reflected in revised commercial offer. 2-Noted, please find our scope of supply as per our offer and attachments which is agreed in TCL mutually. 3-Material of compressor casing LTCS, rotor C.S. and interconnecting piping will be CS. ASTM will be specified after order-Exchanger material has been specified already. 6-Noted, will be considered in price offer. 7-Noted, will be considered in revised price offer.	1-Material as per project data sheet shall be considered. LTCS for casing and forged C.S. for rotor. 2-Noted. 3-Noted. 6,7,8-Noted. 9- Noted 10-Noted. 11-Please send certificates.	1- LTCS is Confirmed for Casing. 11-Please see below link: https://www.mayekawa.com/company/standards






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				8-Noted, will be considered in revised price offer. 9-Please find sub vendor as attached in technical offer. 10-Special tool list will be considered in base offer and in vendor scope of supply. Detail will be specified after order.			
A.6	Utility distribution inside package boundary, from single tie-in, shall be by vendor. Battery limits for utilities shall be agreed later.	Confirmed	Noted				closed
A.7	All tie-ins with purchaser shall be flanged according to project PMS and shall be brought to edge of skid. Please confirm.	Confirmed	Noted				closed
A.8	Please submit filled out and signed checklists included in MR for vendor scope of work and supply (paras 3.1 and 3.2)	It will be submitted in next round when scope of supply is finalized with client	We are waiting to receive fill in scope of supply and work table.	Please find attached filled in scope of supply/	Following items shall be considered: 1-MMS as an option. 2-Please specify if there is need of lifting bar or beam. Please specify method of lifting. 3-Cable specification if necessary after order.	1- MMS is not required. 2- No need of bar or beam, lifting lug is enough 3- If necessary will be provided.	
A.9	Scope for spare parts shall be finalized after having technical specifications of package clarified. Priced breakdown shall be submitted by vendor (commissioning, two-year operation, capital)	Confirmed	Noted				closed
A.10	Prototype equipment has not been acceptable and equipment shall be validated for similar power rating, speed, and mechanical design, materials, compared to at least two units produced by the vendor at the proposed manufacturing plant. These units must have had at least two years' satisfactory operation.	Confirmed	Noted				closed
A.11	Any exception or deviation out of this deviation list will not be accepted after P.O and any claim / cost impact / time delay will not be accepted from Vendor.	Deviation List from API 619 for bare compressor is provided and Compressor Unit is made as per MYCOM Standards and International Standards. Deviation List will be submitted after finalization of this clarification to mention all agreements made here.	Please refer to attachment#1 for comments on deviation list. Moreover, please specify deviation list from MRQ and attachments.	We have no deviation except items discussed and agreed in this TCL and our provided offer.	Noted		closed
A.12	It has been assumed that MRQ doc. No. "DPIC98-12-001-000-ME-MR-4150-0001" with all its attachments has been received by vendor and will be followed by vendor in detail design (after P.O.) except items which has been clearly stated in deviation list.	Confirmed	Noted				closed
A.13	Document after P.O. shall be based on "DPIC98-12-000-000-ME-LST-0000-0002 supplier documentation requirement schedule for rotary & package equipment" which is attach to MRQ.	Confirmed except for compressor Unit documents which will be according to attached OEM Format. however, project	Please provide your deviation on mentioned document "DPIC98-12-000-	All documents for compressor as per provided document list which has been specified in offer, other	Noted		closed



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	Please cross out items, which cannot provide from your side or add some items which is not available in this list.	numbering procedure and line Numbering procedure will be followed.	000-ME-LST-0000-0002" even for compressor.	items for package will be followed as per project specification.			
A.14	Please send us your deviation from attachments and standards which has been mentioned in MRQ or referred to project specification	Deviation List will be submitted after finalization of this clarification to mention all agreements made here	We are waiting to receive deviation list from MRQ and attachments.	Deviation list of compressor has been already sent. Please be noted that compressor package will be design as per MYCOM standard and proven design specifically for this package, and International standards and following API 619 for compressor along with provided deviation list.	Noted		closed
B	MECHANICAL						
B.1	Please fill in project data sheet doc. No. "DPIC98-12-001-600-ME-DS-4150-6101" which is attached to MRQ. Also, please fill in preliminary API 619 5th edition data sheet for compressor.	Please refer to attached OEM Compressor Datasheet	Mentioned data sheet shall be filled in after order. Items which will affect cost shall be specified in this stage, otherwise cost impact is not acceptable.	Preliminary datasheet with required information along with project filled in scope of supply has been provided after order, details will be provided.	Noted		closed
B.2	Please see section 3 of MRQ doc. No. "DPIC98-12-001-000-ME-MR-4150-0001" and mark up and fill in table 3.1 and 3.2 with relevant notes.	It will be submitted in next round when scope of supply is finalized with client	We are waiting to receive fill in scope of supply and works table.	Please find attached	Following items shall be considered: 1-MMS as an option. 2-Please specify if there is need of lifting bar or beam. Please specify method of lifting. 3-Cable specification if necessary after order.	1- MMS is not required for oil flooded screw compressor 2-No need of bar or beam, lifting lug is enough 3-If necessary will be provided.	
B.3	In case of non-ASME/ASTM materials they shall be equivalent or superior to ASME/ASTM material, and full material designation/standard as well as material comparison list (with nearest equivalent ASME/ASTM material) shall be provided. Please confirm.	Material list and respective standards has been provided as attached.	Please specify receiver and economizer material. For compressor unit, please specify material ASTM number for casing which shall be LTCS, rotor which shall be forged C.S., oil separator which shall be LTCS, oil pump, oil cooler, oil filter shall be specified.	Receiver will be LTCS and economizer will be as per MYCOM std.. Casing compressor will be LTCS, rotor will be forged steel. Oil separator will be C.S as per MYCOM standard. Oil cooler, filter and pump will be C.S. material as per MYCOM standard.	Noted		closed
B.4	Material selection with ASTM number shall be specified for each item of package equipment (Rotor shall be forged steel)	Deviation List will be submitted after finalization of this clarification to mention all agreements made here	Please specify receiver and economizer material. For compressor unit, please specify material ASTM number for casing which shall be LTCS, rotor which shall be forged C.S., oil separator which shall be LTCS, oil pump, oil cooler, oil filter shall be specified.	Receiver will be LTCS and economizer will be as per MYCOM std.. Casing compressor will be LTCS, rotor will be forged C.S. Oil separator will be C.S as per MYCOM standard. Oil cooler, filter and pump will be C.S. material as per MYCOM standard. ASTM will be specified after order.	Noted		closed





