



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO Project

Technological and Enterprise Upgrading Programme on agro-chemicals and agricultural machinery production sector (Industrial Upgrading and Modernization in Cuba) (SAP ID 150262)

TECHNICAL SPECIFICATIONS FOR PURCHASE OF EQUIPMENT AND SUPPLIES

1. General Background Information

ORGANIZATIONAL CONTEXT

UNIDO is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. The mandate of the UNIDO is to promote and accelerate sustainable industrial development in developing countries and economies in transition. With this mandate, the Organization carries out two core functions: as a global forum, it generates and disseminates industry-related knowledge; as a technical cooperation agency, it provides technical support, policy advice and implements projects. UNIDO's vision is a world where economic development is sustainable and economic progress is equitable.

The Programme Development and Technical Cooperation (PTC) of UNIDO is responsible for providing technical cooperation services on technological and economic issues in the following areas covered by five departments: Department of Partnerships and Results Monitoring (PRM); Department of Agri-Business Development (AGR); Department of Trade, Investment and Innovation (TII); Department of Energy (ENE) and Department of Environment (ENV).

The Department of Trade, Investment and Innovation (TII) supports countries in their efforts to develop through trade, investment and innovation the potential of the manufacturing sector to drive socio-economic progress. The Department is responsible for assisting countries to strengthen competitiveness in global markets through capacity-building in quality, environmental sustainability, and social accountability requirements in accordance with international management system standards and private sector requirements. It supports the establishment of linkages between producers/processors in developing countries and local, regional and global value chains (retailer, manufacturers) by developing capacities in the area of product quality.

PROJECT CONTEXT

Technological and Enterprise Upgrading Programme on agro-chemicals and agricultural machinery production sector (Industrial Upgrading and Modernization in Cuba) (SAP ID 150262)

UNIDO is supporting Cuba's efforts in investment and strategic alliance promotion endeavours for strengthening its industrial capabilities and competitiveness in priority industrial sectors through the formulation of a Country Programme Framework (CPF), in line with the economic and industrial transformations decided by the Government and with the UNDAF signed for 2014-2018. One of the priority



CPF areas as per main outcomes agreed with the Government of Cuba is the development of an Industrial Upgrading and Modernization Programme (IUMP) focusing on priority agro-chemicals and agricultural machinery production sectors.

Cuba IUMP aims to contribute to inclusive and sustainable industrial development of Cuba and improve food security through upgrading and modernization of industrial sectors of Fertilizers and Agricultural Machinery. This will be achieved through enhancement of industrial performance and competitiveness of pilot enterprises operating in the Fertilizers and Agricultural Machinery industrial sectors within the existing industrial hubs. The programme will be implemented via three main modules: sectoral analysis and building a strategic action plan for the Cuban priority Fertilizers and Agricultural Machinery industrial product lines/sub-sectors; enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority sub-sectors/existing hubs; and strengthening human and technical capacities of national counterpart institutions/expertise in the provision of enterprise diagnosis and industrial modernization, sectoral analysis and other best practices.

Proposed technical assistance includes the following outputs and activities:

- Output 1. Sectoral analysis and building a strategic action plan for development of the Cuban priority Fertilizers and Agricultural Machinery industrial product lines/sub-sectors based on the key food and agricultural crop development needs.
- Output 2. Enterprise diagnosis and industrial upgrading of selected pilot manufacturing enterprises operating within the identified priority Fertilizers and Agricultural Machinery product lines/sub-sectors/existing hubs through technological modernization, optimization of business processes and improvements of enterprise performance and competitiveness.
- Output 3. Human and technical capacities of national counterpart institutions/expertise established/strengthened in the provision of enterprise diagnosis and industrial modernization, sectoral analysis and competitiveness building and other best practices and related services to the respective priority industrial sectors.

UNIDO conducted comprehensive analysis of the Cuban fertilizers and agricultural machinery production sectors resulting in a Sectoral Strategy that helps prioritize and focus developmental efforts of the current Project and of the National Government, in general, on the development of production and application of liquid fertilizer, in order to significantly contribute to the country's efforts in enhancing the sustainable food production using inter alia Cuban know how and accompanied by the best international practices.

Key fertilizer product lines aimed at substituting current solid fertilizers imports (Calcium Nitrate, Magnesium Nitrate and Bayfolan Forte) with the below mentioned liquid fertilizers were identified:

- Liquid Calcium Nitrate/Magnesium Nitrate;
- CBFERT ecological liquid fertilizer.

