ONGC-MRPL

TECHNICAL SPECIFICATION

PR: 3900000038

Supply, Retrofit & upgradation of Alstom SFU module

1. INTRODUCTION

1.1. This specification covers the requirement of supply of complete feeder items, retrofit of supplied items, door fabrication requirement, testing and commissioning for upgradation of Alstom make switch fuse draw out type modules for Substation-23, 26 & 28 at Mangalore Refinery and Petrochemicals Limited in accordance with relevant Indian/International standards.

2. CODES AND STANDARDS

2.1. All equipment and materials shall be supplied, manufactured and tested in accordance with the latest applicable IS/ IEC standards except where modified and/or supplemented by this specification.

2.3. In case of imported equipment standards of the country of origin shall be applicable if these standards are equivalent or stringent than the applicable Indian standards.

2.4. The equipment shall also conform to the provisions of Central Electricity Authority, Oil Industry Safety Directorate and other statutory regulations currently in force in the country.

2.5. In case Indian standards are not available for any equipment, standards issued by IEC, BS, IEEE, OISD or equivalent agency shall be applicable.

2.6. In case of any conflict between the referred standards and purchaser's requirement, the more stringent of the two shall be applicable and the requirements of specification will prevail.

3. SITE CONDITIONS

3.1. Indoor substation, Non-air conditioned room.

3.2. Coastal, humid, corrosive, dusty atmosphere.

3.3. Altitude not exceeding 1000m above sea level.

3.4. Ambient temperature, Max: 45°C, Min: 20°C

3.5. Relative humidity: 91%.

3.6. Rainfall: six months in a year.

3.7. Retrofit of existing Alstom make draw-out type feeders.

3.8. All the equipment described in this specification is intended for continuous duty at the specified ratings under the specified ambient conditions unless indicated otherwise.

4. GENERAL REQUIREMENTS

4.1. It is not the intent to specify completely herein all details of the equipment. Nevertheless, the equipment shall be complete and operative in all aspects and shall conform to highest standard of engineering, design and workmanship.

4.2. Any material or accessory which may not have specifically mentioned but which is necessary or usual for satisfactory and trouble-free operation and maintenance of the equipment's shall be furnished without any extra charge.

4.3. The offered equipment shall be brand new with state of art technology and proven field track record. No prototype equipment shall be offered.

4.4. Vendor shall submit complete bill of materials for offered equipment during bidding.

4.5. Vendor shall ensure availability of spare parts and maintenance support services for the offered equipment/component for at least 10 years from date of supply.

4.6. Vendor shall give a notice of at least one year to MRPL before phasing out the product/spares to enable MRPL to place order for spares and services.

4.7. Prior to supply, manufacturing, the vendor shall take approval of relevant drawings, schematics and data from engineer in charge in writing / email. Any manufacture done prior to the approval of drawings / data shall be rectified in accordance with the approved drawings / data by the vendor at his own cost and the equipment shall be supplied and commissioned within the stipulated period.

4.8. Approval of drawings to be taken from MRPL within 20 days from the date of placement of order.

5. SCOPE OF WORK

5.1. SUPPLY PART:

SN	Code	Description	Qty
1	1052193	Supply & installation for upgradation of DOL 0.37KW-5.5KW SFU Feeder	115
2	1052203	Supply & installation for upgradation of DOL 7.5KW-11KW SFU Feeder	53
3	1052204	Supply & installation for upgradation of DOL 15KW-22KW SFU Feeder	97
4	1052205	Supply & installation for upgradation of DOL 30KW SFU Feeder	57
5	1052206	Supply & installation for upgradation of DOL >30KW-45KW SFU Feeder	32
6	1052207	Supply & installation for upgradation of DOL 55KW SFU Feeder	26

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS FOR UPGRADATION OF ALSTOM SWITCHGEAR SWITCH FUSE DRAWOUT TYPE MODULES