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B.5	Please inform approximate weight and dimension of each skid for transportation.	Will be available during detail design	We need preliminary dimension and weight of package for checking of plant size and estimation for transportation.	12000 x 10000 x 8000 as dimension. Weight total: 60000 kg Details to be specified and agreed after order.	Noted		closed
B.6	Package shall be deigned for 25 years lifetime. Please confirm.	Confirmed	Noted				closed
B.7	Re compressor sizing report (excel file): 1. COP differs from that specified in package PFD. Please recheck and clarify. 2. Please recheck and clarify requirement of economizer	Please find attached Updated Compressor Datasheet and sizing. Economizer is considered by OEM.	Noted				closed
B.8	Re para 13.6 of technical proposal, all installation materials such as special anchor bolts (out of project standard drawing), template (if applicable), shims, leveling jack screw and leveling pads, etc. shall be included in vendor scope. Foundation design and construction is excluded but vendor shall define technical requirements for foundation design and provide foundation loading plan with all applicable loadings (static and dynamic). Please confirm.	Confirmed	Noted				closed
B.9	Re interconnecting piping system: 1. Interconnecting piping system within package boundary shall be designed and supporting engineering documents provided by vendor (including ISO drawings, supporting, etc.) 2. Supply of relevant materials, and fabrication and testing of shop spools, to max practical extent, shall be quoted as optional extra.	1. Please reconfirm base price should not include any interconnecting piping (between compressor skids and vessel skids),and only engineering to be performed by vendor?	All interconnecting piping, supports and wiring between skids are in vendor scope of supply and works	Confirmed	Noted		closed
B.10	Please confirm: 1. All pressure vessels shall be designed, manufactured, and inspected/tested per ASME section VIII, div 1. 2. Shell and tube heat exchangers shall be designed, manufactured and inspected/tested per TEMA R/ASME section	1. Noted 2. ASME/TEMA C is Considered.	TEMA R shall be followed for exchanger. Hexane chiller shall be BKM type.	TEMA R for condenser and chiller. TEMA C and Mycom standard for in. Chiller will be BKM type.	Noted		closed





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No.	VIII div 1.	Response	Remarks	Status	Action	Status
B.11	All butt weld seams exposed to Hexane and/or Propylene shall be 100% radiographed. Please confirm.	Confirmed	Noted			closed
B.12	All parts are in contact with Hexane and/or Propylene shall have impact test certificate verified at -45°C. Please confirm.	Confirmed	Noted			closed
B.13	Please specify min possible temperature of cold hexane at package outlet. Package shall be designed so that cold hexane temperature shall never be lower than -30°C. Please confirm. (note 3 on page 4 of package data sheet)	It will be specified in P&ID after contract.	Noted, however project requirement shall be followed.	Confirmed	Noted	closed
B.14	Re chiller: 1. Design temperature for both shell and tube sides shall be same. Please update accordingly. 2. Tube-to-tube sheet joint shall be strength welded. 3. Please specify liquid hold-up of flammables (note 4 on page 11 of package data sheet)	1. -45 °C for both shell and tube side is considered. 2. This comment in relate to detail engineering and will be specified after contract. Shell volume is 10.67 m ³	1-Noted. 2-Please follow comment after order. 3-Noted	2-Confirmed.	Noted	closed
B.15	Re propylene condenser: 1. Design pressure for both shell and tube sides shall be same. Please update accordingly. 2. Please recheck and clarify requirement of FV 3. Min design temperature for channel shall be -4°C. Please confirm. 4. Tube-to-tube sheet joint shall be strength welded. 5. Please recheck and submit air-cooled condenser as option. 6. Channel shall be subject to PWHT (4-pass design) 7. Please specify min. allowable temperature of cooling water and clarify pressure control requirement on condenser (note 2 on page 9 of package data sheet)	1. OK. 2. FV is OK. 3. OK. 4. It will be specified in mechanical detail calculation during engineering. 5. It is not recommended. DT in air cooler should be at least 8 °C, air temperature is 48 °C so condensing temperature of propylene should be 56 °C which needs more pressure. Consequently, compressor ratio and BHP will increase. In the other hand, air cooler	1-Noted 2-Noted. 3-Noted 4-Comment shall be followed after order. 5-Noted, S&T shall be considered. 6- Comment shall be followed after order. 7-Noted. 8-Noted.	4-Confirmed. 6-Confirmed.	Noted	closed





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	8. Please specify liquid hold-up of flammables (note 6 on page 9 of package data sheet)	needs much more space and cost than shell and tube heat exchanger. Anyhow, Owner should decide between air cooler or S&T heat exchanger based on his calculation. We cannot offer air cooler as option.					
		6. This comment in relate to detail engineering and will be specified after contract					
		7. Design of condenser is based on information of cooling water which owner gave us. Less cooling water temperature, smaller exchanger size. Pressure control is not needed for condenser. Cooling water valve is normally full open.					
		8. Shell volume is 4.08 m ³					
B.16	Re coil cooler: 1. Design pressure and temperature of both shell and tube sides shall be same. Please confirm. 2. Tube-to-tube sheet joint shall be grooved, expanded and seal welded. Please confirm.	We have no coil cooler.	This comment is related to oil cooler.	1-Noted. 2-as per MYCOM standard.	Noted		closed
B.17	For oil separator of compressor: -The allowable oil carryover at the certified point (ppm) in the process gas stream that leaves the separator shall be specified (please be noted that process gas shall not be contaminated with oil). -Please specify retention time for oil separator (min 2 minutes). - Oil separator shall be made of LTCS with 3 mm corrosion allowance. Please confirm.	As per MYCOM Standards and Good practices used in more than 100 Compressor Package working in Iran from 1987	Mentioned data shall be specified after order. Oil separator material shall be LTCS.	-oil carryover < 5 ppm. - min. 2 minutes. -C.S. material as per MYCOM proven standard -Noted.	Noted		closed






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	-Oil separator shall be equipped as minimum with: internal coalescing filtration and impingement baffles, a flanged, safety relief valve, flanged opening 6"min., separate flanged vent, filter drain, oil-return, oil-fill and drain connections, baffle by the gas inlet opening, stilling tubes on oil-fill and return connections, vortex breaker upstream of the oil-outlet connection						
B.18	Oil piping system shall be based on chapter 2 of API 614 (refer to table 4,5,6 of chapter 1 API 614)	As per MYCOM Standards and Good practices used in more than 100 Compressor Package working in Iran from 1987	Please specify oil piping material	Oil piping material will be as per MYCOM standard suitable for this application.	Noted		closed
B.19	Thermal relief valve shall be considered on all cooling water lines. Please confirm.	OEM Designed will be followed	At the header of water distribution, TSV shall be considered by vendor.	Confirmed	Noted		closed
B.20	Please confirm max noise level shall be limited to 85 dbA measured at 1 meter distance. Otherwise proper noise hood (enclosure) shall be designed and supplied by vendor to meet mentioned limit. Noise hood shall have following features: 1. Compatible with package hazardous area classification 2. Doesn't interfere with compressor normal operation 3. Provide sufficient access for compressor normal inspection 4. Equipped with gas detector and ventilation fans (1+1) 5. Equipped with internal lighting 6. Design shall allow full access to compressor, when required	85 dbA measured at 1 meter distance is confirmed.	Noted				closed
B.21	Please confirm: 1. Each skid shall be furnished with 4-point lifting facility and no. two earth lugs located at opposite sides. 2. Each equipment forms part of package shall have dedicated lifting facility and nameplate made of SS material	Confirmed	Noted				closed
B.22	Package shall be supplied with set of special tools required for installation, operation and maintenance. Please submit special tools list and clarify requirement of spreader beam for	To be provided in next round	Special tool are in vendor scope of supply and works and shall be considered in base offer	Confirmed.	Noted		closed