As part of the project implementation, the procurement of the equipment for establishment of sustainable production of CBFERT ecological liquid fertilizer is expected.

2. Purpose of the supply

The purpose of this supply is to provide agricultural equipment and related inputs, accessories and services as per the list provided in this Technical Specification, which is expected to be delivered and located at the project beneficiaries, located in Havana, Cuba.

3. The Scope of Supply - Content of bid (please also refer the ITB letter and related Instruction to Bidders)



3.1 The following items (or equivalent) should be supplied:

The table provided below details the specification of supply.

The supplier(s)/contractor(s) shall complete it by filling in unit and total prices as well as indicate their compliance of deviation from the technical requirements of the Terms of Reference/Technical Specifications.

The specifications established in this document are the minimum requirements to be accepted. Products furnished to these specifications must meet or exceed all requirements herein. Modifications or additions to basic standard products or less size or capability to meet these requirements will not be accepted.

Bidders must include the manufacturer's name, country of origin of each item and the model number in the bid.

Please note that in line with the UNIDO Purchase Order, the Contractor/Supplier shall insure the goods during their shipment and transit to the named place of destination and thereafter until the packing crates are opened in the presence of the Seller's representative(s), if applicable, against all risks of loss or damage from any cause. Such insurance shall be with a reputable insurance company acceptable to UNIDO and shall be in the names of the Contractor and UNIDO in their respective rights and interests. The insurance shall cover the full price of the goods including freight costs plus ten percent (10%) and shall be in the currency of the Contract Price.

Offers are to be made in US Dollars.

Partial offers are acceptable.

Bidders shall clearly state any delivery costs, including export packing, shipping insurance, customs taxes or any other indirect costs, if any.



Lot 1 – Centrifugal pumps for pilot plant purposes

UNIDO REQUIREMENTS			TO BE COMPLETED BY THE INVITEE			
Item	Name and required parameter	QTY	Unit price US \$	Total price US \$	Compliance yes/no	Remarks
LOT 1 - Centrifugal pumps for pilot plant purposes						
01	Technical characteristics: <ul style="list-style-type: none"> • Type of fluid: Fertilizer solution with suspended solids • Type of impeller: open. • Flow speed (Q): 2 m³ / h • Head (H): 70 m (7 bar) • Working Max. Temp: 80 ° C • pH: Between 4 to 7 depending on the formulation • Fluid density: Normally between 1.1 Y 1.3, Maximum 1.5 kg /m³. • Rpm: to be specified by the supplier. • Pump material: Complete Stainless Steel 316L • Explosion-proof • Operating power voltage: 220 V - 60 Hz, three-phase • Protection: IP 54 • Kindly provide installed motor power and power consumption at operating point. • Equipment appropriate for application in tropical countries. • Scope of supply: complete pump with mechanical shaft seal, motor, coupling, base plate and spare parts for a 2-year operation, ready to be integrated into the piping system. 	2				
	Sub-Total, EX-Works:	US \$				
	II. Installation	US \$				
	III. Cost of transportation:	US \$				
	IV. Cost of Insurance at 110%:	US \$				
	Total price LOT 1 CIP Havana, Cuba¹:	US \$				

¹ Carriage & Insurance Paid To; kindly provide information and costing for: storage (if applicable), shipping (e.g. use of single trip containers, etc.), loading and off-loading.



Lot 2 – Vacuum pump for pilot plant purposes

UNIDO REQUIREMENTS			TO BE COMPLETED BY THE INVITEE			
Item	Name and required parameter	QTY	Unit price US \$	Total price US \$	Compliance yes/no	Remarks
LOT 2 - Vacuum pump for pilot plant purposes						
01	Technical characteristics: <ul style="list-style-type: none"> • Suction capacity: 5 m³ / h • Final vacuum (abs): 120 mbar • Power: app. 0.4 kW • Voltage: 220 V, three phase • Frequency: 60 Hz • Protection: IP 54 • Working Max. Temp: 80 ° C • pH: Between 4 to 7 depending on the formulation • It is working for a small fertilizer plant in an ammoniac environment. • Rpm: to be specified by the supplier. • Pump material: Complete Stainless Steel 316L • Scope of supply: complete pump with motor, base plate and spare parts for a 2-year operation, ready to be integrated into the piping system. • Kindly provide installed motor power and power consumption at operating point. 	1				
	Sub-Total, EX-Works:	US \$				
	II. Installation	US \$				
	III. Cost of transportation:	US \$				
	IV. Cost of Insurance at 110%:	US \$				
	Total price LOT 2 CIP Havana, Cuba²:	US \$				

² Carriage & Insurance Paid To; kindly provide information and costing for: storage (if applicable), shipping (e.g. use of single trip containers, etc.), loading and off-loading.



