

SPECIFICATION

FOR

**CONTROL PANEL FOR
HYDROGEN DRYER (X9701)**

IN

**PETROCHEMICAL PLANT, FACT UC
KOCHI, INDIA**

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2				<i>RR</i>	<i>MPR</i>
1	20.10.2020	REVISED	RR	MPR	KVG
0	09.10.2020	FOR ENQUIRY	RR	MPR	KVG
REV	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED

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1.0 GENERAL

- 1.1 The Fertilisers and Chemicals Travancore Limited (herein after referred to as "FACT") is a large Central Public Sector Undertaking in Kerala, engaged in manufacture and sale of Fertilisers/ Chemicals/ Petrochemicals, Consultancy Services and Engineering Fabrication with its major manufacturing units located at Udyogamandal and Ambalamugal in Kochi, Kerala.
- 1.2 FACT UC proposed to upgrade existing relay based Interlock Control Panel of Hydrogen Dryer unit in Petrochemical Plant, into state of the art Programmable Controller based Interlock Control Panel.
- 1.3 This specification covers the minimum user requirements for the design, manufacture, inspection, testing, supply, Supervision of Installation & commissioning and warranty services of the proposed system with accessories for installing at 5A+L section of Petrochemical Plant. The specification also covers the requirement of Documentation, Training etc. as per sections that follow. The intent of this document is to describe the minimum acceptable parameters from user point of view.
- 1.4 The entire work has to be carried out adhering to all relevant industrial standards, regulations and best engineering practices, utilizing best quality materials and workmanship. The absence of specification on any aspect shall imply that the best engineering practices and statutory requirements shall prevail.
- 1.5 It may be noted that compliance to this document alone does not absolve the supplier from supplying a system/equipment that does not meet all the specified operating and service requirements.
- 1.6 In the event of any conflict between data given in the specification and the requirements with respect to standards/regulations the bidder may quote as per standards/regulations. The same shall be intimated and get clarified by the purchaser before submitting the bid. Any deviation from the specification has to be specifically mentioned in the technical bid.
- 1.7 Bidder is advised to visit the site and collect / obtain all details, prior to submitting the offer.
- 1.8 Bidder has to comply with FACT's standard rules and practices applicable for contract works.
- 1.9 The offers that are meeting the PQ Criteria will only be considered for Technical evaluation.
- 1.10 For price evaluation, the total cost including supply (Control panel, Documentation, Commissioning spares, Consumables) & service part (Supervision of Installation & commissioning, Training) of the control system will be considered.

2.0 PROJECT REQUIREMENTS

2.1 GENERAL

- 2.1.1 FACT intends to upgrade the existing Ex-proof relay based interlock Control Panel of Hydrogen Drier in Petrochemical Plant with state of the art Micro controller based interlock system.
- 2.1.2 The Hydrogen drier unit is located in the Anone section of Petrochemical Plant. The panel is also located nearer to the Drier unit.
- 2.1.3 The existing panel is Ex-proof type suitable for the hazardous area classification IEC Zone 1 Gr. IIC, T4. The Panel is installed in the field and is operating independently

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without any or limited manual intervention. A few indication lamps, push buttons and selector switches are provided on the panel for operator intervention and for maintenance activities.

- 2.1.4 Under normal conditions the Drier unit will be operating in Auto mode without any operator intervention. It also provided with a selector switch for change over to manual mode. In manual mode the operator can run each cycles independently using push buttons.
- 2.1.5 All Instruments and systems related to the Drier section are hooked into the control panel.
- 2.1.6 A common fault indication and few status indications are hard wired to the Central Control Room DCS system for operator information regarding the operating status of the Drier system.
- 2.1.7 In the existing system two number of Ex-proof type 36 entry junction boxes are provided for termination of field cables. The junction boxes are also planned to be replaced with new junction boxes.

