

PURCHASER'S DATA

Project	BS VI project	Location	Refer Job Spec
Client	M/S IOCL		
A Site conditions			
1 Maximum ambient temperature:	Refer job spec	4 Relative humidity:	90%
2 Minimum ambient temperature:	Refer job spec	5 Altitude above MSL:	< 1000m
3 Design ambient temperature:	45 °C	6 Environment:	Humid & Corrosive
B Technical particulars			
1 MOV tag no.		18 Setting of adjustable parameter of actuator (2 wire control system)	NA
2 Supply voltage (Ref Note-1)	415 V ± 6%	19 Position indication	
3 Supply frequency	50 Hz ± 3%	Local	Required
4 System neutral earthing:	Solidly earthed	Remote	Refer Note-2
5 System fault level	50 kA	20 Travel limit switch	Required
6 Duty	S2 15 Min	21 Potential free contacts for remote indication/ control	
7 Area classification	Refer job spec.	Valve open	Required
8 Gas group	Refer job spec.	Valve close	Required
9 Temperature class	Refer job spec.	Local/Remote switch	Required
10 Construction	Refer job spec.	Remote control	Required
11 Ingress protection	IP 65	Operation in progress	If specified else where in tender
12 Painting	Shade 632 of IS 5	ESD PB	Required
13 Fireproof requirement		22 DCS interface	Required
MOV tag no.	Refer process data	23 Max. time of operation	
Fireproof rating	Refer process data	Opening	<= 60sec
14 Valve duty		Closing	<= 60sec
Full open & close	Yes	24 Cable glands & plugs for unused entries	Flame proof type
Partial open & close	Refer process data	Applicable standard	EIL Spec 6-51-0091
15 Control requirement	Local & Remote	25 Special requirements (FF)	If specified else where in tender
16 Local/Remote/Off selector switch	Required		
17 Suitability for interfacing with 2 wire control system	If specified else where in tender		

MANUFACTURER'S DATA

A Actuator			
1 Make		5 Max. permissible no. of open & close per hour	
2 Type & Catalogue no.		6 Internal control supply in actuator	
3 Applicable wiring diagram		7 Recommended backup HRC fuse	
4 Valve duty			
B Motor			
1 Make		5 Locked rotor (starting) current	
2 KW rating		6 Rated torque	
3 Rated speed in RPM		7 Average load current	
4 Enclosure			
C Basis for sizing & selection of actuator			
D Test & Approval certificates	Furnished/Not furnished		
E MOV actuator-2 wire system			
1 Max. no. of field units per one master station		3 Max. no. of control inputs & control/status outputs from each filed unit	
2 Max. permissible distance between field unit & master station			

Notes

- The purchaser will provide single point power supply to each actuator. Any other control supply voltage required shall be derived by the manufacturer within the actuator.
- In case of remote continuous position indication, the potentiometer/transducer required for position indicator along with loose remote continuous position indicator shall be supplied and included in the quoted price of respective MOV actuator and supplied with it.
- Remote input signals for opening/closing/stopping the MOV shall be provided through momentary closing of potential free contacts in Purchaser's panel. Necessary controls required for running the motor for the complete opening/ closing sequence of the valve using such input signals shall be provided by manufacturer in the actuator.

A	12.09.2016	Issued with MR/Tender	CA	AKG	SV
Rev. No.	Date	Purpose	Prepared by	Checked by	Approved by

ELECTRICAL LOAD DATA

NOTES: -

1. Vendor shall fill the details of all electrical power consumer loads, which are included in the scope of this MR/Tender and submit with the offer.

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MOV ACTUATORS

[illegible]

**इंजीनियर्स
इंडिया लिमिटेड**
(भारत सरकार का उपक्रम)

 **ENGINEERS
INDIA LIMITED**
(A Govt. of India Undertaking)

Project : BS-VI PROJECT

Client : M/s IOCL

Load Data

DOCUMENT NO.

A882-999-16-50-DS-1003

Date _____

14.11.2017

Rev

A

JOB SPECIFICATIONS (ELECTRICAL) FOR MOV (MR No. A886-000-WP-MR-3045)

PROJECT : BS-VI PROJECT

OWNER : M/s IOCL

PMC : ENGINEERS INDIA LTD.

