

**Khwaja Fareed University of Engineering & Information
Technology, Rahim Yar Khan**



Tender Document

Tender No. Misc-188

**Establishment of New labs / Strengthening of
Existing Labs under annual Development Program
2020-21 of KFUEIT, RYK**

at

**Khwaja Fareed University of Engineering
& Information Technology
Rahim Yar Khan**

General Instructions

1. Content of Bidding Document

1.1 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not substantially responsive to the bidding documents in every respect shall be at the Bidder's risk and may result in the rejection of its bid.

1.2 The sealed tenders are invited by The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan from well reputed firms having established credentials in terms of Technical, Financial and Managerial capabilities and having registered with sales & income tax department for the Establishment of New labs / Strengthening of Existing Labs under annual Development Program 2020-21 of KFUEIT, RYK (list attached).

1.3 In the light of section 22(A)(b) of schedule of stamp duty act 1899 read with Finance Act 1995 (Act VI of 1995) stamp duty @ 0.25% shall be furnished by the successful bidder against the amount of the value of purchase order as levied by the Government after the issuance of purchase order.

2. Eligible Bidders

2.1 This Invitation for Bids is open to all National/International/Original Manufacturers/authorized Sole Agents of Foreign Principals and General Order Suppliers in Pakistan for supply of goods.

2.2 The bidder may possess valid authorization from the Foreign Principal/ Manufacturer and incase of Manufacturer; they should have a documentary proof to the effect that they are the original Manufacturer of the required goods.

2.3 Bidders should not be under a declaration of ineligibility for corrupt and Fraudulent practices issued by any Government (Federal, Provincial), a local body or a public sector organization or have been or being disqualified or blacklisted or is involved in litigation on this account. The bidder shall have to be clear of all in eligibilities, disqualifications and blacklistment for participating in bidding process.

3. Cost of Bidding

3.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall in no case be responsible or liable for those costs, regardless of the conductor outcome of the bidding process.

4. Clarification of Bidding Documents

4.1 A prospective Bidder requiring any clarification of the bidding documents may notify the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan in writing at the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan address indicated in the Invitation for Bids.

5. Amendment of Bidding Documents

5.1 At any time prior to the deadline for submission of bids, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the bidding documents by amendment.

5.2 All prospective Bidders shall be notified of the amendment in writing through post, courier, email or any other authentic source of communication.

5.3 In order to allow prospective Bidders reasonable time in which to take the amendment into account in preparing their bids, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan at its discretion, may extend the deadline for the submission of bids. Amendment notice to that effect shall be communicated in the same manner as the original invitation to bid.

6. Qualification and Disqualification of Bidders

6.1 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated responsive bid is qualified to perform the Contract satisfactorily, in accordance with the criteria listed in TENDER DOCUMENT Clause 27.

6.2 The determination shall take into account the Bidder's financial, technical, and production capabilities. It shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, (TENDER DOCUMENT Clause 27), as well as such other information as the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan deems necessary and appropriate.

6.3 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan, at any stage of the procurement proceedings, having credible reasons for or prima facie evidence of any defect in Supplier's capacities may require the Suppliers to provide information concerning their professional, technical, financial, legal or managerial competence.

6.4 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall disqualify or blacklist a Bidder if it finds, at any time, that the information submitted by him concerning his qualification as Supplier was false inaccurate or incomplete, or other wise to be indulging in corrupt and fraudulent practices.

7. Corrupt or Fraudulent Practices

7.1 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan requires that all Bidders/ Suppliers/Contractors observe the highest standard of ethics during the procurement and execution of such Contracts. In pursuance of this policy, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan:

a. defines, for the purposes of this provision, the terms set forth below as follows:

I. "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or

in Contract execution; and

II. "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract to the detriment of the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non- competitive levels and to deprive the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan of the benefits of free and open competition;

b. Shall reject a proposal for Award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the Contract in question and may disqualify or black list the firm/ bidder either in definitely or for a stated period of time;

c. shall reject the bid which is to be awarded a Contractor contract if it at any time

determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in acquiring or executing, a Contract.

8. Blacklisting of Defaulted Bidder/Contract under rule 21 of Punjab Procurement Rules 2014:

The following are the events which would lead to initiate (Rule 21 of PPRA Rules 2014) blacklisting/debarment process;

- i) Submission of false fabricated / forged documents for procurement intender.
- ii) Not attaining required quality of work.
- iii) Inordinate tardiness in accomplishment of assigned/agreed responsibilities /contractual obligations resulting loss to Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan /Government
- iv) Non-execution of work as per terms & condition of contract.
- v) Any unethical or unlawful professional or business behavior detrimental to good conduct and integrity of the public procurement process.
- vi) Involvement in any sort of tender fixing.
- vii) Persistent and intentional violation of important conditions of contract.
- viii) Non-adherence to quality specifications despite being importunately pointed out.
- ix) Security consideration of the State i.e., any action that jeopardizes the security of the State or good repute of the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan.

NOTE: The decision for Blacklisting shall be for period as the competent authority deems fit according to circumstances of the each case. The letter for debarment of the agency/individual will be published on PPRA website. Once the blacklisting order is issued it shall not be revoked ordinarily unless as provided under rule 21 of the Punjab Procurement Rules 2014.

Preparation of Bids:

9. Language of Bid

9.1 The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall be written in English. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in English, in which case, for purposes of interpretation of the Bid, the translation shall govern.

10. Documents Comprising the Bid

10.1 The bid prepared by the Bidder shall comprise the following components:

- (a) A Bid Form and Price Schedule completed in accordance with (TENDER DOCUMENT Clauses 12 and 13 and Annex-C) (to be submitted along with financial proposal);
- (b) Documentary evidence established in accordance with (TENDER DOCUMENT Clause 15) that the Bidder is eligible to bid and is qualified to perform the Contract if its bid is accepted;
- (c) Documentary evidence established in accordance with (TENDER DOCUMENT Clause 15) that the goods to be supplied by the Bidder are eligible goods and conform to the bidding documents.