2.2 OPERATIONAL DETAILS OF HYDROGEN DRIER SYSTEM

- 2.2.1 The Hydrogen Drier system of Anone plant is used for removing the moisture from fresh Hydrogen. This Unit can be operated either in Automatic or in manual mode. The Drier system is working in the pressure of 32 Kg/cm².
- 2.2.2 The system consists of two Drying columns A & B. One column is in service for 8 Hrs and the other one will be in regeneration and the cycle repeats continuously. In the regeneration process, there are four stages namely,
- De-pressurisation - Duration 10 Mts.
 - Heating - Duration 5 Hrs
 - Cooling - Duration 2 Hrs 40 Mts
 - Pressurization - Duration 10 Mts.
- 2.2.3 The Drying operation is controlled by the instrument interlock Control panel. Each stage will be operated for the above pre-determined period and if the cycle conditions are fulfilled at the end of each stage, the system moved to next stage by suitably open/closing of respective flow control valves. The existing field components of the drier system is as follows.
- Automatic Valves: Pneumatically operated valves; Open/Close control by Solenoid valves of make, ACSO. The instrument air pressure is available at 4.5 – 5.5 kg/cm²g pressure. The valve status is sensed by Open/Close feedback limit switches.
- 2.2.4 If the system is put into Manual mode, the system shall remain in the last stage without any changes in stages. Then the stream and stage changes can be controlled through push buttons and selector switches provided on the panel. The stream and stage selected shall remain in that state as long as the stage selector switch is not changed.
- 2.2.5 After the power ON, in the auto operation, stream A or B can be selected, subsequently all stages shall be covered as per the stage timers. After completion of all stages in one stream, it shall automatically changeover to the next stream. The action of stage selector switch shall not be effected in auto mode.
- 2.2.6 If a stage is delayed due to feedback failure or maintenance of limit switches in auto mode, the operator can intervene and change to next stage if the required time is

elapsed by putting in manual mode. Later putting into auto mode the new stage shall be continued for auto operation.

- 2.2.7 Four independent retentive timers are provided for each stage. If the feedback from valve limit switches in a stage change is not received to the control system, the timer shall be halted until the feedback is received. In this case, the elapsed time, if any shall be retained. One 8 hrs timer also shall be started at the starting of each stream for alarming whether the drier system is halted or not. Change over failure and feedback failure alarm shall be generated depending of the stages and condition of feedback signals.

3.0 SCOPE OF SUPPLY AND WORK

3.1 BIDDER'S SCOPE OF SUPPLY AND WORK:

Scope of supply and work shall include but not limited to the following:

- i. Design, manufacture, programming, inspection, testing, supply, Supervision of installation and commissioning of independent Interlock control panel for the hydrogen drier system of Anone plant with all required accessories as per the enquiry and specification/data sheets.
- ii. Supply of Junction Boxes and cable glands with accessories for field cable termination.
- iii. Packing, forwarding, transportation, transit insurance etc. of the complete equipment shall be under the scope of the bidder.
- iv. Supervision services for Installation of the system and Commissioning assistance.
- v. Program modification at site for the process requirements.
- vi. Commissioning spares and consumables during commissioning of the system.
- vii. Drawings and documents as specified.
- viii. Training for FACT personnel at site.
- ix. The bidder shall arrange to collect / obtain data/details from the site required for design/configuration of the system by deputing their engineers.
- x. Accommodation and travel of bidder's personnel deputed to the site for all purposes in connection with this work including warranty period shall be under bidder's scope.
- xi. Special tools, if any required during installation & commissioning such as programmer unit to be brought by the bidder.

4.0 ITEMS UNDER PURCHASER'S SCOPE

- 4.1 FACT will provide one no. 110 V AC, UPS and 230 V AC Non-UPS power supply.
- 4.2 Removal of existing panel and Junction boxes.
- 4.3 Installation, Cabling, glanding, Termination and cold loop testing.
- 4.4 All cables such as power, signal and control cables outside the Control Panel.

