

requirement will be disqualified from bidding. OGDCL will ask for a tour to visit the bidder's ESP Facility in Pakistan.

Reporting and Quality:

- Keep record of the ESP run life and ESP daily operating parameters.
- Log and report all intervention, repair and troubleshooting events on ESP equipment.
- Inspection (tear down) upon the request from OGDCL at certified workshop with attendance of OGDCL for all or part of the defective elements of the pulled DOWNHOLE ASSEMBLY.
- Perform tear down and full investigation by a certified reliability engineer in Pakistan on any suspicious failed ESP equipment or on OGDCL request.
- Issue monthly report on status of equipment under repair.
- Reporting and preparation of periodic meetings.
- Organization of training sessions upon the request of OGDCL. The training sessions on the principles of functioning and management of the ESP and frequency speed control drives could therefore be organized for any OGDCL personnel.
- Adherence to the HSE procedures of the bidder and OGDCL.
- Warranty on downhole and surface equipments and components as per agreed terms and conditions of the Rental Agreement.

Equipment Description and Requirements

Equipment	Minimum Technical Specifications
Discharge head	<ul style="list-style-type: none"> ○ Upper connection based on the tubing threads, Bidder to provide any X-over required ○ Expected Tubing is 3-1/2" 9.2ppf.
Pump	<ul style="list-style-type: none"> ○ Abrasion resistance configuration suitable for well conditions ○ High Strength Shaft-Monel and mixed flow stages ○ Each ESP item must come with its Flow Acceptance Curve ○ Acceptance of GVF thru pump up to 20% or higher
Intake	<ul style="list-style-type: none"> ○ Abrasion resistance configuration suitable for well conditions ○ Intake (conventional) for GVF before separation < 10% ○ Intake (gas separator) to handle up to 45% GVF before fluid entering the pump ○ High Strength Shaft
Gas mixer/Advance gas handler/Poseidon	<ul style="list-style-type: none"> ○ Abrasion resistance configuration suitable for well conditions ○ Required equipment for GVF (before separation) up to 75% ○ High Strength Shaft ○ Axial Stages
Protector section	<ul style="list-style-type: none"> ○ High Strength Shaft ○ Tandem Protector to maximize the run life of the motor.
Motor	<ul style="list-style-type: none"> ○ High Strength Shaft ○ High voltage, low amperage type ○ Motor winding temperatures minimum 400deg F ○ HP Oversized by 30% to accommodate any future changing in well conditions or production requirements.
Motor lead extension (MLE)	<ul style="list-style-type: none"> ○ Flat cable with protectors (Lead type)
ESP Power cable	<ul style="list-style-type: none"> ○ Size#1 or #2. ○ Designed for 400deg F (204deg C) operating temperatures ○ Copper, flat Lead type cable. ○ Monel coating armor