11. Bid Prices

11.1 The Bidder shall indicate on the Price Schedule the unit prices and total bid price of the goods, it proposes to supply under the Contract.

11.2 Form for Price Schedule is to be filled in very carefully, and should be typed. Any alteration/correction must be initialed. Every page is to be signed and stamped at the bottom. Serial number/bid number of the quoted item may be marked or highlighted with red/yellow marker.

11.3 The Bidder should quote the prices of goods according to the technical specifications. The specifications of goods, different from the demand of enquiry, shall straight way be rejected.

11.4 The Bidder is required to offer competitive price. All prices must include relevant taxes and duties, where applicable. If the taxes are not mentioned, the offered/quoted price shall be considered as inclusive of all prevailing taxes/duties. The benefit of exemption from or reduction in the GST or other taxes, if granted at any stage of procurement, shall be passed on to the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan.

11.5 Prices offered should be for the entire quantity demanded; partial quantity offers shall straightaway be rejected. Conditional offer shall also be considered as non-responsive Bidder. Where prices are to be quoted in package, all items mentioned in the package shall be quoted in the offered prices. Non-mentioning of price of each item of the package being non-responsive shall be rejected straightaway.

11.6 While tendering (your) quotation, the present trend/inflation in the rate of goods and services in the market should be kept in mind. No request for increase in price due to imposition of taxes or market fluctuation in the cost of goods and services etc. shall be entertained after the bid has been submitted.

11.7 All prices shall be on FOR /DDP basis only.

12. Bid Currencies

12.1 Prices shall be quoted in Pak Rupees.

13. Documents Establishing Bidder's Eligibility and Qualification

13.1 The Bidder shall furnish, as part of its technical bid, documents establishing the Bidder's eligibility to bid and its qualifications to perform the Contract if its bid is accepted.

13.2 The documentary evidence of the Bidder's eligibility to bid shall establish to the Khwaja

Fareed University of Engineering & Information Technology, Rahim Yar Khan satisfaction that the Bidder, at the time of submission of its bid, is eligible as defined under TENDER DOCUMENT Clause 28.

14. Documents Establishing Goods' Eligibility and Conformity to Bidding Documents

14.1 TENDER DOCUMENT Clause10, the Bidder shall furnish along with (technical proposal) (if applicable), as part of its bid, documents establishing the eligibility and conformity to the bidding documents of all goods, which the Bidder proposes to supply under the Contract.

14.2 Submission of sample (where demanded): If so required by the technical committee, to be recorded in writing, the bidder shall provide a sample or demonstration as the case maybe.

15. Bid Security

15.1 Bid Security @2% of the estimated price should be attached in the form of Bank Guarantee or CDR with the Proposal in the name of Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan.

15.2 The proposal found without Bid security shall be rejected and returned to the bidder.

15.3 The bid security may be forfeited in the following conditions,

- a. If a bidder withdraws its bid during the period of bid validity.
- b. If the bidder fails to sign the contract, in case of Non/Incomplete supplies with the stipulated time period in accordance with approved specifications.
- c. Not to complete the supplies in accordance with the terms & conditions.
- d. Withdrawal their offer being lowest bidder.

15.4 The bid security will be returned: -

- a. after completion of grievance period as per clause No. 67 (2) of PPRA 2014 or submission of undertaking on judicial paper before the expiry of grievance period which states that the firm is not aggrieved from entire tender process.
- b. in case of successful bidder, the bid security will be returned after completion of supply.

16. Performance Security

16.1 Performance Security (mentioned in supply order) at the rate of 5 % of the total bill amount in shape of CDR, Bank Guarantee or it may be deducted from the bill and will be retained for the period of one year.

17. Bid Validity

17.1 Bids shall remain valid for One hundred Twenty (120) days from the date of submission of the Bid prescribed by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan. A bid valid for a shorter period shall be rejected by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan as non-responsive.

17.2 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall ordinarily be under an obligation to process and evaluate the bid within the stipulated bid validity period. However, under exceptional circumstances and for reasons to

be recorded in writing, the extension in the bid validity shall be asked to the bidders.

17.3 Bidders who,

- (a)** Agree to the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan request for extension of bid validity period shall not be permitted to change the substance of their bids; and
- (b)** do not agree to an extension of the bid validity period shall be allowed to withdraw their bids. In case the bids have been opened and evaluated even in that case the non-willing bidder shall not be penalized and his bid shall be refused without forfeiting of bid security/any penalty.

Submission of Bids:

18. Format and Signing of Bid

18.1 The bid shall be typed and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the Contract. The person or persons signing the bid shall initial all pages of the bid.

18.2 Any interlineations, erasures, or overwriting shall be valid only if they are initialed by the person or persons signing the bid.

18.3 All bidding documents to be duly attested (signed and stamped) by the authorized person of company.

19. Sealing and Marking of Bids

19.1 The bid shall be a single package consisting of two separate envelopes, containing separately the financial and the technical proposals; the envelopes shall be marked as “Financial Proposal” and “Technical Proposal”

19.2 The envelope(s) shall:

- a)** be addressed to the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan at the address given in the Invitation for Bids; and
- b)** Bear the name and number indicated in the Invitation for Bids, and shall be inscribed by the following sentence: “DO NOT OPEN BEFORE,” to be completed with the time and the date specified in the invitation for Bid.

19.3 The inner envelopes shall also indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared non-responsive or late.

19.4 If the outer as well as inner envelope is not sealed and marked properly, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall assume no responsibility for the bid’s misplacement or premature opening.

20. Dead line for Submission of Bids

20.1 Bids must be submitted by the Bidder and received by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan at the address specified under the Tender Notice not later than the time and date specified in the Tender Notice.

20.2 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan may, at its discretion, extend this deadline for the submission of bids by amending the bidding documents in accordance with (TENDER DOCUMENT Clause 5), in which case all rights and obligations of the Khwaja Fareed University of Engineering & Information

Technology, Rahim Yar Khan and Bidders previously subject to the deadline shall thereafter be subject to the dead line as extended.

