



Dubai Natural
Gas Company

Retrofit of existing 415V motor cubicles components in MTBE, 200 area substations.



Emirates National
Oil Company

Scope of work:

- **Project Overview:** Bidder Scope of Works involves Design, Engineering, Supply of ABB make LV Power Component's, Installation, Testing & Commissioning for Retrofitting existing Motor Starter's (19 no's), Outdoor Lighting DB Feeder (1 no.) & Power Feeder (1 no.) in Existing Allen Bradley Switchgear at Sub Station 200 which includes 200A1, 200A2, 200B1 & 200 B2 MCC's.
- **Installation Works.** Install new circuit breakers (MCCB), protection relays, meters, CTs, and wiring. Retrofit or replace door-mounted accessories (selector switches, indicator lights, etc.). Re-terminate cables as necessary. Modify/upgrade control and protection wiring.
- **Standards & References:** IEC 61439 (Low-voltage switchgear and control assemblies). IEC 60947 (Low-voltage switchgear components). IEC 60529 IP rating requirements for panels. Local electrical safety codes and regulations.
- Power Components which include MCCB as Short Circuit Protection Device, Contactor & Electronic Overload Relay/Intelligent Motor Protection Relay, ammeter as replacement components in the Existing Switchgear.
- Power Components replacement will be performed on the existing Mounting plate & new mounting plate is not considered in our scope.
- The scope of dismantling of existing relays, removal of all the power & control connections, breakers , contactors installing the new relays and termination of all cables to new relays, mechanical, electrical works involved & consumables required shall be carried out by the bidders.
- Bidder shall be responsible for performing sizing calculations of the following components Circuit breaker, Contactor, Overload Relay (OLR) range. These sizing details should be clearly documented in the technical submission to ensure compliance with project requirements.
- Components shall have a short-circuit rating of not less than 50 kA.
- The new relays have the minimum protection functions of overload, earth fault, negative phase sequence, locked rotor, and overheating (thermistor) required for like the existing protections scheme.
- The new relays should be of reputed manufacturers like ABB, Siemens, Schneider etc. The country of origin for the relays offered shall be mentioned in the offer.
- The components offered shall be available for the next 15 years and the selection shall comply with Type 2 Co-ordination.



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- The year of manufacturing shall be mentioned along with supported documents in the offer.
- The auxiliary supply for the offered protection relays shall be like the existing protection relays and should have additional MMI for displaying electrical parameters from 75HP and above rated motor cubicle.
- The existing settings shall be implemented, and additional setting shall be enabled after proper Co-ordination and shall discuss with DUGAS engineer.
- Bidder Scope to Perform new relay coordination for high-rated motors MMR relay, with coordination settings and documentation to be submitted for review by the DUGAS engineer approval.
- Provide ON/OFF/TRIP LED status indication on the front door panel for all feeders. Some existing feeders currently lack this feature; as part of the upgrade, implementation is required to ensure uniform status indication across the system.
- Motor Protection Relay Selection Criteria, for motors rated 75 HP and above, use a Microprocessor-based Motor Protection Relay (MMR) to ensure advanced protection features such as thermal overload protection, Current imbalance detection, Ground fault monitoring.
- For motors below 75HP, a static-type Overload Relay (OLR) is sufficient, offering basic thermal protection with sufficient range of setting.
- The modification of control circuits to match the existing system shall be under bidder scope of work.
- Utilize the existing mechanical interlock system that allows panel doors to be opened while the motor is running. This kind of setup is often used to allow inspection or thermal scanning of live components while maintaining separation from energized parts.
- Ensure visibility and accessibility to internal components during motor operation, without compromising safety.
- Required external access for OLR relay reset for the Overload Relay (OLR) be designed so its reset function can be accessed externally, without requiring the operation team to open the panel door.
- The commissioning shall cover and prove the functionality of the complete cubicle in the presence of DUGAS engineer.



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- The control cables shall be of reputed make such as Ducab. It shall be terminated with proper size lugs. Control cables size shall be minimum as 1.5mm²
- The terminals shall be of reputed make such as phoenix Weidmueller, Entrelec etc. and of adequate capacity.
- All wiring cables and cable lugs shall be same size, new ferruling shall be used with same identification. In case of any changes or modification in the existing drawing, the as built drawing for the motors shall be submitted after execution of the work.
- Bidder shall submit a comprehensive Bill of Materials (BOM) detailing all components, specifications, and quantities to facilitate effective inventory management.
- Bidder shall be responsible for preparing and submitting AutoCAD As-Built Drawings upon completion of the project. DUGAS will provide the relevant existing AutoCAD drawings to serve as reference for modification and documentation.

Below mentioned are the list of feeder's where retrofit activity is proposed.

<u>Sl. No.</u>	<u>Motor/Feeder Tag</u>	<u>Motor/Feeder Description</u>	<u>MCC Detail's</u>	<u>Motor HP</u>	<u>Standard 'kW' Rating</u>	<u>Rated Current (A)</u>
1	ARM-250A	DRYER REGEN.GAS COOLER FAN	200A2	3	2.2	4.9
2	ARM-203A1	3rd STAGE AFTER COOLER FAN	200A1	20	15	29
3	ARM-201A1	R.A.B SURF. CONDENSER FAN	200A1	40	30	55
4	ARM-202A1	2nd STAGE AFTER COOLER FAN	200A1	50	37	66
5	PM-237	Wash oil Transfer Pump	200A1	3	2.2	4.9
6	CM-212AX	C-201 Reg. Compr. Bleed Blower fan motor	200A1	4	3	6.5
7	PM-203A	2nd Stage drip Pump	200B2	5	4	8.5
8	PM-216A	AR-201 Condensate Pump	200A2	7.5	5.5	11.5
9	PM-218AX	GT 201 L.O. Pump	200A2	10	7.5	15.5
10	PM-207A	Feed Vapor Cond. Pump	200A2	15	11	22
11	PM-202	Wash oil Circul. Pump	200A2	20	15	29
12	CM-205	GT-201 Bleed Air Blower Motor	200A1	30	30	55
13	CM-210	Gt-202 Bleed blower motor (New)	200B1	40	30	55
14	CM-206AX	GT-202 Enclosure Vent Air Blower Fan Motor	200B1	50	37	66
15	PM-204A	Deprop Reflux Pump	200A2	60	45	80
16	PM-703A	ISO Butane Feed Pump	200A2	75	55	97
17	PM-217AX	C-240/601 L.O. Pump	200A1	125	90	160
18	PM-213AX	PK-207 Hyd. Pump A	200B1	150	110	195
19	PM-205A	Deprop. Feed Pump	200B2	250	200	350
20		Outdoor Lighting DB				250
21		Power Feeder				250

Environmental Conditions

- Operating Temperature: up to +55°C
- Humidity: Up to 95% non-condensing
- Protection Class: IP41 or higher inside the panel



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Integration Requirements

- Wiring compatibility with existing terminal blocks
- No modification of busbars or structural elements unless unavoidable
- Existing control logic to be updated to integrate new module signals if required.
- Retrofit kit or adaptor plate to ensure seamless fitment.

Testing & Commissioning

- Functional testing of all active phase detection and alarm outputs
- Verification of correct phase readings under load
- Simulation of unbalanced/fault conditions
- Final validation report to be submitted with final setting adopted.

Documentation and Handover

- Updated wiring diagrams (AutoCAD preferred)
- Configuration settings of the upgraded module
- Manufacturer's manuals and datasheets
- Test reports and commissioning checklist