5.0 SPECIFICATION OF PROPOSED SYSTEM

5.1 GENERAL

- 5.1.1 The existing Ex-proof control panel with all components shall be replaced with a standalone Programmable logic controller based purged/pressurised type control panel

suitable for the Zone 1 Area classification with required indication lamps, selector switches & Push buttons.

5.1.2 Refer GA Drawing no. PD-INST-DWG-001 for the general appearance of the proposed control panel. All functionalities of the existing control panel shall be retained. All components shall be of reputed make only.

5.1.3 Following are the list of major components envisaged in the new system.

- Purged/pressurized type Control panel housing controller, Interposing relays, MCB, Power supply units, Indication Lamps, Selector switches, push buttons etc.
- Ex-proof Junctions boxes.
- Accessories such as solenoid valves, cable glands, mounting accessories etc.

5.2. SPECIFICATION OF CONTROL PANEL

5.2.1 Following shall be the minimum requirement of the Control Panel.

- Type : Rittal/Hoffman/Pyrotech; free Standing Enclosed cubicle; Air Purged type.
- Mounting location : Field mounting.
- Size : 2000(H) x 1000(W) x 800(D) minimum.
- Protection : Weather proof to IP 65 and Purged type as per NFPA 496.
- Purging classification : IEC- 60079-2: 2014; X - Type.
- Hazardous Area Classification : IEC Zone 1 Gr. IIC T4.
- Material : Powder coated MS
- Sheet Thickness : 3 mm minimum.
- Door : Back side.
- Illumination : 230V AC, LED light.
- Cable entry : Bottom; Gland plate to be supplied.
- Painting
 - Internal : White
 - Exterior : RAL 7035 Glossy Finish
 - Paint Thickness : Min. 80 Micron
- Wiring method : PVC Duct.
- Internal wiring cable size : 0.75 Sq. mm minimum; Colour coding as per IS standard.
- Wire marker : Required; Cross feruling.
- Terminals : Polyamide DIN rail mounted; Connectwell; For power supply and field cables fuse terminals to be used.
- Isolators (MCB) : For Incoming power termination (110 V & 230 V) ABB/Schneider Electric etc.
- Base Frame : Required; 4 mm thick channel of height 100 MM.



- Accessories :Pneumatic hooter, Power ON Indication Lamp, Pressure Switch, Purge Pressure low Bypass switch, Main Isolator, Purge Control Box, Air set including solenoid valve, regulator, flow meter, Manometer, Isolations valves, relief valves; Eye bolt, Utility socket etc.

- 5.2.2 The panel is proposed to be installed at the field after removing the existing ex-proof panel.
- 5.2.3 The Phoenix/Schneider/Telemecanique Indication lamp and Push buttons to be provided at a suitable height. The panel shall be provided with half glassed window for viewing internal Micro controller status indication lamps.
- 5.2.4 The purge control system shall be included along with the panel. The purging system shall have bypass switches for Maintenance Override. The panel shall have doors at back side, the panel shall house all components required for implementing the interlock system. Panel shall be provided with a low pressure alarm facility and to be indicated using an indication lamp.
- 5.2.5 The control system operating power supply to the panel shall be 110 V AC.
- 5.2.6 Proper lugs and cross ferrules shall be used for wiring and cabling. Any power looping at panel instrument side is not permitted. For looping of signals/power, proper connectors or looping jumpers to be used, looping of cables with joint crimping of two cables or termination of two wires in same terminal is not permitted.

5.3 SPECIFICATION FOR PLC SYSTEM

The following guidelines detail the minimum requirements of the Micro PLC system.