21. Late Bid

21.1 Any bid received by the Procuring Agency after the deadline for submission of bids prescribed by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan (TENDER DOCUMENT Clause 20) shall be rejected and returned unopened to the Bidder.

22. Withdrawal of Bids

22.1 The Bidder may withdraw its bid prior to the deadline specified in the invitation to bid.

22.2 No bid can be withdrawn after the deadline for submission of bids and before the expiration of the bid validity period specified in (TENDER DOCUMENT Clause 17) Withdrawal of a bid during this period shall lead to bidder disqualification for participation in future procurements of the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan for a period as deemed necessary by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan and for feature of bid security.

23. The Bidding Procedure

23.1 Bidding procedure according to rule 38 of Punjab Procurement Rules 2014 shall be single stage two envelope procedure.

23.2 The bid found to be the lowest evaluated bid shall be accepted.

24. Opening and Evaluation of Bids

24.1 The Central Purchase Committee of Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall initially open only the envelopes marked "TECHNICALPROPOSAL" in the presence of Bidders' representatives who choose to be present, at the time, date and venue already specified in the Invitation for Bids or Tender Notice. The Bidders' representatives who are present shall sign the Attendance Sheet as evidence of their attendance. However, the envelope marked as "FINANCIALPROPOSAL" shall remain unopened and shall be retained in safe custody of the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan till completion of the technical evaluation process.

24.2 The Bidders' names, item(s) for which they quoted their rate and such other details as the Procuring Agency, at its discretion, may consider appropriate, shall be announced at the opening of technical proposal. Bids found non-responsive and non-complied shall be rejected. The financial bid however shall be opened only of those who are technically found complied and responsive. Non-complied/non-responsive bidder's financial proposal shall be returned unopened. However, at the opening of financial proposals (the date, time and venue would be announced later on), the bid prices, discounts (if any), and the presence or absence of requisite bid Security and such other details as the Women University, Multan, at its discretion, may consider appropriate, shall be announced.

25. Preliminary Examination

25.1 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall examine the bids to determine whether they are complete, whether any

computational errors have been made, whether the required documents have been furnished and properly signed, and whether the bids are generally in order.

25.2 In the financial bids (at the time of opening the financial proposal) the arithmetical errors shall be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected. If the Bidders/Suppliers do not accept the correction of the errors, its bid shall be rejected. If there is a discrepancy between words and figures, the amount in words shall prevail.

25.3 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan may waive any minor informality, non-conformity, or irregularity in a bid which does not constitute a material deviation (or changes the substance of the bid), provided such waiver does not prejudice or affect the relative ranking of any Bidder.

25.4 Prior to the detailed evaluation, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall determine the substantial responsiveness of each bid to the bidding documents. For purposes of these Clauses, a substantially responsive bid is one, which conforms to all the terms and conditions of the bidding documents without material deviations. Deviations from, or objections or reservations to critical provisions shall be deemed to be a material deviation for technical proposals. The Procuring Agency's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

25.5 If a bid is not substantially responsive, it shall be rejected by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan and will not be accepted/ entertained for detail evaluation.

26. Evaluation and Comparison of Bids

26.1 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall evaluate and compare the bids, on knockout clauses basis and shall select only those which have been determined to be substantially responsive during preliminary evaluation of bids (TENDER DOCUMENT Clause 27).

26.2 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan evaluation of technical proposal/ bid (if applicable in any case) shall be on the basis of previous performances, test reports, inspection of plant/ factory/ premises, previous experience, financial soundness and such other details as already highlighted. However, the evaluation of financial proposal shall be on the basis of price inclusive of prevailing taxes and duties in (TENDER DOCUMENT Clause 11, 12).

26.3 All bids shall be evaluated in accordance with the evaluation criteria (TENDER DOCUMENT Clause 27) and other terms and conditions set forth in these bidding documents.

26.4 A bid once opened in accordance with the prescribed procedure shall be subject to only those rules, regulations and policies that are in force at the time of issue of notice for Tender.

26.5 One person one bid.- one person may submit one bid and if one person submits more than one bids, the procuring agency shall reject all such bids.

27. Evaluation Criteria

Note: Basic Evaluation Criteria is mandatory to fulfill to qualify for detailed evaluation. Failure to meet and submit all documents related to basic evaluation may lead to disqualification.

Basic Evaluation

| Category | Description | Points |
|-----------------|---|---------------|
| Mandatory | Proof of registration of business | Mandatory |
| | Valid Income Tax Registration (Status = Active with FBR) | Mandatory |
| | Valid General Sales Tax Registration (Status = Active with FBR) | Mandatory |
| | Submission of undertaking (Annex-A) on legal valid and attested stamp | Mandatory |
| | Submission of Certificates (Annex-B) on letterhead pad | Mandatory |
| | Technical proposal on the company letter head duly signed and stamped. | Mandatory |
| | Minimum 1-3 years relevant experience (Firm must attach supply order as a proof with the technical bid) | Mandatory |
| | Bank letter of financial standing along with Bank Statement | Mandatory |
| | Training certificates of service engineer attached with technical proposal | Mandatory |
| | Bank Draft of the Earnest Money attached with technical proposal | Mandatory |
| | Authorized Distribution Letter | Mandatory |