ONGC एमआरपीएल MRPL

Sr. No.	Description	0.37KW to 5.5KW	7.5KW to 11KW	15KW-22KW	30-45KW	55KW
1	Power Contactor (3P, AC-3)	ABB AF30	ABB AF30	ABB AF65	ABB AF116	ABB AF190
	Quantity(Each feeder/module)	1	1	1	1	1
2	Contactor (Auxiliary)	ABB NF22E 4NO + 4NC				
	Quantity(Each feeder/module)	2	2	2	2	2
3	Auxiliary contacts	ABB make for AF & NF series.				
	Quantity(Each feeder/module)	2	2	2	2	2
4	Motor Protection Relay	Microprocessor/Microcontroller based motor protection relay with Thermal overload, Earth fault, single phasing, current unbalance, Phase sequence reversal, Locked rotor, under current protections. At least 1NO+1NC contact.			Microprocessor/Microcontroller based motor protection relay with Thermal overload with warning, under current, unbalance, Phase loss, Phase sequence reversal, earth fault, Prolong starting, lock rotor, short circuit protections. Atleast 4 digit LED display. Trip data recording. Metering facility (RYB phase current, zero sequence current, thermal capacity), At least 1DI & 2 DO.	
	Quantity(Each feeder/module)	1	1	1	1	1
5	SFU (with limit switch for control supply interlock)	63A, 415VAC	63A, 415VAC	125A, 415VAC		250A, 415VAC
	Quantity(Each feeder/module)	1	1	1	1	1
	SFU (Fuse link loss)	7.5W		12W		32W
6	Fuse base	NS TYPE 20A,415V,3W				
7	Fuse	HBC 6A,415V,80KA				
	Quantity(Each feeder/module) for Fuse and base	2	2	2	3	3
	Quantity(Each feeder/module) for Fuse Link	NA	NA	NA	1	1
8	LED lamps	240V AC,0.5W				
	Quantity(Each feeder/module)	3	3	3	3	3
9	CT (Resin cast Type)	≥3.7KW (15/1, 15VA, CL-1)	30/1, 15VA, CL-1	60/1,15VA, CL-1	100/1,15VA, CL-1	150/1,15VA, CL-1
	Quantity(Each feeder/module)	1	1	1	1	1
10	Push button (Test)	Lamp test push button, 240VAC				
	Quantity(Each feeder/module)	1	1	1	1	1
11	E-stop	Red Stop push button with key, latch type, with stop protective shroud				
	Quantity(Each feeder/module)	1	1	1	1	1
12	Selector switch	NA	NA	NA	Motor Space heater On/Off	
	Quantity(Each feeder/module)	0	0	0	1	1
13	limit switch	SFU trolley service position (Position switch Plastic enclosure open type 30 mm 1 NO+1 NC slow-action contacts Metal plunger, IP20) Similar to Siemens 3SE5250-0BC05				
	Quantity(Each feeder/module)	1	1	1	1	1
14	Power cable, control cable and accessories	Cables should be 1.1KV, flexible, multi stand, XLPE, copper, FRLSH. Earthing cables (Green, 2.5Sqmm), Power cable(Red, yellow, Blue colour), control wiring cable (2.5 Sqmm				
	Power cable size in Sqmm	16	16	50	95	NA
15	Bus bar	Aluminium, with Red, yellow and blue colour and with 1.1KV PVC heat shrinkable sleeves (Covering complete area)				
16	Bus bar Size	NA				20X12mm
17	OFF Delay timer	For Reacceleration scheme of motors				
	Quantity(Total)	Total feeder quantity with reacceleration scheme: 20 numbers.				
18	Door (outside, 1 number for Each feeder/module)	2mm thick, Maintaining same colour of old doors, with SFU handle(Should have facility for lockout and tagout) and cutout for indication, switch, push button inside door/plate. Neoprene gasket at mating surface.				
19	Door/Plate (Inside, 2 numbers for each feeder/module)	1.6mm thick, For mounting, Maintaining same colour of old door. Neoprene gasket at mating surface.				
		LED lamps(Trip Amber colour, OFF Green, ON Red).				
		Test push button				
		Red Stop push button with key and shroud, latch type.				
Note	All required accessories, contacts and switchgear components required over and above the list mentioned above will be in vendor scope. Vendor has to ensure supplied items are sufficient as per feeder scheme and for successful commissionin					

Approved By

Reviewed By

Prepared By

5.2. SERVICE PART:

5.2.1. Removal of all existing components, wiring and doors. Fixing of all new components, wiring as per original feeder scheme, new door fixing, testing and simulation.

6. TECHNICAL REQUIREMENTS-PERFORMANCE PART

6.1. All ratings of motor feeder trolleys shall be as upgraded with reference to the original scheme drawings of Alstom LT switchgear at MRPL site. The ratings and scheme of few feeders shall be modified as per the furnished detail & site survey.

6.2. Compact microcontroller/microprocessor based motor protection relays should be considered for all motor feeders.

6.3. Feeder doors shall be fabricated / manufactured after site visit and after collecting complete detail of installation and scheme.

6.4. Door edges should have neoprene rubber gasket over it as par existing installation.

6.5. In case any changes or modification done w.r.t wiring & component rating to existing installed module, same scheme should be considered for manufacturing.

