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giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



WATER AND WASTEWATER MANAGEMENT PROGRAMME

PROJECT TENDER PACK - 101

Supply & Training for the measuring devices

- **Power Quality and Energy Analyzers**
- **Laser Shaft Alignment Tool**
- **Digital Stroboscope LED strobe flashing frequency measure high-speed**

March 2019

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ABBREVIATIONS

ACs	Affiliated Companies of the HCWW
IEC	International Electro-technical Commission
WWTP	wastewater treatment plant
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
AWWA	American Water Works Association
BS	British Standards
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
EIA	Electronic Industries Alliance
EN	European Norms
HSE	Health Safety & Environment
IEE	Institution of Electrical Engineers
IEEE	Institute of Electrical and Electronics Engineers
ISO	International Organization for Standardization
LV	Low Voltage
MID	Measuring Instrument Directive
NEMA	National Electrical Manufacturers Association
PPE	Personal Protective Equipment
TBD	To be determined

UNITS OF MEASUREMENT

DC	Direct Current
Hz	Hertz
IP	Ingress protection
V	voltage
Ω	Ohm (measuring impedance)
m	meter
MA	Milliampere
THD	Total harmonic distortion
Watts (VA, var)	Kilowatt (Unit of Power)
CF	Crest Factor
°C	Celsius Degrees
A	Ampere
kWh (kVAh, kvarh)	Kilowatt hours (Unit of Energy)

1. INTRODUCTION

This document is for the tendering to purchase the following:

- (2) Power Quality and Energy Analyzer and training on how to use, operate and download data from this device on personal computers through the program attached to this device.
- (20) Stroboscope (flashing light in a certain frequency) mainly applies to the measurement of the speed of the motors and training on how to use it.
- (7) Laser Shaft Alignment Tool.

All sections should be studied before submission of a tender.

It should be noted that all the actions and responsibilities described in this document are to be taken in full compliance with all Egyptian laws and regulations, HCWW and AC policies, procedures and instructions in particular, those for Health, Safety and Environment and Water Quality.

2. PROJECT DETAILS

2.1 Title	Supply and train the staff of the Water Companies for the following devices <ul style="list-style-type: none"> - (2) Power Quality and Energy Analyzer. - (20) Stroboscope (flashing light in a certain frequency) to measure the motors speed. - (7) Laser Shaft Alignment Tool
2.2 Location of supplying and training site	Water and wastewater Companies in Egypt (TBD)
2.3 Client	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
2.4 Owner	Holding company for water and wastewater in Egypt

3. PROJECT DESCRIPTION

3.1 Summary	<p>This tender is for supply, operation and training on how to use, operate and download data from these devices on personal computers (If need it) through the program attached to these devices.</p> <p>These measuring devices should have a warranty of at least one year on production defects.</p>
3.2 Background	<p>The overall objective of the Water and Wastewater Management Programme WWMP is to improve the “Framework Conditions for Efficient and Sustainable Drinking Water and Sanitation Services”. The indicators are:</p> <ol style="list-style-type: none"> 1. Selected Affiliated Companies (ACs) have prioritised their investment projects based on national water and wastewater decision support systems. 2. EWRA has issued temporary licenses to ACs in line with legal requirements. 3. Selected ACs have achieved 80% of the performance targets for revenue collection from key account holders. 4. Project proposals have been submitted to funding agencies that target the improvement of water and wastewater services in informal urban or un-served rural areas. 5. Selected ACs implement action plans enhancing gender-sensitive staff recruitment and career development. <p>This document sets out the tender, commercial and technical data that is to be completed in full by the tenders and will form the Contract for the successful tenderer.</p>

4. INFORMATION ABOUT SITE -

4.1 Details	These measuring devices will be used at some of the WTP&WWTPs companies in Egypt, for continuation of energy studies and analysis.
4.2 Sites	TBD

5. GENERAL INFORMATION

5.1 Place of supply and the training	<p>The supplier will supply all devices at the headquarters of the holding company for water and wastewater in Egypt</p> <ul style="list-style-type: none">- The training for both Stroboscope & Laser Shaft Alignment Tool will be one day at one site of Alexandria Water Company.- The training for Power Quality and Energy Analyzer will be two days at two different sites of Canal cities and Qalyubia AC's. (Two days each) on site training.
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6. APPLICABLE STANDARDS

6.1 Compliance	<p>The required device should comply with the following international standard.</p> <p>IEC 61000-4-30 Class A)</p>
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7. DESCRIPTION OF WORKS