Detailed Evaluation Criteria

Self-Assessment Form with Reference (to be filled and attached with Technical Bid - Mandatory)NOTE:
Only bids securing minimum of 65% marks would be declared technically accepted

| DETAILED EVALUATION CRITERIA FOR TENDER | | | |
|--|--|--------------|------------------|
| Specifications are available at Annex-A | | | |
| Sr. No | Item Name and Description | Marks | Max Marks |
| 1 | Past Performance/Overall Experience of the Bidder (Reg. with GST/NTN) Attach copy of all supporting documents | -- | 10 |
| 1.1 | 1 – 3 year experience | 2 | -- |
| 1.2 | 4 – 8 year experience | 4 | -- |
| 1.3 | 9 – 15 years' experience | 6 | -- |
| 1.4 | Above 15 | 10 | -- |
| 2 | Relevant Experience (Attach copy of all supporting documents) | -- | 10 |
| 2.1 | 1 – 5 years' experience | 3 | -- |
| 2.2 | 6 – 10 years' experience | 6 | -- |
| 2.3 | 11 and above year experience | 10 | -- |
| 3 | Financial Position/ Status (Attach copy of all supporting documents) | -- | 10 |
| 3.1 | Last sales tax paid Form | 4 | -- |
| 3.2 | Bank Certificate (satisfactory) attach original bank certificate indicating financial status | 2 | -- |
| 3.3 | Statement Worth (Min 2 m) attach all supporting documents | 4 | -- |
| 4 | After Sale Services Available (Attach copy of all supporting documents) | -- | 10 |
| 5 | Technical Evaluation of quoted items (Attach copy of all supporting documents) | -- | 60 |
| 5.1 | Specification matched as provided in Annex-A | 30 | |
| 5.2 | Literature in printed shape attached | 2.5 | |
| 5.3 | Reliability | 2.5 | |
| 5.4 | Delivery schedule as per need | 5 | |
| 5.5 | List of clients / where this equipment delivered | 5 | |
| 5.6 | Satisfactory letter from clients in favour of such equipment | 5 | |
| 5.7 | Guarantee / Warranty (as the case may be) | 5 | |
| 5.8 | Provision of Training to concerned user | 2.5 | |
| 5.9 | Free Installation (if required) as per requirement | 2.5 | |
| Total | | -- | 100 |

- i). After technical evaluation is completed, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall notify the date, time and location for opening of the financial proposals. Bidders' attendance at the opening of financial proposals is optional.
- ii). Financial proposals shall be opened publicly in the presence of the bidders' representatives who choose to be present. The name of the bidders and the technical score of the bidder shall be read aloud. The financial proposal of the bidders who met the minimum qualifying mark shall then be inspected to confirm that they have remained sealed and unopened (financial proposals of Bidders failed to secure minimum score threshold in the technical evaluation shall be returned unopened). The financial proposals of technically qualified bidder shall then be opened, and the total prices read aloud and recorded.

28. Financial proposals would be evaluated as follows:

- i). Incomplete bid shall stand rejected.
- ii). Minor oversight, clerical mistakes, other minor inconsistencies that do not alter the substances of the financial bid may be corrected by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan.

29. Contacting the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan

29.1 No Bidder shall contact the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan on any matter relating to its bid, from the time of the bid opening to the time the Contract is awarded.

29.2 Any effort by a Bidder to influence the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan in its decisions on bid evaluation, bid comparison, or Contract Award will disqualify the bidder and rejection of the bid. Canvassing by any Bidder at any stage of the Tender evaluation is strictly prohibited.

30. Rejection of Bids

30.1 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan may reject all bids at any time prior to the acceptance of a bid. The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall upon request communicate to the Bidder who participated in the process seeking the reasons for its bid's rejection, but is not required to justify those grounds.

30.2 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan incurs no liability, solely by virtue of its invoking Clause 31 towards Bidders who have submitted bids.

30.3 Notice of rejection of any or all bids shall be given promptly to the concerned Bidders that submitted bids.

31. Re-Bidding

31.1 If the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan rejects all bids (TENDER DOCUMENT Clause 31), it may call for a rebidding.

32. Announcement of Evaluation Report

32.1 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar

Khan will announce the result of bid evaluation in the form of report giving justification for acceptance or rejection of bid at least ten days prior to awarding of the contract. The report will be available on PPRA website.

Award of Contract:

33. Acceptance of Bid and Award criteria

33.1 The Bidder with lowest evaluated bid, if not in conflict with any other law, rules, regulations or policy of the Government, shall be awarded the Contract, within the original or extended period of bid validity. Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan's right to vary quantities at time of Award.

33.2 The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan reserves the right to increase or decrease, the quantity of goods originally specified in the Price Schedule and schedule of Requirements without any change in unit price or other terms and conditions prior to award of contract or after the award of contracts but such increase or decrease shall not be more than 15% of the contract cost.

34. Limitations on Negotiations

34.1 Save as otherwise provided there shall be no negotiations with the bidder having emerged as lowest bidder or with any other bidder.

35. Notification of Award

35.1 Prior to the expiration of the period of bid validity, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan shall notify the successful Bidder in writing by registered post, courier, email or any other authentic means of communication that its bid has been accepted.

35.2 The notification of Award shall constitute the formation of the Contract.

36. Supply

36.1 No transportation and carriage charges will be paid for delivery / installation of the supplied items.

36.2 The delivery shall be made to the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan main store.

36.3 The supplies shall be delivered to the University main store within 60 days, further 15 days extension without penalty may be allowed in delivery period after getting consent of Competent Authority. Failing to supply within due date liquidated damages under TENDER DOCUMENT clause 37) will be imposed on the bidder.

36.4 In case of failure to supply the ordered items, the university reserves the right to take any action against the firm as per PPRA Rules 2014 including forfeiture of CDR and blacklisting of firm at any time.

36.5 After supply any of the item(s) found substandard (in any case) must be replaced with new one within 10 days positively without any additional charges / cost, failing which the university may take any action against the firm as per PPR Rules 2014 including forfeiture of bank guarantee or CDR and blacklisting.

37. Liquidated Damage

In case of late delivery of goods beyond the periods specified in the Schedule of Requirements, liquidated damages (as may be fixed by the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan) 0.067% per day of the cost till 10% of the contract amount Value for late delivered supply shall be imposed upon the Supplier.

38. Warranty: the warranty period shall be 12 months with parts and services from date of installation of equipment in the concerned department. Further, the firm will be responsible for the replacement of the whole unit at site including transportation, installation, testing & commissioning etc in case of major defect at his own cost.

39. Arbitration and Resolution of Disputes

39.1 The Procuring Agency and the Supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

39.2 If, after thirty (30) days from the commencement of such informal negotiations, the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred to the Arbitrator for resolution through arbitration.