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	equipment/skid handling at site.					
B.23	<p>Please submit compressor technical specifications (filled out data sheet is highly preferred), including:</p> <ol style="list-style-type: none"> 1. Materials of construction 2. Detail of shaft sealing system and related flush plan (with leak detection) 3. Max absorbed power and selected motor power ratings 4. Casing MAWP 5. Detail of capacity control system (ranging 0-100%) 6. Type and construction of bearings (radial and thrust) and thrust balancing mechanism 7. Type of shaft end 8. 1st critical speed 9. Shaft/rotor fabrication 	Please find attached	<p>1-Iron for casing and rotor is not acceptable. Casing shall be LTCS, rotor shall be forged C.S., please specify ASTM number.</p> <p>2-There is no data for seal system.</p> <p>3-After order in data sheet shall be specified.</p> <p>4-Please speify.</p> <p>5-Please specify method for capacity control for 0~30%.</p> <p>6-Please specify type of bearing.</p> <p>7-Noted.</p> <p>8-After order shall be specified.</p> <p>9-After order shall be specified.</p> <p>10-Please use TEMA R for oil cooler.</p> <p>11-Please recheck the oil heater kW which seems wrong.</p> <p>12-Cooling water temp. shall be 37 and 47 deg C.</p>	<p>1-Casing compressor will be LTCS, rotor will be forged C.S.</p> <p>Oil separator will be C.S.</p> <p>Oil cooler, filter and pump will be C.S. material as per MYCOM STD.</p> <p>2-Dual seal has been considered.</p> <p>3-Already specified in offer.</p> <p>4-Will be specified after order</p> <p>5-0~30% will be by recycle which needs additional piping and control valve.</p> <p>6- lube oil flooded by means of hydraulic pressure.</p> <p>10-TEMA C and MYCOM STD for oil cooler.</p> <p>11-2 kW is right.</p> <p>12-Noted will be considered in design.</p>	Noted	closed
B.24	Please explain proposed oil pump(s) configuration and operating sequence (start-up - pre lube, normal operation, low oil pressure condition, shut down – post lubrication)	This is OEM design and will be followed	Please refer to commented P&ID as attachment#2 .	Detail P&ID will be provided after order	Noted	closed
B.25	Copper and copper alloys shall not be used in contact with process gas. Please confirm.	Confirmed	Noted			closed
B.26	<p>Please confirm:</p> <ol style="list-style-type: none"> 1. Coupling shall comply with API 671 (please specify type of attachment between coupling hub and shaft end) 2. Package shall be supplied with local indication of compressor load (as %) 3. Oil piping material shall be SS downstream of oil filters 	As per OEM design	<p>1-Please specify design code, service factor and balance grade for coupling.</p> <p>2-capacity control load shall be provided in local panel.</p> <p>3-Please specify oil pipe material.</p>	<p>1-Coupling as per MYCOM standard. Service factor > 1.5, balance grade as min. G 6.3.</p> <p>2-Noted will be added in local panel.</p> <p>3-Oil pipe C.S.</p>	Noted	closed
B.27	<p>Please submit sub-vendors list, including:</p> <ul style="list-style-type: none"> • Compressor shaft seal • Coupling • Oil pump • Machine monitoring system 	Please find attached	Please submit sub vendor list	Please find sub vendor as attached in technical offer.	Noted	<div style="text-align: center;">  KASRAVAND Co. شرکت مهندسی و ساخت کبر اوئند </div>



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B.28	Please submit technical specification and scope of compressor / motor MMS (machine monitoring system). Please submit relevant PID showing sensors arrangement.	Similar to our all other project and to make project cost effective, we have considered 4-20mA connected to PLC for respective measurement	MMS shall be offered as an option	In none of our projects MMS has not been used in Iran and our proposed solution is more than sufficient considering type of compressor. Considering MMS will bring operational problems considering spare parts and make package un necessarily complex.	MMS shall be offered as an option	MMS is no required for this package.	
B.29	Winterization (tracing) required inside package boundary shall be by vendor (including design, supply of material – including insulation, MTO)	Optional	Clips, supports, design and MTO for insulation and winterization is by vendor. Location of winterization and insulation shall be specified by vendor.	Confirmed.	Noted		closed
B.30	Vendor shall supply first charge of lubricating material (particularly compressor oil) required for package flushing, commissioning and start up. Also lubricating material for one-year consumption shall be quoted as option. Please specify recommended oil to be used for flooded screw compressor.	Optional	First charge of lubrication is by vendor in base offer with break down price and one year lubrication shall be considered as an option with break down price	Confirmed	Noted		closed
B.31	Please specify type and arrangement of bearings (radial and thrust) as well as their lubrication for compressor motor drive	Radial bearing is selected, selection of trust bearing will be confirmed in next clarification.	Please specify type of bearings; hydrodynamic or antifriction	lube oil flooded by means of hydraulic pressure	Noted		closed
B.32	Please submit proposed scope for: 1. Refrigerant charging facility (valves, filter) 2. Oil refilling facility (motor driven pump, check valve, isolation valve) 3. Oil recovery system (detail to be proposed)	Optional	Shall be considered in vendor base offer, not option	Confirmed	Noted		closed
B.33	Preliminary package PID (Typical Propylene PID) included in offer shall be presented with more detail: 1. Please submit PID legend for better understanding (package PID shall be submitted based on project legends after order) 2. Change-over of twin oil filters shall be realized by two three-way valves 3. Oil pump pressure safety valve shall be external 4. According to package data sheet, both evaporator and condenser shall be of	MYCOM PID will be followed as per her long experience and manufacturing 2000 Compressor Unit/ refrigeration package per year. PID will be detailed during engineering phase	Please refer to attachment#2 for comments on P&ID.	Detail P&ID will be provided after order	Noted		closed





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	<p>shell and tube type (please update)</p> <ol style="list-style-type: none"> 5. All shell and tube heat exchangers shall have valved vent and drain connections on both sides 6. All trip instruments shall be shown (preferably 2oo3 voting) 7. Please clarify purpose of line branched downstream of oil filters 8. Please recheck and clarify requirement of economizer 9. Please show bypass line if required for capacity control 10. All oil return lines shall be furnished with sight glass and orifice 11. Oil separator shall be equipped with heater 12. Twin oil filters shall have PDT and PDI 13. There is no pressure / temperature instrument monitoring compressor suction and discharge conditions 14. Please recheck and clarify package N2 purging 15. At least all major items shall be shown on proposal PID (KO drums, suction gas strainer, shaft sealing system, etc) to clear vendor scope. Please update accordingly 						
B.34	All pressure vessels shall be provided with access for internal surface inspection as well as replacement of internals (such as manhole, body flange). Please confirm.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Please specify such facility for compressor unit	Will be specified after order.	Noted		closed
B.35	Commissioning spare part shall be as below and shall be considered with price break down: -200% gasket and o-rings for each equipment in the package. - 10% piping gaskets (min one set each type) - 10% bolting (min one set each type) - piping as required Capital spare part shall be as below and shall be considered with price break down:	Will be updated	Spare parts shall be followed as per this comment	Confirmed will be considered in revised commercial price.	Noted		closed