5.3.1 GENERAL:

- 5.3.1.1 The Controller shall be a micro programmable logic controller of Omron/Siemens/Allen Bradely / Schnieder Electric. The base unit shall be expandable by adding modules.
- 5.3.1.2 The system shall have high noise immunity in order to ensure safe and reliable operation when subjected to RFI and EMI disturbances expected in normal plant operation.
- 5.3.1.3 The system shall have a data protection scheme for the preservation of data during the power outage and this shall be automatic.
- 5.3.1.4 Vendor has to engineer all the Interlocks, sequence of operations for safe operation of the system. The final logic diagram shall be handed over to the successful bidder during engineering stage.
- 5.3.1.5 The control system shall be operational under the worst operating conditions like Voltage variation more than +10%, Frequency variation more than +3%, Ambient temperature up to 45 deg C and relative humidity up to 95%.
- 5.3.1.6 The Power supply shall be 110 V AC +/- 10%, 50 Hz +/- 3%. If DC power supply model is offered separate power supply unit to be provided by the bidder.
- 5.3.1.7 A spike protection device to be added in the system in order to protect the components from lightning spikes and power supply spikes.
- 5.3.1.8 Separate MCBs shall be provided for AC and DC power. The power supply units if any used shall be Siemens/Omron/Phoenix/Meanwell.

5.3.2 PROCESSOR

- 5.3.2.1 The processor shall have the capability to handle arithmetic, logical, sequential, comparison, timing and counting functionalities. The Application program and data memory shall be non-volatile and EEPROM/Flash memory shall be available for application and data storage. The storage shall be automatic.
- 5.3.2.2 The retentive timers of duration 8 hrs and clock functions shall be available for batch operation.
- 5.3.2.3 The Controller shall have RS 485 Modbus communication port for communication to other devices. The RS 485 port shall be isolated type suitable for communication to long distance. If isolated port is not available suitable RS 485 extender to be provided.

5.3.3 INPUT and OUTPUT SYSTEM

- 5.3.3.1 Omron Interposing relays to be provided for all digital inputs and digital outputs. All interposing relays shall be with minimum two change-over contacts. All input and output interposing relays shall be wired to the controller, Input TB, output TB, LED lamps with proper lugs and cross ferrules according to the requirements. The spare contacts, if any shall also be wired up to the terminal blocks. The interposing relays shall be of DIN rail mountable type with suitable mounting base units.
- 5.3.3.2 All field input contacts are to be potential free. The interrogation voltage to the field switches shall be 110V AC.
- 5.3.3.3 For DC Interposing relays, flyback diodes to be provided for the protection against induced surge voltage. Interposing relays shall be individual relays and not relay boards.
- 5.3.3.4 The power supply for the Digital out puts from controller shall be 24 V DC. For field Solenoid valve energisation, 110 V AC is required and the same shall be wired through the output interposing relay contacts., The relay contact rating shall be 110 V AC, 1 A min.
- 5.3.3.5 All field terminals (DI/DO) are to be provided with fuses and shall have fuse blown indication. Each field signal shall be provided with two terminals. The power looping can be done at panel side only for the safe isolation of field devices.
- 5.3.3.6 Each I/O shall be protected against the reversal of polarity. Each I/O channels shall have a LED per channel to indicate the status of input / output. The interposing Relays shall be provided with LED for status indication.

5.3.4 SYSTEM SOFTWARE REQUIREMENTS

- 5.3.4.1 The basic programming language for Micro controller shall be Ladder diagram. However it is preferable to have other languages such as FBD, STL, SFC etc.
- 5.3.4.2 The application software shall be modified at site, if sequence of operation needs changes as per site requirement during the commissioning.
- 5.3.4.3 Functions, sequence of operations and details of control scheme for safe operation of the system shall be furnished as a part of software.
- 5.3.4.4 The complete software package shall be provided with two backup DVD. This shall include all application software and complete documentation of the project.

5.3.5 PROGRAMMER UNIT

- 5.3.5.1 Bidder has to supply Original licensed programming software with programming cable along with the system. The programming software shall be original and to be supplied in CD/DVD along with system.