39.3 In case of any dispute concerning the interpretation and/or application of this Contract shall be settled through arbitration.

**Certificate
(On Legal Stamp Paper of worth Rs.100/-)**

1. We do hereby affirm that we to have read carefully the terms and conditions of tender documents for the Establishment of New labs / Strengthening of Existing Labs under annual Development Program 2020-21 of KFUEIT, RYK. We will abide by all the terms and conditions/Instructions, rules and regulations of Government & the Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan which are and to be applicable.
2. Our firm is not black listed on any ground by any Government (Federal / Provincial / District), on account of submission of false statement and failure to abide by the terms and conditions.
3. Certified that the prices quoted are not more than the prices charged from any other Government/Purchasing agencies. If prices are found higher or in case of any discrepancy, the bidder hereby undertakes to refund the price charged in excess.
4. Certified that the prices quoted by our firm are inclusive of all taxes and charges of transportation/handling/fixing/installation etc and no extra charges will be claimed.
5. Certified that the stock is available of the quoted items in the bid and firm is bound to supply in the prescribed period.
6. Certified that the firm will be responsible for the free replacement of items on his own expenses, if the same is found substandard and or at variance with the specifications given in the tender.

| | | |
|---|---------------------|--|
| 1 | Name of Firm | |
| 2 | Address | |
| 3 | Income Tax No. | |
| 4 | Sales Tax No. | |
| 5 | Name of bidder | |
| 6 | CNIC No. | |
| 7 | Signature of bidder | |
| 8 | Company/Firm Stamp | |

(ON LETTER PAD OF THE FIRM DULY SIGNED & STAMPED)

Price Reasonability Certificate

I M/S ----- do solemnly declare that “the prices quoted to The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan are not more than the prices charged from anyother Government/Purchasing agencies. If prices are found higher or in case of any discrepancy, the bidder hereby undertakes to refund the price charged in excess”.

Certificate of Availability of Stock Quoted

(On letter pad of the firm duly signed & stamped)

I M/S ----- do solemnly declare that “the stock is available of the quoted items in the bid and firm is bound to supply in the prescribed period”

Certificate of Physical Features of Quoted Items

(On letter pad of the firm duly signed & stamped)

I M/S ----- do solemnly declare that “the physical features of quoted products/ items mentioned in the Technical Bid are same as in Financial Bid and Firm is bound to supply without change”.

Certificate of Inclusion of all Taxes and others

(On letter pad of the firm duly signed & stamped)

I M/S -----do solemnly declare that “the prices quoted by our firm are inclusive of all taxes and charges of transportation/handling/fixing/installation etc and no extra charges will be claimed.

Certificate of Free Replacement of Items

(On letter pad of the firm duly signed & stamped)

I M/S ----- do solemnly declare that “the firm will be responsible for the free replacement of items on his own expenses, if the same is found substandard and or at variance with the specifications given in the tender”

On Site Backup Support

(On letter pad of the firm duly signed & stamped)

I M/S ----- do solemnly declare that “we will provide backup support for our quoted items to The Khwaja Fareed University of Engineering & Information Technology, Rahim Yar Khan. If the supplier fails to provide backup support, the university may take any action against our firm.

PRICE SCHEDULE

| Sr. No. | Name of Items with Specification Unit/ Packing etc. | Unit / Packing | Qty. | Unit Price (Rs.) | Total Amount (Rs.) |
|----------------|--|-----------------------|-------------|-------------------------|---------------------------|
| | | | | | |

Note: Unit rate and total rates must be filled properly and submitted with the offer on firm's letter head pad.

- All Rates are inclusive of all taxes.
- The rates are on FOR/DDP basis.
- While quoting the rates of required/specified supplies, its make & made/brand should be written against each. The rates should be quoted only in applicable Unit; / Per Kg. / Per Litter / Pack / Reams / Sheets etc. each according to the nature of the quotations / bids / items.