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	-One set of complete rotor plus one set of complete sealing per each type and size -One set of lube oil pumps -Gear and Pinion Two years spare part shall be based on "ANNEX 1K-11 10.07.98" table 4, which is attached to MRQ with price break down. List of special tools with DWG shall be provided in next revision.						
B.36	For all vessels, inspection opening shall be foreseen.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Please specify such facility for compressor unit	Will be specified after order.	Noted		closed
B.37	Heat exchangers shall be removable bundle type.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Please specify such facility for compressor unit	Will be specified after order.	Noted		closed
B.38	Heat exchangers shall be TEMA R.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Noted				closed
B.39	Sub vendor list shall be as per project AVL which can be found Attachment#4-PGPIC AVL V.8.	For Compressor Unit SVL would be as per OEM which are Western Europe/Japanese Materials, you may refer to attached. For Rest of the package AVL will be followed	Please specify sub vendor list	Please find sub vendor as attached in technical offer.	Noted		closed
C	PROCESS						
C.1	THERMAL CALCULATION FOR E-6101.pdf: for vaporizing service 90 shall be considered.	Ok. Noted	Noted				closed
C.2	THERMAL CALCULATION FOR E-6101X.pdf: specified compressor capacity in submitted by vendor is less than this figure. it is 1.1 times higher however over design on flow rate is considered only 5%.	10% over design capacity is considered for condenser design. So, PFD and data sheet corrected.	Noted				closed
C.3	THERMAL CALCULATION FOR E-6101X.pdf: increase outlet temp up to max 47C to decrease water consumption.	Since propylene condensation temp. is about 48 oC, if cooling water discharge sets to 47 oC, MTD will decrease and exchanger size will be doubled. So cooling water outlet sets to 43 oC.	Please consider 0.0002m2K/W as cooling water fouling factor.	Confirmed, will be considered in design			closed
C.4	1. Technical Proposal for Refrigeration PACKAGE -Rev 00 -Nargan-converted.pdf: TEMA R shall be followed for heat exchanger sizing. please add to list	Ok. Noted	Noted				closed
C.5	Simulation files (process by HYSYS and heat exchanger sizing by HTRI) shall be submitted DURING ENGINEERING.	OK, As much as possible.	Noted				closed
C.6	Ref. DOCUMENT LIST.pdf: Deliverable doc list shall be as per doc no. DPIC98-12-000-000-ME-LST-0000-0002 which attached to MR	Compressor Unit deliverables will be as per OEM.	Noted				closed





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	any deviation from this document shall be listed in deviation list and submitted in this stage.						
C.7	NEW ITEM		All instrumentation indicated on PIDs are preliminary and min requirement and will be finalize and completed during engineering stage.	Updated PID with details according to preliminary PID will be provided.	Will be checked.		closed
C.8	NEW ITEM		Utility connection for purging (Start-up and Maintenance) and relevant facilities (Flow indicator and strainer on Nitrogen purge line) shall be specified (if required).	Confirmed as per project requirement	Noted		closed
C.9	NEW ITEM		Vent, Drain and Utility lines (cooling water, instrument air,) should be collected and one header should be considered in battery limit.	Confirmed	Noted		closed
C.10	NEW ITEM		Strainer and filter shall be equipped with PDAH, PDHH and relevant interlock.	Confirmed	Noted		closed
C.11	NEW ITEM		Vendor is requested to suggest a system to detect hexane network pollution by propylene, which can occur in case of exchanger tube failure.	Gas detector to be considered by Contractor.	Noted		closed
C.12	NEW ITEM		Vendor is requested to suggest a system to detect hexane network pollution by propylene, which can occur in case of exchanger tube failure.	Gas detector to be considered by Contractor.	Noted		closed

D	CONTROL & INSTRUMENT						
D.1	<p>1- Vendor shall fully meet the following specification and related documents attached to requisition. If there is any deviation, vendor shall submit deviation with clarification. If we do not receive any deviation, it means vendor will fulfill our relevant requirements.</p> <p>2- DPC-IN-SPC-0001-B01 - General Specification for Instrumentation</p> <p>3- DPC-IN-SPC-0003-B01 - Instrument Standards, Codes and References</p> <p>4- DPC-IN-SPC-0004-B01 -General Specification for Instrumentation Furnished with Package Units</p> <p>5- DPC-IN-SPC-0007-B01 - Instrument Piping Interface Specification</p> <p>6- DPC-IN-SPC-0010-B01 - Instrument Specifications for Distributed Control System DCS</p>	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Please be noted that compressor package will be designed as per MYCOM standard. For other parts, project requirement will be followed.	Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Already has been mentioned that for compressor skid, MYCOM standard will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.	 KASRAVAND Co. شرکت مهندسی و ساخت کراوند



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	<ul style="list-style-type: none"> 7- DPC-IN-SPC-0011-B01 - Instrument Specification for Emergency Shut-Down System_ESD 8- DPC-IN-SPC-0013-B01 - Human-Machine Interface _HMI_ Specification 9- DPC-IN-SPC-0020-B01 - Shut down consoles specification 10- DPC-IN-STD-0001-B01 -Typical Installation process connection 11- DPC-IN-SPC-0002-B02 - Control Systems Philosophy 12- DPIC9812-001-000-CI-JSD-1500-2020 -INSTRUMENT CABLE AND JB NUMBERING PROCEDURE 13- DPIC9812-001-000-CI-JSD-1500-2021 - GENERAL SPECIFICATION FOR INSTRUMENT CABLE 14- DPIC9812-001-000-CI-JSS-1521-1025 - SUPPLY SPECIFICATION FOR CABINETS AND PANELS 15- INSTRUMENT TECHNICAL DATA SHEET PK6101 "REFRIGERATION UNIT" 16- Supply specifications for instruments will be listed after issuing P&ID 						
D.2	Vendor shall supply all instruments tag items besides related bulk materials for construction work within the Package B.L. (Cable, Cable tray, Cable gland, Junction Boxes Supports and etc). Accordingly Instrument multi-Cables from control room to Junction Boxes are in client scope of work	Confirmed	Noted				closed
D.3	Cabling from instrument to junction box is in purchaser scope of work.	Confirmed	Noted				closed
D.4	Cable trays including covers shall be provided with Galvanized or SS trays.	Confirmed	Noted				closed
D.5	The minimum enclosure protection for all instrumentation located outdoors shall be IP65.	Confirmed	Noted				closed
D.6	Instruments shall have Ex I/d IIC T3. This item subject to change	EXE is considered	As per project specification Instruments shall be selected Ex i/d	Exei is considered with consideration of barriers	If Exel is not applicable vendor shall consider Ex d	Exd will be followed for instrument	
D.7	Vendor participation in DCS/ESD FAT is mandatory to review and comment/approve on implemented logics for the package based on his design. (Please present daily rate of the expert in	Will be provided in commercial offer	Noted				closed