6.6. Documents such as Schematics, Bill of materials etc shall be submitted for approval of MRPL.

6.7. An engraved nameplate shall be provided for the modules. Each module shall have engraved nameplate-bearing feeder and load data. (Load data has to be collected during site visit and should be provided for approval).

6.8. Relay should be Modular & Compact.

6.9. Suitable CTs along with CT shorting links for motor protection relays will be in vendor scope of supply.

6.10. Selection of compact CTs and Installation of Supplied CTs should be done in such a way that proper clearance for maintenance is ensured.

6.11. All components/accessories (Fuse, base, holder, cable etc) required for extending PT supply for motor protection relay will be in vendor scope.

6.12. Motor protection relay should be suitable for auxiliary supply: 110-240V AC/DC.

6.13. MPR relay should have fail safe logic.

6.14. MPR should have separate LEDs for type of protection acted, trip indications.

6.15. As per scheme requirement wherever dedicated CT is provided for Field Ammeter, same setup/specification shall be considered for new trolley/module.

6.16. Separation of Power and Control Circuit as per Safety Norms to be adhered.

6.17. Response Time of relay Overload Protection should be as per IEC/IS and as low as to avoid Motor Overloading & Increased let through Energy on Switchgear.

6.18. Relay should have In-built Control Logic for faster adaptability for different types of Connection.

6.19. Relay module Contacts should be minimum rated for 5A @ 230V AC for high availability of system.

6.20. The power contactor, auxiliary contactor & auxiliary contacts used in the feeders shall be of AC-3 duty and shall have wide range coil of AC voltage range as mentioned below:

Make/Model	Pick up % (V)	Drop off %
ABB-AF & NF contactors	**85% of 100V-110% of 250V**	**<60% of 100V**

6.21. The retrofit of the module shall include replacement of the door and hinges, matching color (IS5, Shade 631 with paint thickness 30-35 microns) of existing switchgear (Maintaining aesthetic look).

6.22. Offered protection relay and all other components inside the module should be of latest version. No obsolescence till next 10 years (Declaration for same should be given by Vendor).

7. APPROVED MAKES/MANUFACTURERS:

Description	Approved make and models
MOTOR PROTECTION RELAY	L&T
	GE
	ABB
	SIEMENS
	SCHNEIDER ELECTRIC
CONTACTORS AND ITS AUXILARY CONTACTS	ABB AF & NF SERIES
SWITCH FUSE UNIT	ABB
	SIEMENS
	SCHNEIDER ELECTRIC
	L&T
	GE
FUSE BASE WITH FUSE	BUSSMANN
	L&T
	EATON
	SCHNEIDER ELECTRIC
	PHOENIX
	GE
	INDO ASIAN
	LEGRAND
	HAVELLS
LED LAMPS & PUSH BUTTON	ABB
	LARSEN & TOUBRO
	SIEMENS
	SCHNEIDER ELECTRIC

	TEKNIC
	ESPEE
SELECTOR SWITCHES	ABB
	LARSEN & TOUBRO
	SIEMENS
	SCHNEIDER ELECTRIC
	SWITRON
	KAYCEE
CT	ABB
	LARSEN & TOUBRO
	SIEMENS
	SCHNEIDER ELECTRIC
	KALPA ELECTRIKAL
	KAPPA ELECTRICALS
	PRAGATI
	PRECISE ELECTRICALS
Neutral Links	CANDS
	BUSSMANN
	L&T
	SIEMENS
	SIEMENS
	ABB
	GE
	SCHNEIDER ELECTRIC.
OFF DELAY TIMER	SCHNEIDER ELECTRIC.
	L&T
	GIC
	ABB
	Siemens
	GE

8. INSTALLATION & COMMISSIONING

8.1. Supply of complete material as per feeder scheme and installation of supplied material.

8.2. Wiring and interconnection of all components as per scheme along with demonstration of simulation to MRPL.

8.3. Wiring of components includes Lyra contacts also.

8.4. Wiring should be done neatly with best aesthetic look.

8.5. Supply of complete accessories for cabling (like: ferrules, suitable copper Lugs, cable tie, cable grommet, sealant) in vendor scope.

8.6. Wiring ferruling should be of interlocking type.

8.7. Consumable required for complete installation (Like: Cotton cloths, contact cleaner, Grease conductive and non-conductive) will be in vendor scope.

8.8. Nut bolt for cable and bus bar termination should be of stainless steel, suitable nut and bolt supply and installation in vendor scope.

8.9. It is the responsibility of vendor to comply to the specification and scheme requirements. The offered motor feeder trolley components shall match one to one with the existing, no major site modification is allowed.