JOB NO : A886

A	26.07.2018	ISSUED WITH MR	GCS	AR	SV
Rev. No	Date	Purpose	Prepared by	Checked by	Approved by

GENERAL

- 1.1 The specification defines the basic requirements of the electrical works in vendor's scope for the MOVs for BS-VI Project of M/s IOCL. This job specification shall be read in conjunction with EIL standard specifications, data sheets and documents attached with the Material Requisition. In case of any conflict amongst various documents enclosed with MR, the most stringent requirement shall govern and Owner/EIL decision in this regards shall be final.
- 1.2 The equipment shall conform to this specification, enclosed data sheets and standard specifications.

2.0 SCOPE

- 2.1 Vendor's scope, in each case, shall include sizing, design, engineering, manufacturing, supply, testing at manufacturer's works, packing and delivery at site of electrical equipment including supply of all commissioning spares, mandatory spares, special tools & tackles and quotation for two years recommended spares as per the specifications and data sheets enclosed with the requisition. The major electrical equipments involved are:-
- a.) Actuator for MOVs
- 2.2 Vendor shall supply cable glands and tinned copper lugs for equipment supplied by them. For outdoor equipment, double compression type Nickel plated brass Safe/FLP cable glands suitable for the classified area shall be supplied

3.0 EXCLUSIONS

- 3.1 Supply of feeders for MOV Actuators.
- 3.2 Supply and laying of all power, control, signal cables from field to Substation & Control room.

4.0 UTILIZATION VOLTAGE

Utilization voltage shall be as listed below:

- a.) All MOV actuators : 415V $\pm$ 10%

5.0 SITE CONDITIONS

The equipment and the installation shall be suitable for continuous operation under the following site conditions:

- Altitude above MSL : < 1000 m
- Seismic Zone : As per IS-1893
- Environment : Dusty, Tropical & Corrosive as in Hydrocarbon Industry

The temperature profiles at various locations are tabulated below:

Location	Maximum/ Minimum Ambient Temperature	Equipment design temperature (IS-9676)	Humidity
Haldia	46 °C / 7.2 °C	45 °C	90%

6.0 SPECIAL REQUIREMENTS

- 6.1 The MOV' s shall comply With EIL Spec.6-51-0091, data sheet A882-999-16-50-DS-0851 and shall meet the specific requirements as indicated against respective MOV Tag Nos. in the table below :

S.N O	MOV TAG No.	Area Classification	Gas Group, Temp. Class	Power and Control cable size	Interface with DCS/PLC
1.	205-MOV-2504	Zone 2	II A / II B, T3	Later	Conventional

S.N O	MOV TAG No.	Area Classification	Gas Group, Temp. Class	Power and Control cable size	Interface with DCS/PLC
2.	205-MOV-2505	Zone 2	II A / II B, T3	Later	Conventional
3.	205-MOV-2506	Zone 2	II A / II B, T3	Later	Conventional
4.	205-MOV-2507	Zone 2	II A / II B, T3	Later	Conventional

- 6.2 All MOVs specified in the MR shall be with Flameproof (Ex-d) enclosure type and with minimum ingress protection IP-65. All Flame proof equipment shall conform to the requirements of IS/IEC 60079-1.
- 6.3 Remote continuous position indication shall be provided for the MOVs for which inching / jogging requirement are indicated in Process data sheet.
- 6.4 Please note that MOVs shall have 5 No's limit switches (full open, full close & 3 No's partial open/close, at 85% opening position) to cater to the process requirements as per the process data sheet enclosed with the MR.
- 6.5 All MOVs shall have cable entries for one power cable and three control cables. Exact cable sizes of power and control cables shall be finalised during detailed engineering. Provisions, as required in Vendor's equipment for termination of the same, shall be made accordingly without any cost & time implications to Owner. Unused cable entries shall be supplied with flameproof blanking plugs.
- 6.6 All electrical equipment for use in hazardous areas shall be certified by CIMFR, ATEX, BASEEFA or equivalent independent testing agency for the service & the area in which it can be used and shall have a valid statutory approval of CCOE/PESO and copies of the same (CCOE/PESO) shall be furnished during detailed engineering stage which is mandatory as per local rules/regulations
- 6.7 Cable glands to be supplied with hazardous area MOVs shall be of flameproof Ex-d type suitable for use in Zone-2, Gas group IIB/IIC, Temp class T3 and shall meet all the requirement of IS/IEC-60079-01/15.
- 6.8 For the contacts provided for interface with owner's systems, vendor to ensure that in the event of voltage dips/power outage, status of MOV (OPEN/CLOSE/TRIP indication etc.) for remote annunciation shall not undergo any change. The wiring for all MOVs feedback controls shall be fail safe type. Any back up for power supply & hardware required for achieving the same shall be provided by vendor within the actuator. Owner shall not provide any power supply other than 415V+/-10%, three phase, 50Hz+/-3% incoming supply to each of MOV actuator.