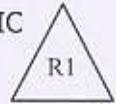
- 5.3.5.2 It is proposed to load the supplied software into a Laptop available with the purchaser. Bidder has to provide all supports for site installation of the programming software.
- 5.3.5.3 For site modifications of the interlock program and for site training, the Purchaser's Laptop shall be used by the Bidder.
- 5.3.5.4 The Micro controller shall meet the following specification.

1.0	General		
1.1	Architecture		Micro Controller with Expandable Modules
1.2	Mounting		DIN rail mountable.
1.3	Power Supply		110 V AC +/- 10%, 50 Hz, If DC power models are offered separate power supply to be included.
2.0	Processor		
2.1	Memory		8 K Program Capacity; 8K Data Memory or better
2.2	Memory Type		Non-Volatile
2.3	Program backup		Internal flash memory or internal EEPROM with automatic backup
2.4	LED indication for RUN, Fault, Bat low etc.		Required
2.5	Self-Diagnostics		Required for basic diagnostic functions
2.6	Protocols for communication		RS 485 Modbus RTU
3.0	I/O System		
3.1	I/O Capacity (Min)	Digital Inputs	48
		Digital Outputs	32
3.2	Interrogation voltage for I/O		24 V DC
3.3	Output Type		Relay Outputs, Rating 0.5A, 24 V DC
3.4	I/O Control method		Cyclic scan with immediate refreshing
3.5	Input type		Sinking
3.6	LED indication for every channel		Required
3.7	I/O Terminal screws		M3
5.0	Functions Required		Counter, Timer (settable 24Hrs or more), Retentive Timer, Sequential, Arithmetical, Comparison, Clock, logical etc
6.0	Programmer		
6.1	Programming Software package		Required
6.2	Programming		Through Laptop PC (Note: PC not included in supply scope)
6.3	Operating System		Windows
6.4	Programming Language		Ladder Diagram
6.5	Connection port for Programming Device		USB

5.4 SPECIFICATION FOR JUNCTION BOXES

5.4.1 Junction Boxes shall be of following specification.

Item	: Signal Junction Box
Type	: Weather proof to IP 65 and Ex-proof to IEC Zone 1 Gr. IIC T4.
Size	: 700(H) x 700(W) x 250(D) mm or suitable.
Material of Construction	: Cast Aluminium.
Cable Entry	
➤ Inlet	: Side entry
➤ Size	: 1/2" NPTF
➤ Qty	: 36 Nos (18 Nos each side) or higher
➤ Outlet	: Bottom entry
➤ Qty	: Three nos
➤ Size	: 1 1/2" NPTF
Mounting	: Wall Mounting
Terminals	: Spring loaded Polyamide DIN Rail mountable type terminals. End plates required for terminal mounting. Numbering to be provided.
Terminal size	: Suitable for Terminating upto 2.5 sq. mm wire
Accessories	: Double compression Ex-proof Nickel plated Brass cable Gland for all entries with PVC shroud.



6.0 SPARE PARTS AND CONSUMABLES

6.1 Mandatory spares:

• Micro controller (specification as per 5.3.5.4)	- 1 No
• Fuses and Terminals	- 50 nos.
• MCB's	- 2 nos.
• Relays	- 10 nos
• LED lamps	- 5 nos
• Push button	- 3 nos

6.2 Consumables: Any consumables required for the system to be included in the scope of supply.

7.0 PERIOD OF COMPLETION

7.1 Bidder shall submit relevant drawings within two weeks after placement of PO. FACT will communicate comments, if any within seven working days through e-mail.

7.2 Bidder shall complete the supply of the system with accessories as per TPS within 14 weeks from the date of issue of LOI/PO. The delivery period is inclusive of drawing approval, if any.

7.3 For delay in supply liquidated damages / penalty, as applicable shall be imposed as per terms of the enquiry/PO.

8.0 INSPECTION AND TESTING

8.1 Inspection and tests shall be carried out for the entire system in order to ensure conformity to standards & specifications, system performance and that it meets requirements as stipulated in TPS.