Specifications
LIST OF ITEMS, SPECIFICATIONS & QUANTITY



| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|--|----------|------------------------------|
| 01 | <p>Spectrofluorometer Specification: A general purpose spectrofluorometer with excellent basic performance and functionalities suitable even for routine fluorescence analysis especially of liquid samples. The standard Auto-SCS and Auto-Gain features allow measurements in a wide range with six-digit linearity. High-speed scanning up to 20,000 nm/min, High sensitivity S/N >4,500 (RMS, water Raman). The Spectra Manager II cross-platform spectroscopy software all full-system control and advance data processing. Wavelength Range: 200 ~ 750 for both EX and EM monochromators Light Source: Xe lamp with shielded lamp house, 150 Watt. Photometric System: Photometric ratio system using monochromatic light to monitor the intensity output of Xe Lamp monochromators: Holographic grating with 1800 grooves/mm modified Rowland mount. Spectral bandwidth: 2.5, 5,10, 20 nm. Resolution: 2.5 nm (at 546.1nm) on both EX and EM Wavelength scan speed: 20, 50, 100, 200, 500, 1,000, 2,000,5,000, 10,000, 20,000 nm/min for both EX and EM monochromators. Slew speed 30,000 nm/min Sensitivity 4,500: 1 (RMS) Auto Gain Standard Sensitivity selection High, Medium, Low, Very Low Manual, Auto SCS. Response: 20, 50, 100, 200, 500 m sec, 1, 2, 4, 8 sec. Shutter Function: Standard (Automatic control) Instrument communication: USB 2.0 Dimensions: 490W x 545D x 270H mm for 220V AC 50Hz. System Configuration; Main unit, Rectangular Quartz cells. Applicable for LIQUID, POWDER, THIN FILM NOTE: Authorized distribution letter is required. Trained staff for backup service is mandatory. (Please attach training certificates of service engineer)</p> | 01 | 3.2 |
| 02 | <p>X-Ray Powder Diffraction (XRD) Specification: General purpose X-ray Diffractometer with vertical theta - theta goniometer and sample horizontal position enables to perform X-ray diffraction analysis of phase composition, structural state and orientation of heavy large-size and irregular-form samples. Type: Vertical two-circle θ-θ X-ray optical scheme Bragg-Brentano (basic) Debye-Sherrer, parallel-beam, grazing incidence and other geometries are available with additional equipment Radius R, mm: 180-250 Angular range, deg: 2θ -10 to 165</p> | 01 | 14.4 |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|---|----------|------------------------------|
| | <p> θD -5 to 165 θF -5 to 95 Scanning modes: discrete/continuous Scanning methods: $\theta - \theta, \theta, \Omega, 2\theta-\Omega, \Psi$ Smallest addressable increment, deg 0.0005 Scanning rate, deg/min: From 0.1 to 50 Reproducibility, deg: ± 0.001 Maximum angular speed, deg/min 2000 Registration system (basic): Detector type: scintillation NaI (TI) Counting rate, count/sec: up to 1,000,000 High voltage power supply: . Output power, kW : 3 . Output voltage, kV : 0-60 . Anode current, mA : 0-80 . Long term stability, % : 0.01 . Cooling agent : Air X-ray tube (basic): Type :1.5BSV-297Cu Focus size, mm² : 8.0 x 0.4 Cooling agent :water (3 l/min) Operational characteristics: Installation area, m² : 5 Power consumption, kWA : 5.5 Power requirements, V/Hz : one-Phase 220/50 Control and Data Collection Software Package The software package enables control of Diffractometer configurations, data collection in continuous and discrete modes using various algorithms of movements of controlled mechanisms and actuators, as well as saving of obtained data in files of different format The program features graphical interface for on-line visualization of measured spectra, Russian or English interface with on-line help system The software works under OS Windows XP/Vista/7/8/10 It is protected against unauthorized access that can lead to the corruption of measurement data The software packages enables the following: Control and monitoring of main units and mechanisms of the diffractometer Diagnostics and handling of emergencies that may occur during operation of the diffractometer and its actuators and drives Automatic generation of detector amplitude distribution curve Discrete and continuous measuring of diffraction spectrum in a specified angular range with a preset exposure (or scanning rate) in $\theta - \theta, \theta, \Omega, 2\theta-\Omega, \psi$ scanning modes Measurements with multiple scanning of different angular ranges followed by averaging or summing of the results Fast registration system with linear PSD Linear stripped position-sensitive detector Mythen 2R 1D (Dectris, Switzerland) with a holder, collimation system for a diffracted beam and adjustable stop for primary beam. The system ensures up to 50 times faster measurement of X-ray </p> | | |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|---|----------|------------------------------|
| | <p>diffraction pattern when compared to conventional scintillation counter (several minutes against several hours of measurements required to obtain reliable data). The system also includes collimation system for a diffracted beam and primary beam stop to enable measurements at small angles (from 3 deg.).</p> <p>The fast registration system is particularly efficient for poorly crystallized, quickly decomposing objects or in the case of small amount of substance. It is indispensable for in situ studies of chemical reactions and phase transformations in combination with high- and low-temperature attachments, as well as for data collection for residual stress analysis.</p> <p>ADVANCED OPTIONS</p> <p>Monochromator holder on a diffracted beam</p> <p>A universal holder for a diffracted-beam monochromator is mounted on the detector bracket. It is designed for installation of flat crystals from various materials including pyrolytic graphite.</p> <p>It is used to get a monochromatic beam for different x-ray radiations (from Mo to Cr). It is recommended for measurements of polycrystalline samples</p> <p>Crystal-monochromator (flat pyrolytic graphite)</p> <p>Flat crystal made from pyrolytic graphite of (0001) crystallographic orientation with FWHM 0.8,0.2. It is used as diffracted-beam monochromator when installed in the above holder (item 2.1) .It is used for measurements of polycrystalline objects.</p> <p>Standard Reference Material SRM 1976b</p> <p>Instrument Response Standard for X-Ray Powder Diffraction.</p> <p>This SRM intended for calibration of X-ray powder diffraction equipment with respect to line position and intensity as a function of 2θ angle.</p> <p>SRM 1976b consists of a sintered alumina disc</p> <p>Closed cooling system (chiller)</p> <p>Closed cooling system (chiller). The system ensures cooling of X-ray tube with distilled water in the closed loop. The system maintains water temperature with an accuracy of 0.1 deg.</p> <p>CRYSTALLOGRAPHIC SOFTWARE FOR DATA PROCESSING AND ANALYSIS</p> <p>Analytical software «DrWin – Data processing»</p> <ul style="list-style-type: none"> . Processing of diffraction pattern or selected area . Background approximation (by polynomial or user curve) . Separation of Kα-doublets . Determination of angular positions . Approximation of reflection profiles by pseudo-Voigt function (for the entire array or independently for each peak) . Calculation of peak heights and their integral intensities . Calculation of FWHM of reflection . Evaluation of degree of crystallinity (content of amorphous phase) <p>Quan – Quantitative phase analysis</p> <ul style="list-style-type: none"> . Calculation of mass absorption coefficients for any chemical compounds . Selection of analytical lines for mixture and standards . Quantification of mixture with seven various techniques: <ul style="list-style-type: none"> • Overall analysis of multicomponent mixture • Analysis of n-component system | | |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|---|----------|------------------------------|
