



University of Science and Technology of Southern Philippines

Alubijid | Cagayan de Oro | Claveria | Jasaan | Oroquieta | Panaon

BID FORM

NAME OF THE PROJECT : **Proposed Procurement for the Supply and Delivery of Small Engine Test Set Equipment for the Enhancement of Mechanical Engineering Laboratories for USTP-CDO**

APPROVED BUDGET OF : **TEN MILLION PESOS AND 00/100 (P10,000,000.00) ONLY**

BRIEF DESCRIPTION : **Supply and Delivery of Small Engine Test Set Equipment for the Enhancement of Mechanical Engineering Laboratories for USTP-CDO**

SOURCE OF FUND : **IGI FY 2022**

CONTRACT DURATION : **One Hundred Twenty (120) Calendar Days**

ITEM NO.	DESCRIPTION/SPECIFICATIONS	QTY	UNIT	USTP APPROVED UNIT PRICE	UNIT PRICE	AMOUNT
1	<p>Small engine test set Specifications: • Instrumentation Dimensions (fully assembled with fuel tank): Width 1400 mm x depth 300 mm x height 820 mm • Bed and Trolley dimensions (without engine): Width 950 mm x depth 475 mm x height 1050 mm Dynamometer: Hydraulic variable fill Maximum absorption: 7.5 kW @ 7000 rev.min-1 • Typical engine range: 3 to 4 kW, 3000 rev.min-1, 150 to 250 cc • Speed measurement: Proximity pick up and digital display • Torque measurement: Strain gauged load cell and digital display • Air consumption measurement: Air-box and orifice plate, pressure transducer and digital display • Ambient Air temperature and barometric pressure measurement: Thermocouple, pressure transducer and digital display • Exhaust temperature measurement: Engine thermocouple and digital display • Fuel consumption: Precision volumetric fuel gauges (analogue or automatic digital versions available)</p>	1	lot	9,920,000.00	P	P
1.1	<p>Auto volumetric fuel gauge with digital read-out • Automatic volumetric fuel gauge • Accurately and automatically calculates fuel consumption • Directly displays fuel consumption on digital read-out • Can cycle continuously or run once</p>					

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	<p>only</p> <ul style="list-style-type: none"> Fully compatible with Data Acquisition System and software Self-sealing couplings enable quick and efficient connection and disconnection of fuel lines with minimum loss or spillage of fuel <p>The Automatic Volumetric Fuel Gauge consists of a:</p> <ul style="list-style-type: none"> precision fuel gauge with sensors; digital read-out (display) unit which shows fuel consumption and allows data to be transferred to a suitable PC via the data acquisition system 					
1.2	<p>Modified 4 stroke diesel engine (electric start)</p> <p>Learning Outcomes investigations into the performance and characteristics of a four-stroke diesel engine, including:</p> <ul style="list-style-type: none"> Torque, speed and power relationship Brake mean effective pressure Engine performance curves Air and fuel consumption Volumetric and thermal efficiencies Willans line <p>When used with Small Engine Test Set, Cylinder Head Pressure Transducer, Crank Angle Encoder and Engine Cycle Analyser, students can investigate further features including:</p> <ul style="list-style-type: none"> Plotting p-q and p-V diagrams Engine cycle analysis Indicated mean effective pressure Indicated power Comparison of brake and indicated mean effective pressures Mechanical efficiency of the engine <p>Fuel: Diesel to minimum specifications EN590, BS2869 A1/A2 or ASTM D 975 - 1D/2D</p> <p>Engine Capacity: 232 cc Power and Torque : 3.1 kW at 3450 RPM Torque 10 Nm at 1700 RPM Speed: Governed to 3200 to 3400 RPM Cooling: Air cooled</p>					
1.3	<p>Engine cycle analyzer</p> <ul style="list-style-type: none"> Significantly enhances practical investigations, demonstrations and studies of internal combustion engines Can also be used with other engines fitted with suitable cylinder head transducers and crank angle encoders 					