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D.8	the offer) Instrumentation individual specifications to be used by package unit suppliers. For instruments purchasing they shall be prepared on ISA-S20 datasheets or project data sheet format. These data sheets shall be completed by each instrument sub-supplier / Package supplier and then, approval shall also be taken from Contractor for these data sheets as well as any other technical specifications and drawings to be prepared by package supplier.	Except for Compressor Unit confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Please be noted that compressor will be designed as per MYCOM standard. For other parts, project requirement will be followed.	D.8 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Already has been mentioned that for compressor skid, MYCOM standard will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.	
D.9	All documents and drawings shall be submitted as mentioned in Related MR The following Documentation for instrumentation shall be provided in case of order as minimum: • Instrument data sheets • Installation Drawing	Except for Compressor Unit confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Please refer to document list which already considered. Except for Compressor Unit is confirmed.	D.9 shall be followed. Deviations shall be mentioned in deviation list exactly	Instrument datasheet will be provided as requested.	
D.10	Power and instrument air consumption list shall be provided for review.	Please refer to attached Compressor documents.	Noted				closed
D.11	Instruments shall be calibrated, inspected and tested in accordance with Project Specification "IDPC-IN-SPC-0004-B01 - General Specification for Instrumentation Furnished with Package Units	Except for Compressor Unit confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Please be noted that compressor will be designed as per MYCOM standard. For other parts, project requirement will be followed.	D.11 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Calibration report for compressor instrument will be issued after order as per MYCOM standard. For other part of package, as per project specification will be followed.	
D.12	All special cables within the Package B.L. and special multi-Cables from control room to Junction Boxes are in vendor scope of supply (if any).	Confirmed	Noted				closed
D.13	Instrument process and pneumatic hook-up material shall be in vendor scope.	Confirmed	Noted				closed
D.14	As a minimum all instrument cables shall be provided as Steel Wire armored and to be meet IEC 60331/ IEC 60332 standard All inputs and outputs to ESD level signals shall be fire resistance cables If signals are energized to trip. All wires shall be tagged at both ends of Connection to devices and terminal blocks as per wiring diagram.	Confirmed	Noted				closed
D.15	All instruments shall be selected and nominated f	Except for Compressor Unit	Any deviation shall be	Please refer to sub	Vendor shall consider	Please be noted that all instrument parts are	





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	from the recommended Vendors List. Main instruments shall be unified for easy maintenance and operation. In the case of any exception or deviation from this list. Vendor shall submit his deviated sub-vendor list with reasonable technical justifications and sufficient explanations.	confirmed.	mentioned in deviation list to consider by owner	vendor list of technical offer	Project AVL and inform owner about any deviation. Any deviation shall be mentioned in deviation list	from well-known sub vendors from West Europe and Japan. Please mention specifically which sub vendor is not in AVL.	
D.16	A.Bidder shall specify the package's Utility Consumptions such as Instrument Air, Nitrogen, UPS Electrical Power Consumption, and heat dissipation in details B.Bidder shall estimate Total package I/Os and number of cabinet for each package at bid stage. The tolerance shall not exceed 20% to 30%.	Please refer to attached	Noted				closed
D.17	all instrument cable glands material shall be 316 Stainless Steel.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Cable Gland material is confirmed	
D.18	Each Control Valve or On-off valve shall have its own filter and regulator.(if applicable)	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	As per MYCOM standard.	D.18 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	For Compressor Units, since Valves are special design for Compressor, this will be as per OEM standard and practices for local portion it is confirmed	
D.19	All RTDs shall have SMART transmitters, instead of ohm/I and mV/I converter installed in UCP. (if applicable)	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard.	D.19 shall be followed. Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	For connection with customer, project specification will be followed	
D.20	Common air connection shall be provided as flanged connection by vendor at skid edge, which will be connected for all related Instrument users including control valves on Package's skid. (if applicable)	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Comment will be followed and no deviation for this comment	
D.21	Solenoid valve shall be activated by 24VDC and provided with a switch-fuse unit separately. 110 V AC to 24 VDC converters for internal usage of package like SOV shall be provided by vendor. From client only 110 VAC (UPS) will be provided.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	If needed switch will be supplied by Vendor	D.21 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Comment is Confirmed.	
D.22	Vendor shall provide the following documents for instrumentation as minimum. •Both reproducible hard copy and electronic files such as CD-ROM).	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	As per document list which can be found in offer	D.22 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in	Compressor document list has been already provided. For other part of package, comment will be followed.	 KASRAVAND Co. شرکت مهندسی و ساخت کراوند



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	<ul style="list-style-type: none"> •Instrument data sheets (ISA-S20 format) and calculation sheets (Including sizing calculation for control valves, PSV's and Flow elements). •Instrument list (index) and specification. •Control Panel dimensional and arrangement drawings including inside •Equipment Material Take Off. (If applicable) •Control Panel interconnecting wiring diagrams and Wiring Loop diagrams (If applicable). (If applicable) •Instrument location layout drawings (cable tray, location of instruments and junction boxes, all wiring, utility/air piping and etc) for construction / Erection. •Instrument Installation drawings. •Process and Pneumatic hook up details. •Typical installation and Earthing. •Instrument junction boxes wiring diagram. •Process / Pneumatic and Electrical Hook up. •Cable list •Material take off •Catalogue and instruction manuals •Alarm Set Point List (could be submitted within I/O list) •Spare parts list for commissioning, and two years operation •Special tool list (If required) •Shut down logic diagram •Shut down block diagram •Cause and Effect matrix (if applicable) 				deviation list.	
D.23	All instruments shall be accessible for adjustment, repair and replacement without The machine or pipes.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Comment will be followed and no deviation for this comment
D.24	All thermowells, orifice plates and restriction orifices shall be 316 SS as a minimum.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	D.24 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	For compressor as per MYCOM proven standard. For other parts confirmed.
D.25	The material for instrument tubing and fittings shall	OEM design will be followed for	Any deviation shall be	For compressor as per	D.25 shall be followed	For compressor as per MYCOM Proven





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	all be of AISI 316 type.	compressor Unit, the rest of package is confirmed.	mentioned in deviation list to consider by owner	MYCOM standard. For other parts confirmed.	Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	standard. For other parts confirmed.	
D.26	All instruments shall meet the requirements in the Project Piping Material Specification (PMS)	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	D.26 shall be followed. Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Tie in point will be as per project PMS	
D.27	Valves Limit switches shall be hermetically sealed NAMUR proximity switches, DPDT (preferable) or SPDT rated at 3A @ 230VAC or 1A @ 24VDC in accordance with IEC 60947-5-1 SHALL be considered for creating digital output signal. Relay shall be volt-free contacts, unless otherwise stated in the individual data sheets. For control valves which equipped with solenoid, a limit switch shall be considered for relevant fail position	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	D.27 shall be followed. Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Already has been mentioned that for compressor skid, MYCOM standard will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.	
D.28	Vendor shall calibrate the individual instruments prior to shipping and shall submit calibration certificate (with a Conformity certificate issued by a recognized laboratory) and include these kinds of certificates in Final Package's Report.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Comment will be followed and no deviation for this comment	
D.29	As a minimum all instrument cables shall be provided as Steel Wire armored and to be meet IEC 60331/ IEC 60332 standard All inputs and outputs to ESD level signals shall be fire resistance cables If signals are energized to trip. All wires shall be tagged at both ends of Connection to devices and terminal blocks as per wiring diagram.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	This item has been confirmed in D.14.D.29 has been repeated. Vendor shall follow D.29	Already has been mentioned that for compressor skid, MYCOM standard will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.	
D.30	Control valves (including self regulating valve) minimum flange rating shall be 300 # RF in accordance with ANSI B 16.5 for steel or alloy valves.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	D.30 shall be followed. Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	For compressor as per MYCOM proven standard and guarantee. For other parts confirmed.	 KASRAVAND Co. شرکت مهندسی و ساخت
D.31	All Pressure instruments shall be installed with block-and-bleed valves. For ratings up to and including	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	D.31 shall be followed. Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	For compressor as per MYCOM proven standard and guarantee. For other parts confirmed.	