7.0 SPARES

7.1 Mandatory Spares:

The following mandatory spares for electrical equipments shall be included by the bidder in the quoted price:

S. No.	Part Description	Quantity Required
1	MOV actuators	
a.	Position transmitter	10% (1 no. min. if the same is provided in MOVs)
b.	Power supply unit	10% (1 no. min.)
c.	Logic Board	10% (1 no. min.)
d.	Local control board assembly	10% (1 no. min.)
e.	Switchgear assembly	10% (1 no. min.)

NOTES:

- a.) Wherever %age is identified, Bidder shall supply next rounded figure.

b.) The terminology used under 'Part Description' is the commonly used name of the part and may vary from manufacturer to manufacturer

7.2 Erection/Commissioning Spares:

All erection/commissioning spares shall be included by the bidder in the quoted price. The list of such items shall be furnished along with the offer.

7.3 Two Years Operation & Maintenance Spares:

Bidder shall quote unit price for Two years operation and maintenance spares along with the recommended quantity. Price for the same shall be separately quoted by the bidders. List of minimum recommended spares for two years operation along with quantity shall include but not limited to the following list. Bidder shall include any other spares which they feel are required as recommended spares over and above those specified in the below list.

S. No.	Part Description
1	MOV actuators
a.	Main PCB board/ module (1 no. of each type)

7.4 Special Tools and Tackles:

All required special tools and tackles shall be included by the bidder in the quoted price. The list of such items shall be furnished along with the offer.

8.0 MAKES OF EQUIPMENT AND COMPONENTS

8.1 List of approved vendors for Electrical equipment/components is as mentioned below

Item	Supplier
MOV Actuators	AUMA INDIA PRIVATE LTD
	AUMA RIESTER GMBH & CO. KG
	BIFFI ITALIA S.R.L
	EMERSON PROCESS MGMT VALVE ACTUATION LLC
	FLO - TORK INC
	FLOWSERVE LIMITORQUE
	LIMITORQUE INDIA LIMITED
	MARSH AUTOMATION PVT. LTD.
	ROTORK CONTROLS (INDIA) LTD

8.2 Additional makes of imported items shall be subject to Owner/EIL's approval during detailed engineering.

8.3 Vendor may procure material from any of the listed vendors. However current validity and range of approval as per EIL enlistment letter, workload, stability and solvency needs to be verified by the vendor before placement of order.