8.2 Bidder shall test and confirm the functional integrity of the system hardware and software prior to dispatch. The test certificate/report shall be submitted for review and verification by the purchaser. No material or equipment shall be dispatched until all required tests are successfully completed and the test certificate/report duly verified by the purchaser.

8.3 If required Pre-Dispatch-Inspection (PDI) shall be done jointly by bidder and purchaser's representative at bidder's facility / factory for the complete system with all accessories as specified in this specification. Facility and necessary arrangements for successful completion of PDI covering all operational & performance aspects of the offered system shall be in the scope of the bidder. The bidder shall inform the purchaser two weeks prior to the commencement of inspection after completion of internal inspection of the complete system as specified in the enquiry. The bidder shall submit the procedure for PDI and results of internal inspections for Purchaser's review well in advance before giving intimation for commencement of PDI. The accommodation and conveyance of the purchaser's representative during the period of inspection shall be under FACT scope.

If the purchaser is satisfied with the internal inspection certificate/report, the PDI may be waived off after the review.

8.4 **Site Acceptance Test (SAT)** shall be done, jointly by the bidder and the purchaser, after system installation. When the control panel is completely installed, the control system shall be subject to inspection by the Purchaser's representative. The testing shall be carried out to ensure functional integrity of all hardware and software supplied and compliance of the supplied system with respect to specification and standards. Bidder must initiate the remedial action in case unsatisfactory operation of any equipment or item is observed during this testing with intimation to Engineer-in-Charge. A detailed report shall be prepared on the tests and the final takeover of the system shall be based on the conformity to the specifications and functions specified.

8.4.1 All equipment shall be inspected thoroughly by bidder and Purchaser at site. The tests, as a minimum, shall include:

- i. Hardware verification as per packing list.
- ii. Visual and mechanical checking.
- iii. Performance, Functioning, Programming etc.
- iv. Any other checking as per bidder's Quality assurance plan.

9.0 TRAINING

9.1 The bidder shall provide satisfactory training to maximum 4 maintenance personnel of FACT UC. The training shall be arranged at the site.

9.2 Bidder shall provide three hard copies and one soft copy in CD/DVD of the training manuals with appropriate details for the system supplied.



10.0 WARRANTY & PERFORMANCE GUARANTEE

- 10.1 Bidder shall provide warranty for the system for 12 months from date of takeover (after Commissioning) of the system or 18 months from date of supply whichever is earlier covering complete systems and bought out items.
- 10.2 Bidder shall have full defect liability during the warranty period. It shall be obligatory on the part of bidder to modify and/or replace any hardware or software, entirely at his cost, in case any malfunction is revealed during the warranty period.
- 10.3 In case of a hardware or software malfunction during the warranty period, bidder shall depute his service engineer to the site and rectify the defects within 24 hrs of the receipt of information.
- 10.4 Performance Guarantee: The bidder shall provide performance guarantee to effect that the system will meet the requirements set forth in the PO with respect to quality, specifications and performance.
- 10.5 To ensure optimal performance of the system supplied by the bidder, a Performance Bank Guarantee (PBG) of 10% of the total order value shall be submitted in the respective format till the completion of warranty period.