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			list to consider by owner	other parts confirmed.	mentioned specifically to consider and confirmed by owner in deviation list.	
D.32	ding class 900, instrument lead lines shall be min . 12 mm OD with SS tubes and fittings of the double ferrule-type in SS 316. ½" pipes and socket-welded fittings shall be used above class 900. If Intrinsically Safe instruments is provided instead of explosion proof instruments, all relevant barriers shall be supplied by vendor.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Comment will be followed and no deviation for this comment
D.33	Vendor shall prepare all instruments items base on standards which have been mentioned as our reference standards in relevant specs	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	For compressor as per MYCOM standard. For other parts confirmed.	D.33 shall be followed Deviations shall be mentioned specifically to consider and confirmed by owner in deviation list.	Already has been mentioned that for compressor skid, MYCOM proven design standard and with MYCOM guarantee will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.
D.34	The cable terminal boxes shall have adequate space for cable termination. Vendor shall comply with cable entry size of terminal boxes in accordance with purchaser's comments during Purchaser's drawing approval stage.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Comment will be followed and no deviation for this comment.
D.35	Earthing distribution inside package skid shall be in vendor scope	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Comment will be followed and no deviation for this comment
D.36	All transmitters shall be provided of SMART type, with HART protocol for conventional 4-20 mA electrical signals.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Already has been mentioned that for compressor skid, MYCOM proven design standard and with MYCOM guarantee will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.
D.37	All cable entry to transmitters/switches shall be ISO type.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	Already has been mentioned that for compressor skid, MYCOM proven design standard and with MYCOM guarantee will be followed and for other part of package, project specification will be followed. Please be noted that compressor connection with customer such as junction box and PLC will be as per project specification.
D.38	Dial size of all pressure/temperature gauges shall be 150-160 mm	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	MYCOM best design practices will be followed and compressor packages are under full MYCOM guarantee. For Other skids is confirmed





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Reference Material Requisition: DPIC98-12-001-000-ME-MR-4150-0001-D1


Vendor Name: KASRAVAND Co

Vendor's Quotation Reference No: 9906315 Rev.: 0 Dated: 14.09.2020

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D.39	Casing for Gauges shall be 316 SS.	OEM design will be followed for compressor Unit, the rest of package is confirmed.	Any deviation shall be mentioned in deviation list to consider by owner	Comment is Confirmed	Vendor shall issue Related deviation list	MYCOM best design practices suitable for project will be followed and compressor Packages are under full MYCOM Brand guarantee. For Other skids is confirmed	
D.40	Vendor shall revise new proposal based on purchaser comments and to submit it with relevant catalogue. Submitted deviation/conflict list should be discussed during clarification meeting. This clarification sheet sets out the minimum requirements for the supply and does not relieve the Vendor of his full responsibility for the design and the reliable operation of the elements supplied. Purchaser's approval on Vendor's reply to this clarification, shall in no way be construed as relieving VENDOR of any of his obligation, responsibilities or liabilities under the CONTRACT and/or applicable codes and standards. Also; this clarification sheet sets out the minimum requirements for the supply and does not relieve the Vendor of his full responsibility for the design and the reliable operation of the elements supplied. Purchaser's or its Client's acceptance of Vendor's reply (with or without comments) does not relieve the Vendor of the responsibility of complying with all terms, conditions, codes, standards, requirements of related requisition and project specifications	Please find attached revised offer	Vendor shall confirm D.40	Comment is Confirmed	Vendor shall issue Related deviation list	Confirmed as per agreed TCL, This Package is designed based on latest technology and 100 years of experience of MYCOM Compressors fully under guarantee. MYCOM Brand is making 60 similar package per month and there are 65 units operating in Iran since 1989.	
D.41	Regarding technical offer exclusion item: Instruments signals transfer outside B. L. Please be noted that If there are any special cable (for Temperature, Vibration,...) shall be supplied by vendor.	Confirmed	Noted				closed
D.42	NEW ITEM		Unit Control Panel (UCP) - UCP Scope is as below: Size of UCP Cabinets: 800 W x 800 D x 2000 H with 100mm Plinth (RITTAL with RAL 7035). Unit Control Panel (UCP), installed in safe area (Control Room), IP-50, It Shall include: A. UCP Workstation (Embedded Type, Industrial	-Noted, Dimension will be specified after order. A-Noted. B-Noted. C-Noted. D-Noted. E-Noted.	Any deviation from dimension shall be mentioned in deviation list	Comment will be followed and no deviation for this comment	 KASRAVAND Co. شرکت مهندسی و ساخت کراوند



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			<p>PC/Panel Mounted).</p> <p>B. UCP Printer.</p> <p>C. UCP hard-wired interfaces with the Plant Control System (PCS) [Distributed Control System (DCS), Emergency Shutdown System (ESD), Fire & Gas System (FGS)] and Motor Control Centre (MCC) shall be provided as per client request (during detail design) and project specifications which are mentioned above.</p> <p>D. Time synchronization signal shall be considered by UCP Vendor in order to synchronize UCP and DCS time for data communication. Vendor shall confirm Instrument Symbols & Legend, in related referenced P&ID's.</p> <p>E. For Utilities inside UCP / LCP such as fluorescent lamps and Fans Non-UPS power (230VAC) will be provided by client, so vendor is requested to provide and consider this philosophy for their wiring connection diagram</p>			
D.43	NEW ITEM		<p>PLC system shall consist of the following mentioned items: (this item subject to change)</p> <p>A. Redundant and Fault tolerant PLC modules for power supply, CPU, I/O cards and communication modules shall be configured with 2 (Two) separated rack (Master/Slave) and with Hot-</p>	<p>A-Noted. B-Noted. C-Noted. D-Noted E-Noted. F-Noted.</p>	<p>Noted</p>	<p>closed</p> <p>KASRAVAND Co. شرکت مهندسی و ساخت کراوند</p>



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Reference Material Requisition: DPIC98-12-001-000-ME-MR-4150-0001-D1

Vendor Name: KASRAVAND Co

Vendor's Quotation Reference No: 9906315 Rev.: 0 Dated: 14.09.2020

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Standby configuration.
 B.Modbus RTU with RS-485 (Slave type) physical layer shall be provided on the PLC's communication module. (DCS can receive / transmit signal with Modbus RTU / RS-485 physical layer, UCP shall communicate with DCS via dual redundant industrial communication network. Communications link shall be provided with galvanic / optical isolation and with full link diagnostics).
 C.Interconnecting cable between program loader and PLC is in vendor's scope.
 D.Original PLC's operating software and application software plus laptop (with permanent license). Permanent License for HMI (19" monitor) shall also be considered.
 E.An individual LED shall identify failure of each module.
 F.Cooling Fan and diagnostics interface signals shall be provided.