7.1 Inclusions	<p>The Supplier is to include for:</p> <p>Supply all devices with the to the specifications that will come after and train (20 Persons) from water and wastewater companies on how to use these devices, operate and download data from this device on personal computers through the program attached to this device.</p> <ul style="list-style-type: none">▪ The supplier should train the staff on how to use these devices, the training material should be hard and soft copy in Arabic language.▪ provide the following Documentation:<ol style="list-style-type: none">1. Certificate of Origin2. Manual /Catalogue for the measuring device and all the accessory.
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	3. As well as the training materials that previously mentioned in Arabic language.
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8. SPECIFICATIONS POWER QUALITY AND ENERGY ANALYZERS

8.1	Specification	The works includes supply of the Power Quality and Energy Analyzers which should comply with the following specification and data.
Voltage inputs		
8.1.1	NUMBER OF INPUTS	4 (3 phase + neutral) dc-coupled
8.1.2	MAXIMUM INPUT VOLTAGE	1000 V rms
8.1.3	COUNTRY OF MANUFACTURE REQUIRED	European Economic Area (EEA), USA, Japan and England
8.1.4	NOMINAL VOLTAGE RANGE	Selectable 1 V to 1000 V
8.1.5	MAX. PEAK MEASUREMENT VOLTAGE	6 kV (transient mode only)
8.1.6	INPUT IMPEDANCE	4 MΩ//5 pF
8.1.1	SCALING	1:1, 10:1, 100:1, 1,000:1 10,000:1 and variable
8.1.2	POWER SOURCE	Rechargeable Battery Lithium-Ion
Current inputs		
8.1.3	NUMBER OF INPUTS	4 (3 phase + neutral) dc- or ac-coupled
8.1.4	TYPE	Clamp or current transformer complies with: CAN/CSA-C22.2 No. 61010-1-04ANSI / UL 61010-1:2004EN / IEC 61010-1:2001EN / IEC 61010-2-032:2002EN / IEC 61010-031:2002+A1:2008
8.1.5	RANGE	0.5 Arms to 600 Arms , 5 Arms to 6000 Arms
8.1.6	BANDWIDTH	> 10 kHz
8.1.7	SCALING	1:1, 10:1, 100:1, 1,000:1 10,000:1 and variable
8.1.8	ACCURACY (CURRENT PROBE)	± 1 % of reading (@ 25 °C, 50 Hz)
Sampling system & Display		

8.1.9	RESOLUTION	16-bit analogue to digital converter on 8 channels
8.1.10	MAXIMUM SAMPLING SPEED	200 kS/s on each channel simultaneously
8.1.11	DISPLAY:	The device should display Waveform, Phasor diagram, Meter readings, Trend graph, Bar graph and an Event list
Measurement modes & Monitor		
8.1.12	SCOPE	4 voltage waveforms, 4 current waveforms, V rms, V fund. Arms, A fund, V @ cursor, A @ cursor, phase angles
8.1.13	HARMONICS	Harmonics Volts, THD, Harmonic Amps, K factor Amps, Harmonic Watts, THd Watts, K factor Watts, Inter-harmonic Volts, Inter-harmonic Amps, V rms, Arms (relative to fundamental or to total rms)
8.1.14	POWER AND ENERGY	V rms, A rms, W full, W fund., VA full, VA fund., VA harmonics, VA unbalance, var, PF, DPF, Cos Q, Efficiency factor, W forward, W reverse, Unbalance & Inrush current
8.1.15	MONITOR	V rms, A rms, harmonic Volts, THD Volts, PLT, V rms ^{1/2} , A rms ^{1/2} , Hz, dips, swells, interruptions, rapid voltage changes, unbalance and mains signalling. All parameters should be measured simultaneously in accordance with EN50160, and Flagging is applied according to IEC61000-4-30 to indicate unreliable readings due to dips or swells
8.1.16	POWER WAVE	Vrms ^{1/2} , Arms ^{1/2} W, Hz and scope waveforms for voltage amps and watts
8.1.17	DATA LOGGER	The device should have an internal Memory Capacity that can store data (at least 8 GB data stored)
Case		
8.1.18	DESIGN	The design should be Rugged, Shock and vibration proof with integrated protective holster, Drip and dust proof IP51 according to IEC60529.
8.1.19	BRIGHTNESS, SIZE & RESOLUTION	Brightness should be at least: 200 cd/m ² typ. using power adapter, 90 cd/m ² typical using battery power Size at least: 127 mm x 88 mm (153 mm/6.0 in diagonal) LCD Resolution at least: 320 x 240 pixels
Environmental		