Sulphuric Acid Plant Haldia Refinery				HALDOR TOPSØE 					
				Document ID S-06841		J62050		4	
				Job no.		Doc. no.		Rev.	
Instrument data sheets				Page 111 of 267		Spec. J-50			
	P&I diagram	P11			205-ML-2501				
	Service	Process gas blower, Running							
	Equipment	205-K-05 A							
	205-ML_L-2501	DCS	J-227.11	Communication Link					
				Signal	Multisignal communication				
	205-ML-2501	DCS	J-227.4	Digital Indicator					
			Type	Running					
	P&I diagram	P11			205-MZAL-2502				
	Service	Process gas blower, Trip							
	Equipment	205-K-05 A							
	205-MZAL-2502	ESD	J-281.35	Safety Interlock Logic					
				Alarm type	Low				
				Signal to safety interlock group No.	IS-7A				
205-MZAL_IZ-2502	ESD	J-281.02	Digital Input						
			Signal	On/Off					
	P&I diagram	P11			205-MZAL-2503				
	Service	Process gas blower, Trip							
	Equipment	205-K-05 B							
	205-MZAL-2503	ESD	J-281.35	Safety Interlock Logic					
				Alarm type	Low				
				Signal to safety interlock group No.	IS-7B				
205-MZAL_IZ-2503	ESD	J-281.02	Digital Input						
			Signal	On/Off					
4	P&I diagram	P11			205-MOV-2504				
	Service	Process gas from 205-M-02 to 205-K-05 A							
	Pipe	72"-P-205-2402-K42N-IH							
	Fluid	Process gas							
			Design min	Operating	Design max	Unit			
	Pressure			-0.04	0.2	kg/cm² g			
	Temperature			209	250	°C			
	205-MOV-2504	Field	J-243	Control Valve					
				See document	S-06841 J62063, 205-MOV-2504				
	205-MZSH-2504	Field	J-243.7	Limit Switch					
				Switch indication	Valve Open				
	205-MZSH_IZ-2504	ESD	J-281.02	Digital Input					
				Signal	On/Off				
	205-MZO-2504	ESD	J-281.6	Calculation					
				Calculation type	Position mismatch logic and recording				
				Signal to safety interlock group No.	IS-7A				
	205-MZLH-2504	DCS	J-227.4	Digital Indicator					
				Type	Valve Open				
	205-MZSL-2504	Field	J-243.7	Limit Switch					
				Switch indication	Valve Closed				
	205-MZSL_IZ-2504	ESD	J-281.02	Digital Input					
			Signal	On/Off					
205-MZC-2504	ESD	J-281.6	Calculation						
			Calculation type	Position mismatch logic and recording					
			Signal to safety interlock group No.	IS-7A					
205-MZLL_L-2504	ESD	J-281.11	Communication Link						
			Signal	On/Off					
			Signal from	ESD					
			Signal to	DCS					
205-MZLL-2504	DCS	J-227.4	Digital Indicator						
			Type	Valve Closed					

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Instrument data sheets				Page 112 of 267		Spec. J-50					
4	P&I diagram	P11							205-MOV-2505		
	Service	Process gas from 205-M-02 to 205-K-05 B									
	Pipe	72"-P-205-2501-K42N-IH									
	Fluid	Process gas									
				Design min		Operating		Design max		Unit	
	Pressure					-0.04		0.2		kg/cm² g	
	Temperature					209		250		°C	
	205-MOV-2505	Field	J-243	Control Valve							
				See document				S-06841 J62063, 205-MOV-2505			
	205-MZSH-2505	Field	J-243.7	Limit Switch							
				Switch indication				Valve Open			
	205-MZSH_IZ-2505	ESD	J-281.02	Digital Input							
				Signal				On/Off			
	205-MZC-2505	ESD	J-281.6	Calculation							
				Calculation type				Position mismatch logic and recording			
				Signal to safety interlock group No.				IS-7B			
	205-MZLH-2505	DCS	J-227.4	Digital Indicator							
				Type				Valve Open			
	205-MZSL-2505	Field	J-243.7	Limit Switch							
				Switch indication				Valve Closed			
	205-MZSL_IZ-2505	ESD	J-281.02	Digital Input							
			Signal				On/Off				
205-MZO-2505	ESD	J-281.6	Calculation								
			Calculation type				Position mismatch logic and recording				
			Signal to safety interlock group No.				IS-7B				
205-MZLL_L-2505	ESD	J-281.11	Communication Link								
			Signal				On/Off				
			Signal from				ESD				
			Signal to				DCS				
205-MZLL-2505	DCS	J-227.4	Digital Indicator								
			Type				Valve Closed				