LOCAL CONTROL PANEL (if applicable):
 A. Terminals shall be grouped according to voltage level. Ground bus bar as well as external termination point shall be provided According to specification.
 B. Outdoor (IP-65), self-standing type and a rain, sun

A-Noted.
 B-Noted.
 C-Noted.
 D-Noted.
 E-Noted.
 F-Noted.
 G-Noted.
 I-Noted.
 J-Noted.
 H-Noted.
 K-Noted.

Noted

closed



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shade and canopy. All electrical equipment shall comply with "application of electrical equipment in hazardous area" in accordance with specific job requirements of general specification for instrumentation.

C. AC instrument power and low voltage DC wiring shall be routed in separate cable tray.

D. Terminals for multi cables shall be provided with 20% spare. All spare shall be identified

E. All devices mounted in panel and on instruments shall be identified. With a permanently attached tag name showing the service

F. The Panel shall be equipped as a minimum with following devices:

- I) Start, Stop and Emergency Shutdown Push-Buttons
- II) Reset demand or Authorization Push-Button
- III) Lamp Test Push Button
- IV) Audible & Visible Alarm / Horn
- V) Other accessory devices shall be provided as per vendor's standard operation.
- VI) Package Burner Firing Indicators from Flame Detector / Flame sensor for both Pilot and main burner
- VII) Package Burner Fault

L-Noted.
M-Noted





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			<p>Indicators and alarm</p> <p>Besides, appropriate LCP with respect to project technical specification shall be provided by vendor.</p> <p>G. All wires shall be tagged at both ends of connection to devices and terminal blocks as per wiring diagram.</p> <p>H. Operating and indicating devices shall be outside of panel</p> <p>I. All Emergency PBs & Switches in LCP or UCP shall have a protective cover to avoid inadvertent shutdown.</p> <p>J. Illumination shall be provided by fluorescent lamps which shall be operated by door Switch.</p> <p>K. Each shutdown logic output and output for solenoid valve activation shall be Fuse-Protected.</p> <p>L. Skid Mounted Local Gauge Board shall be provided by package's VENDOR.</p> <p>M. Local Panel Material: AISI 316 with suitable painting, as per project specifications shall be considered. (if applicable)</p>				
D.45	NEW ITEM		Distance between package units and control room will be clarified later but, if any restriction is exist for signal transmission, vendor shall review and submit technical solution.	There is technical limitation for that and it should be discussed.	Noted		closed
D.46	NEW ITEM		Control panel and equipment enclosures shall be designed	Noted	Noted		closed



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D.47	NEW ITEM		for bottom entry or bottom exit of cables with Gland plate and explosion proof cable glands.	Noted	Noted		closed
D.48	NEW ITEM		Machin Monitoring system shall be selected separate and individually (not integrated to PLC) with related System and Transmitter	MMS is not recommended by OEM.	Noted		closed
D.49			Vendor shall follow final P&ID as scope of work. any deviation shall be mentioned in deviation list	OEM PID Will be followed and details will be provided after PO.	Any deviation will be discussed to confirm by owner. vendor shall follow scope of work/supply	Scope of supply and works has been already discussed in TCL and vendor offer. The package process and mechanical guarantee is by vendor and MYCOM design will be followed based on her 100 years of experience and 75 under operation unit in Iran since 1989.	
E	ELECTRICAL						
E.1	Motor sub vendor list shall be followed.	WEG or equivalent will be used.		Noted			closed
E.2	In document list motor data sheet shall be added. In detail design data sheet for all motor shall be filled and delivered.	Confirmed		Noted			closed
E.3	Cable Gland for motor shall be supplied.	Confirmed		Noted			closed
E.4	Local control push button for motor shall be supplied.	Confirmed		Noted			closed
E.5	Main motor supply voltage shall be indicated in this stage.	Please refer to revised offer	As 6 KV and 11 KV motor are under negotiation with client. The supply voltage will be finalized later.	We are waiting for your information.			
E.6	NEW ITEM		Manufacturer shall declare that project specifications are understood and will be followed for design and manufacturing.	Compressor Package as per MYCOM standard. For other parts, project specification will be followed.			
E.7	NEW ITEM		As per project specification all JB and panel shall be metallic body. GRP panel is not acceptable.	Noted.			
F	PIPING						






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F.1	Please see comments on P&ID on attachment#1 .	OEM design will be followed as the process Guarantee is in OEM and packager scope of work, and this is the best OEM practice for performance of this package	Maximum available area with considering maintenance area which marked on it and tie in location has be followed by vendor (updated G.A should be submitted and laydown area (maintenance space shall be marked on it)	12000 x 10000 x 8000 as dimension. Weight total: 60000 kg.	If mentioned area containing maintenance requirement and related access, submitted dimension is acceptable (see attachment#1 for more detail)	Noted details will be discussed in engineering phase	
F.2	Please see comments on GAD on attachment#2 .	OEM design will be followed as the process Guarantee is in OEM and packager scope of work, and this is the best OEM practice for performance of this package. Vessel skids and Package battery limit will be as per project specification					
F.3	NEW ITEM		3D model compatible with aveva should be submitted by vendor	Noted			closed
F.4	NEW ITEM		Caesar II file of lines in vendor scope shall be submitted (stress analysis file and report)	Noted except for Compressor units	Caesar II files for all lines are required.	Inside of Package in under guarantee and responsibility of vendor	
F.5	NEW ITEM		Minimum requirements of PMS shall be considered in base material/wall thickness calculation,.. of all internal piping	For tie in points confirmed	For all interconnecting lines inside packages minimum requirement of PMS shall be followed	For tie in point and any loose item, confirmed. Vendor PMS inside Package will be issued after order.	
F.6	NEW ITEM		Isometric for all internal lines shall be submitted	Noted		 KASRAVAND Co. شرکت مهندسی و ساخت کسراوند	closed
F.7	NEW ITEM		Load and displacement for all nozzles shall be	For tie in nozzles will be provided After order	confirmed		closed