Equipment	Minimum Technical Specifications
	<ul style="list-style-type: none"> ○ To be wet tested in factory- Certification required ○ ESP cable manufacturer to be recognized as a reliable worldwide supplier (brochure and certifications required). ○ Bidders to provide sample of power cable
Cross coupling cable protector	<ul style="list-style-type: none"> ○ Carbon steel cross coupling protectors for: <ul style="list-style-type: none"> – 3-1/2" 9.2ppf EUE TOP tubing ○ Suitable for proposed ESP power cable and 2 x 1/4" control line ○ Other sizes and types shall be included in the price list
Mid joint cable protector	<ul style="list-style-type: none"> ○ Carbon steel mid joint protectors for: <ul style="list-style-type: none"> – 3-1/2" 9.2ppf tubing ○ Suitable for proposed ESP power cable and 2 x 1/4" control line
ESP Cable spooler	<ul style="list-style-type: none"> ○ 2 x powered cable spoolers (one Prime and one backup) ○ 15T capacity
Electrical cable meter counter	<ul style="list-style-type: none"> ○ 2 x meter counters
Wellhead Penetrator	<ul style="list-style-type: none"> ○ ISO or ATEX Certified. Min requirement as below ○ Surface connector: 5Kv/100A, molded to 20 feet cable. ○ Downhole connector: 5kv/100A with proper seal design molded to at least 12 feet lead cable. ○ Penetrator 5Kv/100A, 300 DEG F, 5000 Psi
ESP Wellhead	<p>Complete wellhead system, that is (not limited to):</p> <ul style="list-style-type: none"> ○ Sized to be Compatible with the proposed ESP system and well completion. Please refer to the well current completion diagram. ○ It must wellheads manufactured to API 6a last edition ○ It should be with a proper quality control plan.
Bottom-hole Multi-sensor	<ul style="list-style-type: none"> ○ Use the ESP power cable to transmit data to surface ○ ESP system must not interfere with the down-hole sensor or surface equipment. ○ 13 % chrome steelhousing coating for the base gauge and AISI 4140 carbon steel or AISI 420 13% chrome steel for discharge sub. ○ Temperature rating 150 (° C) ○ pressure Rating 6500 Psi and motor temperature reading up to 409 (° C) ○ pressure accuracy of +/- 5psi max with a resolution of 0.1psi ○ Surface panel including data collector with event logger required with interpretation program providing at least: <ul style="list-style-type: none"> – Historic trends – On line logging ○ Suitable data including fine sampling option (minimum requirement): <ul style="list-style-type: none"> – Intake pressure (psi) – Discharge pressure (psi) – Well bottom-hole Intake temperature (° C) – Motor oil or direct Motor temperature (° C) – Motor vibrations – Amps data

Equipment	Minimum Technical Specifications
VSD	<ul style="list-style-type: none"> – VSD design must have adequate harmonics protection on both sides upstream and downstream. Check whether the VSD offered has built in protection otherwise external harmonic filters must be supplied. – VSD control panel shall be equipped with all alarms and safety settings that can be set remotely to shut down and send data remotely through satellite or internet. – Total Harmonic Distortion on voltage according to IEC 50160 must be less than 5%. – Total Harmonic Distortion on current according to IEC 50160 shall be less than 8%; – VSD shall be closed in special containers to avoid any access from unauthorized personal.
Transformers	<ul style="list-style-type: none"> ○ Step up transformer sized properly according to downhole requirements and VSD. ○ It must be skid mounted with the VSD in a cage with comfortable access for maintenance and monitoring.
Monitoring System	<ul style="list-style-type: none"> ○ Real time monitoring using a system that is capable to monitor remotely like lift watcher. ○ System should be capable to send well ESP parameters to available ESP experts or engineers to analyze and provide recommendation for protection parameters setting to keep the ESP healthy and prevent shut downs. ○ The monitoring center can be within or out Pakistan but there must be a local support engineer with rapid response for troubleshooting/ maintenance within 9 hours.
Gen Sets	<ul style="list-style-type: none"> ○ Two Generators for power supply to the designed ESP, Prime Generator on Gas Fuel and Standby Generator on Diesel Fuel. Both Generators should work on synchronize panel for easy switching from one to another. ○ All wiring and cable required should be provided and done by the bidder

Equipment Delivery & Stock

3.6.1 Bidder has to commit to **supply the equipments, tools and spare parts of full ESP system to the well site within 18 weeks after signing the contract**, two weeks for data collection of Pasakhi-5, well study and ESP design are **included** in it. Bidder must have one complete backup system of ESP in there facility in Pakistan, which will be used in case of any problem of downhole or surface system to minimize production curtailment.

Terms and Conditions

- 4.1 As ESP will be installed in OGDCL as a pilot project, that's why the payments of rental charges will be made only after 3 months of successful ESP running and producing as per designed optimum rate in the agreement of OGDCL.
- 4.1.1 Quoted Mobilization and installation cost will be paid after mobilization and successful insallation at site.
- 4.1.2 Monthly rent will be paid after 3 months of successful ESP running and producing as per designed optimum rate in the agreement of OGDCL.
- 4.1.3 After three months it will be complete discretion of OGDCL to buy the complete installed equipment on the depreciated/discounted quoted cost at the time of bidding OR to issue demobilization notice to the Contractor.