8.10. The SFU trolley components shall be supplied to site with proper packing arrangement with protection against rain, dust or any possible transit damages.

8.11. Shifting, unpacking, safe handling & installation should be done by qualified person, Complete alignment and smooth operation of draw-out type module will be in vendor scope. Same need to be demonstrated after installation.

8.12. Removal of existing modules, removal and connection of power cables & control cables, removal and fixing of all feeder components, shifting of old material to designated location as per EIC instructions is in scope of vendor.

8.13. Cleaning of draw out type module related switchgear verticals before new installation and maintaining good housekeeping after work completion will be in scope of vendor.

8.14. Deputation of competent application/Service Engineer is required for configuration, testing, commissioning of supplied SFU module, protection relays.

8.15. Complete central software for configuration, commissioning, operation and diagnostics of protection relay with lifetime license to be supplied at free of cost.

8.16. Sufficient manpower should be deputed for installation of complete supply within 30 days.

8.17. As the work is related to opportunity based shutdown, manpower deputed should complete work as and when clearance is provided. This include working on holidays and working in shifts to utilize the shutdown opportunity available.

8.18. One-day training session on module, switchgear component selection, protection relay configuration and operation shall be provided to MRPL Operations and Maintenance team.

8.19. Three sets of hard copies and three sets of soft copies (PDF format) of testing & as built drawings for entire SWBD shall be submitted.

8.20. Complete insulated tools and instruments required (such as multi meter, IR tester, relay simulation test kit, screw driver, plier, crimping tool, cutting tools) in vendor scope.

8.21. Boarding & lodging of deployed testing-commissioning engineer/ skilled/un-skilled manpower, skilled wire-man etc. should be taken care of by the vendor.

9. FOLLOWING WILL BE SUPPORTED BY MRPL,

9.1. Conveyance to the manpower inside refinery premises will be provided by MRPL for which circular vehicles are available during the normal working hours of the day.

9.2. Work permits/isolation will be provided by MRPL.
9.3. Details on existing system will be provided.
9.4. Support on gate passes for which vendor must submit all necessary documents. However, MRPL is not responsible for delay due to non-availability of gate pass documents.
9.5. Vehicle for shifting new panels to installation location.
9.6. Food and snacks on chargeable basis.

10. SPECIAL NOTES:

10.1. Job is related and expected to be given as and when process plants/facilities (powered from Substation-23, 26 & 28) shutdown/opportunity is available.
10.2. Service/retrofit part of order shall be valid till 31st March 2026.

11. PAYMENT TERMS:

11.1. 80% payment against supply of material.
11.2. Balance 20% payment after successful commissioning of supply.

12. COMPLIANCE STATEMENT

12.1. Vendor must state categorically whether or not their offers meets all the requirements listed in the technical specifications. Any technical deviation from MRPL requirement shall be listed clause wise. Any deviation not listed shall be considered as compliance.
12.2. Vendor has to fill up this table and has to be sent along with the bid documents along with the endorsement of the authorized person.

COMPLIANCE REQUIREMENT	VENDOR's COMMENTS
Technical Specifications are read and understood (YES /NO)	
Technical Deviations, if any (Attach additional list if required)	
Reasons for Deviation	
Name & Designation of the Authorized Person	

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS FOR UPGRADATION OF ALSTOM SWITCHGEAR SWITCH FUSE DRAWOUT TYPE MODULES

ONGC एमआरपीएल MRPL

Sr. No.	Technical Specifications	Details to be filled by Bidder				
		0.37KW to 5.5KW	7.5KW to 11KW	15KW-22KW	30-45KW	55KW
1	Power Contactor (3P, AC-3) (Make)					
2	Contactor (Auxiliary) (Make)					
3	Auxiliary contacts (Make)					
4	Motor Protection Relay (Make and model))					
5	SFU (with limit switch for control supply interlock) (Make)					
6	SFU (Fuse link loss)					
7	Fuse base (Make, Rating)					
8	Fuse (Make, Rating)					
9	LED lamps (Make, Rating)					
10	CT (Make, Rating)					
11	Push button (Test) (Make, Rating)					
12	E-stop (Make, Rating, Type)					
13	Selector switch (Make, Rating, Type)					
14	limit switch (Make, Rating, Type)					
15	Power cable, control cable and accessories (Make, Rating, Type)					
16	Power cable size in Sqmm (Make, Rating, Type)					
17	Bus bar/cable (Make, Rating, Type)					
18	Bus bar Size (Make, Rating, Type)					
19	OFF delay timer					
20	Door (outside)					
21	Door/Plate (Inside)					

Seal & Signature

Place:

Date:

Prepared By

Reviewed By

Approved By