| | <ul style="list-style-type: none"> • Analysis of sample with known mass absorption coefficient • Method of internal standart • Method of Reference Intensity Ratio • Method of additives • Method of reduction <p>Param – Refinement of unit cell parameters</p> <ul style="list-style-type: none"> . Calculation of unit cell parameters for any of the six crystal systems with known reflection indexes . Selection of peaks for calculation . Calculation of unit cell parameters for different components in multi-component systems <p>Size&Strain – Calculation of average size of coherent domains and of microstrains</p> <ul style="list-style-type: none"> . Plotting of moments dependence vs diffraction angle . Calculation of size of coherent domains and microstrains by the method of second central moments . Calculation of instrumental line broadening . Application of absorption correction to the samples with another Composition <p>Calculation of theoretical diffraction pattern – TheorPattern</p> <ul style="list-style-type: none"> . Loading of CIF files from ICSD and COD structural databases with their editing by user . Simulation of diffraction patterns of multicomponent mixtures from structural data . Account for instrumental factor . Account for texture and crystalline size for each component . Comparison of simulated and measured diffraction patterns . Integrated package of geometrical crystallography <p>Rietveld – Rietveld method</p> <ul style="list-style-type: none"> . Loading of CIF files from ICSD and COD structural databases with their editing by user . Refinement of crystal structures from X-ray powder diffraction data of single crystalline phases and mixtures . Quantificaion of mixture with simultaneous refinement of selected structural parameters . Calculation of polynomial and physical background . Independent refinement of U, V, W, X, Y profile for different phases and for different groups of reflections . Refinement of unit cell parameters, atomic and thermal parameters, occupations of atomic positions for each phase . Accounting for preferred orientation of crystallites individually for selected components . Selection of refinement strategy . Control of refinement conditions . Creation of templates for structure refinement or quantification of mixture . Calculation of five R-factors <p>PDF-2 Powder diffraction database with Re&Se software for qualitative phase analysis and for the access to the database (1 license for 5 years for academic companies)</p> <ul style="list-style-type: none"> . Use of powder diffraction database PDF-2/PDF-4 of International Center for Diffraction Data (ICDD) for qualitative analysis . Automatic and manual search | | |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|--|----------|------------------------------|
| | <p>. Creation of user-defined sub-bases for convenient search . Addition of user standards into the sub-bases . Qualitative phase analysis against various criteria, bases (sub-bases) . Analysis of matching lines by position and intensity . Calculation of component concentrations by Reference Intensity Ratio . Access to database, including search by selected criteria</p> <p>ADVANCED OPTIONS: -Versatile holder for diffracted beam monochromator -Crystal-monochromator (flat pyrolytic graphite) -Standard Reference Material SRM 1976b</p> <p>Detectors auto changing system Two pre-aligned detectors (scintillation counter and linear stripped PSD) are installed on the goniometer lever and ready for use. Remote activation of the certain detector. Maximal diffraction 2Theta angle for scintillation counter is 165 deg. Maximal diffraction 2Theta angle for PSD is 145 deg. Compatible UPS HP or Dell Latest Compatible Computer and Printer Warranty one year from the date of installation including free parts and service User training for two persons at manufacturer site for Five days Manufacture origin must be USA, Russia, Japan, Europe, China Not Allowed</p> | | |
| 03 | <p>Fourier Transform Infrared Spectrometer (FTIR) Specifications: A general-purpose Fourier Transform Infrared Spectrometer (FTIR) with excellent basic performance and functionalities suitable even for routine qualitative analysis of compounds/materials and composites by identifying the respective functional groups.</p> <p>Technical Specifications:</p> <ul style="list-style-type: none"> • Spectral range: 7800 - 350 cm⁻¹ • Wave Number Accuracy: 0.01 cm⁻¹ • Resolution: 0.7 • S/N Ration: 25000: 1 • Interferometer: 45° Michelson interferometer Corner cube mirror interferometer, with auto-alignment mechanism (Excellent/Better) • Drive speed: auto 1, 2, 3, 4 mm/sec • Beam Splitter: Ge/KBr (Excellent/Better) • With diffuse reflectance accessory having 5 position sample holder • Ergonomic one-finger clamp mechanism, 360° rotation • Pressure control • A variety of sampling options for temperature-controlled measurements and liquid flow through analysis with the Platinum ATR • Accessories required (e.g computer, software etc) for the complete functioning of the equipment <p>Note: Authorized distribution letter is required. Trained staff for</p> | 01 | 3.5 |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|--|----------|------------------------------|
| | backup services is mandatory. (Please attach training certificates of service engineer). | | |
| 04 | <p>Compound Microscopy Specifications:</p> <ol style="list-style-type: none"> 1) DM6 M compound microscope assisted with LIBS (Laser induced Breakdown Spectroscopy) save 90% of your time to determine microstructure composition compared to inspection with conventional SEM/EDS  <ol style="list-style-type: none"> 2) DM6 M microscope Leica DM 4M, DM6M, DM2700M, DM1750M  | 01 | 01 |