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Instrument data sheets				Job no.		Doc. no.	Rev.			
				Page 113 of 267		Spec. J-50				
4	P&I diagram		P11					205-MOV-2506		
	Service		Process gas from 205-K-05 A to 205-E-02							
	Pipe		68"-P-205-2502-K22A-IH							
	Fluid		Process gas							
			Design min		Operating		Design max		Unit	
	Pressure				0.09		0.2		kg/cm ² g	
	Temperature				230		260		°C	
	205-MOV-2506		Field		J-243		Control Valve			
					See document		S-06841 J62063, 205-MOV-2506			
	205-MZSH-2506		Field		J-243.7		Limit Switch			
					Switch indication		Valve Open			
	205-MZSH_IZ-2506		ESD		J-281.02		Digital Input			
					Signal		On/Off			
	205-MZC-2506		ESD		J-281.6		Calculation			
					Calculation type		Position mismatch logic and recording			
					Signal to safety interlock group No.		IS-7A			
	205-MZLH-2506		DCS		J-227.4		Digital Indicator			
					Type		Valve Open			
	205-MZSL-2506		Field		J-243.7		Limit Switch			
					Switch indication		Valve Closed			
	205-MZSL_IZ-2506		ESD		J-281.02		Digital Input			
					Signal		On/Off			
	205-MZO-2506		ESD		J-281.6		Calculation			
					Calculation type		Position mismatch logic and recording			
					Signal to safety interlock group No.		IS-7A			
205-MZLL_L-2506		ESD		J-281.11		Communication Link				
				Signal		On/Off				
				Signal from		ESD				
				Signal to		DCS				
205-MZLL-2506		DCS		J-227.4		Digital Indicator				
				Type		Valve Closed				

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Instrument data sheets				Page 114 of 267		Spec. J-50		
4	P&I diagram	P11			205-MOV-2507			
	Service	Process gas from 205-K-05 B to 205-E-02						
	Pipe	68"-P-205-2503-K22A-IH						
	Fluid	Process gas						
				Design min	Operating	Design max	Unit	
	Pressure				0.09	0.2	kg/cm² g	
	Temperature				230	260	°C	
	205-MOV-2507	Field	J-243	Control Valve				
				See document		S-06841 J62063, 205-MOV-2507		
	205-MZSH-2507	Field	J-243.7	Limit Switch				
				Switch indication		Valve Open		
	205-MZSH_IZ-2507	ESD	J-281.02	Digital Input				
				Signal		On/Off		
	205-MZC-2507	ESD	J-281.6	Calculation				
				Calculation type		Position mismatch logic and recording		
				Signal to safety interlock group No.		IS-7B		
	205-MZLH-2507	DCS	J-227.4	Digital Indicator				
				Type		Valve Open		
	205-MZSL-2507	Field	J-243.7	Limit Switch				
				Switch indication		Valve Closed		
	205-MZSL_IZ-2507	ESD	J-281.02	Digital Input				
				Signal		On/Off		
	205-MZO-2507	ESD	J-281.6	Calculation				
				Calculation type		Position mismatch logic and recording		
				Signal to safety interlock group No.		IS-7B		
	4	205-MZLL_L-2507	ESD	J-281.11	Communication Link			
					Signal		On/Off	
					Signal from		ESD	
			Signal to		DCS			
205-MZLL-2507		DCS	J-227.4	Digital Indicator				
			Type		Valve Closed			
	P&I diagram	P11			205-ML-2511			
	Service	Process gas blower, Running						
	Equipment	205-K-05 B						
	205-ML_L-2511	DCS	J-227.11	Communication Link				
				Signal		Multisignal communication		
	205-ML-2511	DCS	J-227.4	Digital Indicator				
				Type		Running		
	P&I diagram	P13			205-ML-2701			
	Service	2nd combustion air blower, Running						
	Equipment	205-K-04 A						
	205-ML_L-2701	DCS	J-227.11	Communication Link				
				Signal		Multisignal communication		
	205-ML-2701	DCS	J-227.4	Digital Indicator				
				Type		Running		
	P&I diagram	P13			205-ML-2702			
	Service	2nd combustion air blower, Running						
	Equipment	205-K-04 B						
	205-ML_L-2702	DCS	J-227.11	Communication Link				
				Signal		Multisignal communication		
	205-ML-2702	DCS	J-227.4	Digital Indicator				
				Type		Running		

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