11.0 DOCUMENTS AND DRAWINGS

- 11.1 Bidder should attach detailed literature/Catalogue, manuals carrying all technical details, specification, ordering information of offered models, Drawing etc along with the technical bid.
- 11.2 All documents and drawings submitted shall be in readable format and shall be as per the good engineering practices. All dimensions shall be in mm. All soft copies of documents and drawings shall be in standard pdf or ACAD format.
- 11.3 Bidder has to submit final drawings (GA drawing, Schematic drawing, wiring drawing, Dimensional drawing etc.) within two weeks after placement of LOI/PO for comments by FACT.
- 11.4 Following documents shall be furnished along with the offer.
- i. BOM [hardware and software] with quantity, make, model and detailed specification of all components and sub-assemblies.
 - ii. System configuration, specification and hook up schematic drawings.
 - iii. Wiring and Interconnection drawings.
- 11.5 Following documents shall be furnished along with supply of items (minimum three hard copies and one soft copy).
- i. Final documents in respect of items (i) to (iii) of above clause. The BOM shall have reference with purchaser's PO serial No and PO item code.
 - ii. Installation, Operation and maintenance manual, GA Drawings.
 - iii. Original test certificates & guarantee certificate
 - iv. Three copies of training manual, Installation guide, Operation and maintenance manual along with softcopies.

12.0 SUPERVISION OF INSTALLATION AND COMMISSIONING

- 12.1 Bidder to provide supervision assistance for Power up of the system, Hot loop checking, sequence checking, Trial operation, Program modification required, if any and commissioning of the system.
- 12.2 Any change/modification in the hardware part inside the panel is Bidder's scope.
- 12.3 Bidder has to arrange necessary programmer unit for site testing/modification of the software part.
- 12.4 Bidder shall employ only ESI registered workmen for work inside the factory. Bidder's site personnel whose salary exceeds the salary limit prescribed under ESI Scheme for coverage, they should suitably and adequately be covered by an accident policy issued by a nationalized Insurance Company for the entire period of contract. Also bidder shall comply with FACT's standard rules and practices applicable for contract works.

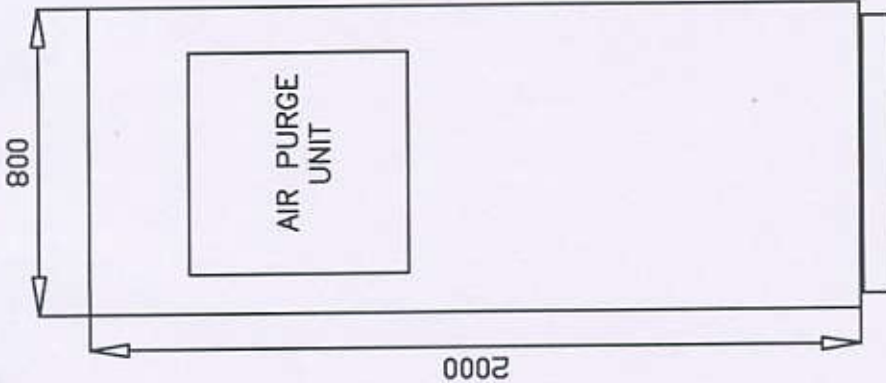
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ANNEXURE I - BILL OF MATERIAL (BOM)