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	<ul style="list-style-type: none"> Includes powerful Windows based software specially designed for educational use Automatic calculation and real-time display of p-q plots and p-V plots and other important parameters Useful snap-shot, replay and animation functions Accurate, clear animations of crank, piston, inlet and exhaust valve positions help students visualise the engine cycle Students can export data for further analysis <p>Learning Outcomes When used with suitable test engines, the analyser allows investigations into a variety of internal combustion engine characteristics, including:</p> <ul style="list-style-type: none"> The thermodynamic cycle of an internal combustion engine Calculation of indicated mean effective pressure and indicated power Comparison of indicated mean effective pressure and brake mean effective pressure Mechanical efficiency of the test engine Further work using exported data such as combustion analysis <p>Crank angle input: Shaft encoder with 360 pulses per revolution Resolution: 1 degree Pressure signal conditioning: Precision charge amplifier with digital thumb-wheel calibration Maximum engine speed: 7000 rev.min⁻¹ PC connection: Via USB type 1.1 or 2 Auxiliary input: 0 to 10 V via BNC connector</p>					
1.4	<p>Data acquisition frame mounted</p> <p>Key Specifications</p> <ul style="list-style-type: none"> All mains connectors and cables STP (shielded twisted pair) cables for equipment connection Data Export: – XLSX file (default) – HTML file (optional) <p>Software features:</p> <ul style="list-style-type: none"> Recording data manually or automatically Data capture set by time or intervals Display of real-time data, in digital form or as an analogue meter Real-time traces of analogue signals 					



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	<ul style="list-style-type: none"> • Logging data for printing and later analysis • Exporting data for use by other software • Performing real-time calculations to generate userdefined data • Creating and printing charts and data tables • Customisable layouts <p>Accessories (supplied):</p> <ul style="list-style-type: none"> • All mains connectors and cables • STP (shielded twisted pair) cables for equipment connection <p>Digital Inputs:</p> <ul style="list-style-type: none"> • 6 off RJ45 connection • 4 off SPC (DTI) inputs <p>Analogue Inputs:</p> <ul style="list-style-type: none"> • 1 DIN type socket for dual trigger input • 2 DIN type sockets for signal inputs of 0 to 10 V or 4 to 20 mA • Sample rate up to 25 kHz with 12 bit resolution • Bandwidth/Filter cut-off 3 kHz (nominal) <p>Data Export: • XLSX file (default) • HTML file (optional)</p>					
1.5	<p>Online Learning Management Software (include 1-year subscription)</p> <ul style="list-style-type: none"> • Subscription: 1 year • Software features include: <ul style="list-style-type: none"> o Monitors student participation through time logging o Records data manually or automatically o Data capture can be set by time or intervals o Displays real-time data in digital form or as an analogue meter o Real-time traces of analogue signals o Logs data for printing and later analysis o Exports data for use by other software o Performs real-time calculations to generate user defined data o Creates and prints charts and data tables o Customizable layouts o Provides automatic calculation, recording, charting and data export remotely o An unlimited number of students can simultaneously acquire and process live experimental data remotely from their computer, just as 					



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	they would in the laboratory o Students can individually manipulate the experiment data remotely o Intuitive and easy-to-use, with clear, customisable display and layout options o To monitor engagement, the connection status of students are time logged o Suited to remote classroom demonstrations, laboratory experiments and group work • Standard Features: o Supplied with comprehensive user guide • Data Export: o XLSX file (default) o HTML file (optional)					
2	Branded Laptop Processor: Intel Core i7 Memory: 8 GB Storage: 512GB SSD Screen: 15.6" Operating System: Windows 10	1	unit	80,000.00	P	P
TOTAL:						P

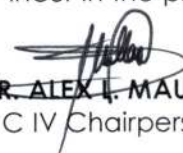
Total Bid Price in Figure: _____

Total Bid Price in Words: _____

Name and Signature of Bidder: _____

All bid proposals must be sealed in envelopes properly labeled and submitted to this University on or before the deadline of submission of bids, **June 06, 2022, 01:30 P.M.** at the Procurement Services, 2nd Level Gymnasium Lobby, University of Science and Technology of Southern Philippines, C.M. Recto Ave., Lapasan Cagayan de Oro City.

The University of Science and Technology of Southern Philippines assumes no responsibility whatsoever to compensate or indemnify bidders for any expenses incurred in the preparation of the bid. The USTsP neither assumes any obligation for whatsoever losses that the bidders may incur in the preparation on their bids nor guarantee that an award will be made.


ENGR. ALEX I. MAUREAL
 BAC IV Chairperson