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			submitted				
F.8	NEW ITEM		Maintenance requirement (mobile crane,..) shall be specified by vendor	After order and it is by client	If maintenance requirement has effects on layout of package, this matter shall be clarified now (see attachment 1)	Maintenance requirement (mobile crane,..) will be recommended by vendor.	
F.9	NEW ITEM		Please see our comments on "document list" and "FLOW DIAGRAM_320 For Compressor"	Noted			closed
F.10	NEW ITEM		minimum requirement of project paint specification shall be followed by vendor	For compressor as per MYCOM standard. For other parts, noted.	Final coat of spec for all items shall be followed	For compressor as per MYCOM standard. For other parts, confirmed.	
F.11	NEW ITEM				Fire water ring/support inside package shall be supplied by vendor (if any)	Not in vendor scope of supply and work	
F.12	NEW ITEM				Supports of all lines inside package shall be supplied by vendor	Confirmed	
G		CIVIL					
G.1	NEW ITEM				<p>1- All structural activities\design shall be in compliance with documents and codes noted in MR and Technical specification.</p> <p>2- Vendor to confirm calculation note and native file (if requested) for foundation support/structural design shall be issued.</p> <p>3- Any deviation from the above mentioned specifications shall be listed</p>	<p>1) For compressor package design data shall be as per OEM Std and best practices suitable for this type of Compressor for Local part is confirmed.</p> <p>2) MYCOM will provide respective Loads to esteemed client for design of Foundation.</p> <p>3) For compressor package design data shall be as per OEM Std and best practices suitable for this type of Compressor.</p> <p>4) Design of Foundation will be done by esteemed client according to received Loads from MYCOM</p> <p>5) Confirmed</p> <p>6) If Applicable Confirmed</p> <p>7) If Applicable Confirmed</p>	 <p>KASRAVAND Co. شرکت مهندسی و ساخت گراوند</p>



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					<p>by vendor in a Deviation List and shall be submitted to the purchaser.</p> <p>4- Foundation loading diagram shall be included of: Dimensioned Outline & Elevation for Foundation, All foundation Static/Dynamic Load (based on codes Referred in civil design criteria), support details and Required Clearance for Operation, Maintenance or Removal on Foundation Layout. (If requested)</p> <p>5- Anchor bolts type, size and material, general arrangement for skids & all details of equipment shall be determined by vendor. (If requested)</p> <p>6- Post installed anchors or expansion anchor bolts are in vendor's scope of work and to be provided by vendor</p> <p>7-If epoxy grout with more than 60 MPa strength is needed, type of grout to be specified in vendor's document.</p>		
H		SAFTY					
H.1	PSV Data sheet/PSV calculation sheet, flare load summary shall be submitted by vendor.	After order will be submitted.	Noted				closed
H.2	For flare lines": Disposal system piping should be	OEM design will be followed	Vendor to confirm this	Confirmed			




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	self-draining toward the discharge end. Pocketing of discharge lines shall be avoided. The laterals from individual relieving devices shall enter a flare header from above. In case of any low point flare or vent or drain to flare, drip leg at low point shall be provided by vendor.		requirement				
H.3	All flare Tie-ins in Vendor PID shall have the Size & all process condition including flow, pressure, composition,	During Engineering Phase	Noted				closed
H.4	Bidder shall consider 0.05 and 3.5 barg as Flare constant and design pressure.	To be replied in next stage	This data shall be considered by vendor.	Confirmed			
H.5	Area classification of zone 2, IIB, T3 to be considered by bidder as minimum.	Confirmed	Noted				closed
H.6	1- Noise calculation and measurement shall be in accordance with the requirements of codes and standards mentioned in the document "General Specification for Noise": Doc. No. DPC-SF-SPC-0003". Please Confirm. 2- Noise Data Sheet shall be provided according to the project specification for each noisy equipment and complete package in project format after PO. Bidder to modify his deviation list according to this requirement.	Noise consideration has been reflected in our offer 85DBA @ 1m	1- Bidder to confirm the previous comment; otherwise, any deviation shall be clearly stated in deviation list. 2- Bidder to confirm the previous comment; otherwise, any deviation shall be clearly stated in deviation list.	Confirmed. Noise consideration has been reflected in our offer 85DBA @ 1m	It is supposed that bidder confirmed noise data sheet will be provided according to the project noise specification and its referenced Codes and Standards.	Confirmed, noise calculation will be per as per MYCOM standard and project requirement for noise level is confirmed.	
H.7	The max. sound pressure level of each noisy equipment and complete package shall be less than 85 dB(A) at 1 meter. Bidder to guarantee.	Confirmed	Noted				closed
H.8	Any sound reduction measurement and all required accessories to meet the above mentioned sound limit shall be designed and supplied by vendor. Moreover, the hazardous area classification shall be suitable for using the vendor designed sound reduction measurement. Please confirm.	confirmed	Bidder shall delete supplying of noise enclosure as an option in the technical offer (such as page 1 of 8) based on his confirmation in TCL. Also bidder shall revise	Confirmed. Noise consideration has been reflected in our offer 85DBA @ 1m	Modified Technical Offer has not been received. But according to the bidder confirmation in TCL, it is accepted.	Noted	 KASRAVAND Co. شرکت مهندسی و ساخت کراوند



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H.9	This package is located in fire potential area. Hence, fireproofing support for all equipment shall be provided by vendor in case of necessary.	Fire proofing is out of scope and can be done by site contractor	his technical offer and reconfirm item H.8. Please be noted fireproofing supports and clips shall be supplied by vendor.	Fire proofing is by EPC		
H.10	Vendor to participate in HAZOP and SIL study meeting and implement the relevant consequences without any cost effect.	Daily rates will be applied/implementation of consequences only for agreed items	HAZOP and SIL study will be held by Contractors through Third Party with attendance of Vendor representative(s) and OWNER. Vendor attendance at this HAZOP & SIL review meeting has to be included in Vendor scope of supply. Any change results of HAZOP & SIL review meeting shall be at Vendor care and cost unless vendor can convince technically HAZOP & SIL chairman. Vendor to confirm.	Since Number of days are unclear, this will be invoiced to contractor against daily rates. Also items which has been technically confirmed by chairman and OEM will be performed by vendor.	Please consider 2 days as a maximum for the mentioned meeting. Based on Vendor reply, Vendor confirmed that the relevant consequences will be implemented by Vendor without any cost effect.	This will be agreed between chairman and MYCOM, Only item agreed by MYCOM COMPRESSORS, can be considered
H.11	All environmental consideration shall be based on "Environmental Job Specification" doc. No.: DP IC9812-000-000-HS-SPC-0000-0002.	Confirmed	Noted			closed
H.12	Noise Data Sheet shall be provided according to the project specification for each noisy equipment and complete package.	As per OEM format	Bidder to report noise data in the project format according to the project specification; otherwise, any deviation shall be clearly stated in deviation list.	Confirmed, except for compressor Unit which will be as per OEM standard.	Refer to vendor reply in item H.6: It is supposed that bidder confirmed noise data sheet will be provided according to the project noise specification and its referenced Codes and Standards.	Refer to H6  KASRAVAND Co. شرکت مهندسی و ساخت گراوند
H.13	NEW ITEM				The following items shall be provided by bidder:	Not in vendor scope of supply and works



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					<p>1- Fire Water Spray system piping and Instrument Air lines shall be supplied according to the purchaser PID. Fire Water Spray System PID will be sent after receiving vendor drawings for whole equipment of package.</p> <p>2- Fabrication and installation of spray system piping and instrument air lines are in vendor scope of work and required supports shall be supplied by vendor.</p> <p>3- Spray nozzles and fusible plugs are not in vendor scope of work and supply.</p> <p>4- Pipe Materials shall be considered according to the project PMS (Piping Material Specification).</p> <p>Please confirm.</p>		
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