8.1.20	OPERATING TEMPERATURE	From 0 to 50 °C
8.1.21	HUMIDITY	At 30 °C: 95 % RH non-condensing
8.1.22	ELECTRO-MAGNETIC-COMPATIBILITY	Should comply with EN 61326 (2005-12) for emission and immunity
8.1.23	INTERFACES	The device should have a mini-USB-B/ Isolated USB port for PC connectivity and SD card slot.
Accessories & Flexible Current Probe		
8.1.24	PLUG ADAPTER	International plug adapter set
8.1.25	CLIP SET	Test lead and Alligator clip set with colour coding
8.1.26	FLEXIBLE CURRENT PROBES (FULL KIT)	24-inch (61cm) length, 4 clamps (this Probe should be able to surround cables/busbar carrying 6000 amperes), These probes should be able to measure the current out of current transformers with extreme accuracy <u>therefore, the supplier should supply another special current probes that can be used with the output of current transformer (5 A) for a medium voltage analysis.</u>
8.1.27	PROBES FOR LENGTHENING	Extra Probes for lengthening (volt and current)
8.1.28	OUTPUT CONNECTOR	Safety BNC connector
8.1.29	DEGREE OF PROTECTION	IP41

9. SPECIFICATIONS FOR STROBOSCOPE

9.1 Specification	The works includes supply of the Stroboscope (flashing light in a certain frequency and No need for reflective tape) to measure the motors speed. which should comply with the following specification and data.
9.1.1 RANGE	30 to 300,000FPM , 0.5 to 5000Hz
9.1.2 ACCURACY	0.02 %
9.1.3 COUNTRY OF MANUFACTURE REQUIRED	European Economic Area (EEA), USA, Japan and England
9.1.4 FREQUENCY SETTING	FPM or Hz
9.1.5 RESOLUTION	30 to 999 FPM = 0.1 1000 to 300,000 = 1 0.5 to 999 Hz = 0.1 1000 to 5000 Hz = 1
9.1.6 COLOR TEMPERATURE	At least 6500 K
9.1.7 FREQUENCY RANGE	0.5 to 5000 Hz
9.1.8 ILLUMINATION	At least 1500 Lux at 6000 FPM at 20 cm
Supplied with a Protective case and External trigger connector	

10. SPECIFICATIONS FOR LASER SHAFT ALIGNMENT TOOL

CPU	
10.1 Specification	The works includes supply of the laser shaft alignment tool to measure the motors speed. Which should comply with the following specification and data.
10.1.1 Memory	At least 64 MB RAM, 64 MB flash
10.1.2 Display	TFT, transmissive (sunlight-readable), 65,535 colors, backlit LED Resolution: 320 x 240 pixel
10.1.3 Power supply	Integrated Lithium-ion polymer rechargeable battery, with typical operating time of at least 15 hours.
10.1.4 External interface	USB host and USB device, OR RS232, AC adapter/charger socket
10.1.5 Environmental protection	At least IP 65
Sensor	
10.1.6 Environmental protection	At least IP 67
10.1.7 Operating temperature	0°C to 55°C
10.1.8 Laser	Type: Ga-Al-As semiconductor laser, Beam power: < 1 mW, Safety class: Class 2, FDA 21 CFR 1000 and 1040
10.1.9 Carrying case	Rugged carry case including all standard parts

11. TRAINING

The supplier shall prepare and conduct a comprehensive training for the Stroboscope and for the laser shaft alignment tool for least (25) persons from Water and wastewater companies in Egypt The training shall include Practical measurement with each devices.

For the Power Quality and Energy Analyzer the supplier shall prepare and conduct a comprehensive training and Practical measurement on one of the feeder / motors and downloading the data with an explanation of the use of this data with the software attached to this device for analysis only for staff from Canal cities and Qalyuobia AC's

12. BILL OF QUANTITIES (BOQ)

The tenderer should complete the following table in full. All omissions, blanks and 'TBAs' will count against the tenderer in the evaluation process. On award of contract, the data provided in the table will be deemed as the agreed specification and therefore a contractual obligation.

Description	Unit	Quantity	Unit Rate (EGP)	Total (EGP)
Main: Supply and train the staff of the Water Companies for the following devices <ul style="list-style-type: none">- (2) Power Quality and Energy Analyzer.- (20) Stroboscope (flashing light in a certain frequency) to measure the motors speed.- (7) Laser Shaft Alignment Tool with Specifications mentioned previously				
12.1.1 Power Quality and Energy Analyzer	Nr	2		
12.1.2 Stroboscope (flashing light in a certain frequency) to measure the motors speed	Nr	20		
12.1.3 Laser Shaft Alignment Tool	Nr	7		
12.2 Training	LS	1		
12.3 Total Price for the offer				

13. EVALUATION METHOD

Evaluation will be by using two envelopes financial & technical, after the technical acceptance It will award to the lowest prices.