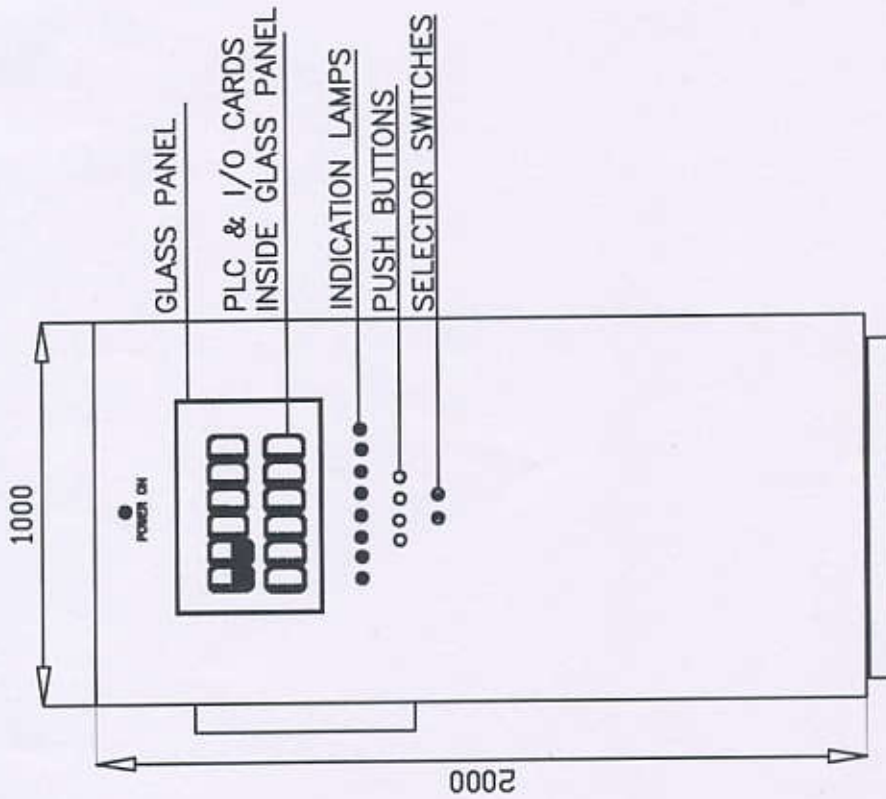
Sl No.	Description of Work	Qty
1.0	Purged type Interlock control panel for Hydrogen Drier unit of Petrochemical Plant as per TPS: INST-PETRO-H2DRYER-PS-001.	1 Set
2.0	Ex-proof junction Boxes	2 Nos
3.0	Accessories – Relays, MCB, Cable Glands, Terminals, lugs, ferrules, cable duct, DIN Rail, other wiring accessories, Programming software etc	1 lot
4.0	Spares	1 lot

Notes: For details refer Item wise Specifications.

THIS DRAWING IS THE PROPERTY OF THE FERTILISERS AND CHEMICALS TRAVANCORE LIMITED AND IS TO BE USED ONLY FOR THE PURPOSE ON DEMAND. WHICH IT WAS LENT AND MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY AND IS SUBJECT TO RETURN ON DEMAND.



SIDE VIEW



FRONT VIEW

*NOTE : 1. All dimensions are in mm
2. GA drawing is indicative only

THE FERTILISERS AND CHEMICALS TRAVANCORE LTD UDYOGAMANDAL		FACT-UC		PROJECT NO: ----	
SCALE	NTS	DATE	09.10.2020	DRIVEN	RR
CHECKED	RMP	APPROVED	KVG	REVISION	
NO.	ZONE	NO.	DATE	NO.	DATE
TITLE: PROPOSED GA DRAWING FOR HYDROGEN DRIER PANEL					
SHEET 1 OF 1 DRG. NO. PD-INST-DWG-001 PAGE 15 OF 15 REV.					
CLIENT M/S FACT - UC					

COMPLIANCE STATEMENT

ENQUIRY No : _____

We state that our Quotation No.....is in full compliance with the documents (Specification and TPS) issued against the Enquiry No: ----- except for the deviations listed below.

LIST OF DEVIATIONS

Sl. No	Description	Reason for deviation
1		

Name of Vendor:

We have read, understood and accepted the terms and conditions of the enquiry as given in the Technical procurement Specification, Instructions to Bidders, Annexure, Terms and Conditions for Purchase and Terms and Conditions for Erection and Commissioning attached with the tender documents, except for the deviations distinctively listed above.

Date:

Name & Designation

Seal & Signature

PRICE BID FORMAT

Sl.No	Item	Quantity	Unit Price (Rs)	Total Price (Rs)
1	Supply of Control Panel with Accessories for Revamp of Interlock Panel of Hydrogen Drier unit of Anone Plant.	1 Set	*	*
2	Supervision of Installation & commissioning and Training.	1 LS	*	*

Note: LS : Lump sum

IMPORTANT : Vendor to fill up in all the columns for each item separately.

Alm