| 05 | <p>Photocatalytic Reactor (Coupled with GC-MS) for CO₂ reduction, energy and environmental applications Specifications: Gas chromatography (Beifen-Ruili: SP-2100, MS-5Å, column, TCD, Ar carrier)</p> <ul style="list-style-type: none"> ➤ Thermal Conductivity Detector Analysis of Hydrogen & CO₂ using Argon Carrier Gas and HayeSep® D Columns ➤ Linear response in the 6-60% hydrogen concentration range ➤ Hewlett-Packard 5890 Series II GC incorporating either one or two 1.83-m × 3.18-mm stainless steel columns packed with 80/100-mesh HayeSep® D ➤ TCD temperature: 10 μL and 130°C, 1 mL and 300°C, and 100 μL and 140°C ➤ TCD with Argon as carrier gas for detecting H₂ as they have very high conductivity difference, where we can get H₂ within at 2-3 min in GC. <p>Carrier gas (capillary column)</p> <ul style="list-style-type: none"> • Detection limit: ≤ 100 ppm, Recommended Gas: HiQ Helium 5.0, Recommended Cylinder Regulator: Baseline C106 series, Recommended Gas Generator: n/a • Detection limit: ≤ 100 ppm, Recommended Gas: HiQ Hydrogen 5.0, Recommended Cylinder Regulator: Baseline | 01 | 05 |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|------------------------------|------------------------------|--|-------------------|-----------|-----------|-----------------------|---------------|--|-------------------|------------------------|--|--------|---------------|--|-------|-----------|--|----------------|---|--|---------|---|--|----------------|--|--|-----------------------|--|--|---------------------------------------|--|--|----------------------------|--|--|---------------------------------|--|--|---|--|--|--------------------|---|--|----------------|--|--|----------------|---------|--------|--------------|-------|--------|--|--|
| | <p>C106 series, Recommended Gas Generator: HiQ PGH2 Hydrogen</p> <ul style="list-style-type: none"> Detection limit: ≤ 100 ppm, Recommended Gas: HiQ Nitrogen 5.0, Recommended Cylinder Regulator: Baseline C106 series, Recommended Gas Generator: HiQ HPN2 Nitrogen Detection limit: ≤ 1 ppm, Recommended Gas: HiQ Helium 6.0, Recommended Cylinder Regulator: REDLINE C200 series, Recommended Gas Generator: n/a Detection limit: ≤ 1 ppm, Recommended Gas: HiQ Hydrogen 6.0, Recommended Cylinder Regulator: REDLINE C200 series, Recommended Gas Generator: HiQ NMH2 Hydrogen Detection limit: ≤ 100 ppm, Recommended Gas: HiQ Nitrogen 6.0, Recommended Cylinder Regulator: REDLINE C200 series, Recommended Gas Generator: n/a <div data-bbox="225 913 975 1839" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Technical data</p> <table border="1"> <tr> <td>Max H₂ flow rate</td> <td colspan="2">0.10 – 0.60 l/min</td> </tr> <tr> <td>Delivery pressure</td> <td>0.1–7 bar</td> <td>1–100 psi</td> </tr> <tr> <td>H₂ purity</td> <td colspan="2">99.999% (5.0)</td> </tr> <tr> <td>Electrolysis cell</td> <td colspan="2">Solid polymer membrane</td> </tr> <tr> <td>Safety</td> <td colspan="2">Auto shut-off</td> </tr> <tr> <td>Water</td> <td colspan="2">Deionized</td> </tr> <tr> <td>User interface</td> <td colspan="2">Set points, system status, user parameter</td> </tr> <tr> <td>Display</td> <td colspan="2">LCD display with set points, status, alarms</td> </tr> <tr> <td colspan="3">Options</td> </tr> <tr> <td colspan="3">I/O board containing:</td> </tr> <tr> <td colspan="3">• RS232C bi-directional/2 ports RS485</td> </tr> <tr> <td colspan="3">• Cascading up to 32 units</td> </tr> <tr> <td colspan="3">• Potential free relay contacts</td> </tr> <tr> <td colspan="3">Software for PC-control capability (requires I/O board)</td> </tr> <tr> <td>Dimensions (W/D/H)</td> <td colspan="2">22/33/39.5 cm 8²/₃" / 13" / 15⁵/₈"</td> </tr> <tr> <td colspan="3">Weights</td> </tr> <tr> <td>PGH2 100 – 300</td> <td>16.5 kg</td> <td>36 lbs</td> </tr> <tr> <td>PGH2 500/600</td> <td>18 kg</td> <td>40 lbs</td> </tr> </table> </div> <p>Note: Authorized distribution letter is required. Trained staff for backup services is mandatory. (Please attach training certificates of service engineer)</p> | Max H ₂ flow rate | 0.10 – 0.60 l/min | | Delivery pressure | 0.1–7 bar | 1–100 psi | H ₂ purity | 99.999% (5.0) | | Electrolysis cell | Solid polymer membrane | | Safety | Auto shut-off | | Water | Deionized | | User interface | Set points, system status, user parameter | | Display | LCD display with set points, status, alarms | | Options | | | I/O board containing: | | | • RS232C bi-directional/2 ports RS485 | | | • Cascading up to 32 units | | | • Potential free relay contacts | | | Software for PC-control capability (requires I/O board) | | | Dimensions (W/D/H) | 22/33/39.5 cm 8 ² / ₃ " / 13" / 15 ⁵ / ₈ " | | Weights | | | PGH2 100 – 300 | 16.5 kg | 36 lbs | PGH2 500/600 | 18 kg | 40 lbs | | |
| Max H ₂ flow rate | 0.10 – 0.60 l/min | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Delivery pressure | 0.1–7 bar | 1–100 psi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H ₂ purity | 99.999% (5.0) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electrolysis cell | Solid polymer membrane | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Safety | Auto shut-off | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Water | Deionized | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| User interface | Set points, system status, user parameter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Display | LCD display with set points, status, alarms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Options | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I/O board containing: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • RS232C bi-directional/2 ports RS485 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • Cascading up to 32 units | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • Potential free relay contacts | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Software for PC-control capability (requires I/O board) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dimensions (W/D/H) | 22/33/39.5 cm 8 ² / ₃ " / 13" / 15 ⁵ / ₈ " | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Weights | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PGH2 100 – 300 | 16.5 kg | 36 lbs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PGH2 500/600 | 18 kg | 40 lbs | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Sr. No. | Item Name with Specification | Quantity | Estimated Cost PKR (Million) |
|---------|--|----------|------------------------------|
| 06 | <p>Bet Surface Area and Pore Size Analyzer</p> <p>Specifications: A general-purpose surface area and pore size analyzer with excellent basic performance and functionalities suitable even for routine analysis of Carbon, catalysts, organic materials, minerals, powdered metals, etc.</p> <p>Technical Specifications:</p> <ul style="list-style-type: none"> • Surface area analysis: 0.01 m²/g to no known upper limit • Minimum pore volume: (STP) 0.0001 cc/g • Mesopore size distribution • Standard micropore methods • Any gas capability (for dual-sample analysis) • Pore size range: 0.35 to > 400 nm (3.5 to > 4000 Å) • Test accuracy: repeatability error is less than ±1.5% • Sample types: powders granules fibrous sheet material and the like can be loaded into sample tube material • Number of Stations: 6 or more • Output Report: Directly printed and Excel output the parameters such as adsorption /desorption isotherm, BET specific surface area, Langmuir specific surface area, t-plot micropores areas, BJH specific surface area, Dubinin Astakhov micropores distribution, Hovath-Kawazoe micropores distribution. • Accessories required (e.g., computer, software etc.) for the complete functioning of the equipment <p>Note: Authorized distribution letter is required. Trained staff for backup services is mandatory. (Please attach training certificates of service engineer)</p> | 01 | 2.9 |