Lot 3 – Mobile filtration unit

UNIDO REQUIREMENTS			TO BE COMPLETED BY THE INVITEE			
Item	Name and required parameter	QTY	Unit price US \$	Total price US \$	Compliance yes/no	Remarks
LOT 3 - Mobile filtration unit						
01	<p>Product type:</p> <p>Technical characteristics:</p> <ul style="list-style-type: none"> • Maximum flow 6 m³ / h • Filtration area 0.09 m² • Capacity: 3 liters; 3,5 kg. • Installation (cm) 59 Height 25x25 space • Material: AISI-316 • Maximum pressure: 9 bar • Temperature: 120 ° C • Operational data: 9 max. bar; 120 C . • Input connection: app. 1 ½" BSP • Output connection: app. 1 ½" BSP • Particle sizes for the filter tissues: 97% less than 150 microns. • The scope of supply must include spare parts for a 2-year operation. <p><i>Further details for this Lot are included in the Annex to this Technical Specification.</i></p>	1				
	Sub-Total, EX-Works:	US \$				
	II. Installation	US \$				
	III. Cost of transportation:	US \$				
	IV. Cost of Insurance at 110%:	US \$				
	Total price LOT 3 CIP Havana, Cuba³:	US \$				

³ Carriage & Insurance Paid To; kindly provide information and costing for: storage (if applicable), shipping (e.g. use of single trip containers, etc.), loading and off-loading.



Lot 4 – Semiautomatic dosing machine

UNIDO REQUIREMENTS			TO BE COMPLETED BY THE INVITEE			
Item	Name and required parameter	QTY	Unit price US \$	Total price US \$	Compliance yes/no	Remarks
LOT 4 - Semiautomatic dosing machine						
01	<p>Product type:</p> <ul style="list-style-type: none"> Semiautomatic dosing machine <p>Technical characteristics:</p> <ul style="list-style-type: none"> Dosing speeds: 2 different dosing speeds Dosing range from 100cc to 25 liters Sparkling products with viscosities of up to 15,000 cp Electricity: 220 volts, 60 Hz Type: semi-automatic with manual handling of bottles / containers <p><i>Further details for this Lot are included in the Annex to this Technical Specification.</i></p>	1				
	Sub-Total, EX-Works:	US \$				
	II. Installation	US \$				
	III. Cost of transportation:	US \$				
	IV. Cost of Insurance at 110%:	US \$				
	Total price LOT 4 CIP Havana, Cuba⁴:	US \$				

⁴ Carriage & Insurance Paid To; kindly provide information and costing for: storage (if applicable), shipping (e.g. use of single trip containers, etc.), loading and off-loading.



Lot 5 –Reactors of 5 liters and 20 liters with accessories for laboratory and pilot plant

UNIDO REQUIREMENTS			TO BE COMPLETED BY THE INVITEE			
Item	Name and required parameter	QTY	Unit price US \$	Total price US \$	Compliance yes/no	Remarks
LOT 5 - Laboratory equipment - Reactors for laboratory and pilot plant purposes – 5 liters and 20 liters with accessories						
1	Product type: <ul style="list-style-type: none"> Reactor of 5 liters with accessories for laboratory and pilot plant. <i>Further details for this Lot are included in the Annex to this Technical Specification.</i>	1				
2	<ul style="list-style-type: none"> Reactor of 20 liters with accessories for laboratory and pilot plant. <i>Further details for this Lot are included in the Annex to this Technical Specification.</i>	1				
Sub-Total, EX-Works:		US \$				
II. Installation		US \$				
III. Cost of transportation:		US \$				
IV. Cost of Insurance at 110%:		US \$				
Total price LOT 5 CIP Havana, Cuba⁵:		US \$				

⁵ Carriage & Insurance Paid To; kindly provide information and costing for: storage (if applicable), shipping (e.g. use of single trip containers, etc.), loading and off-loading.



3.2 Supplier's General Responsibilities

The supplier is entitled to provide a bid for the complete tender or selected lots thereof.

The supplier must provide evidence of being a recognized supplier.

The supplier should demonstrate a minimum of 5 years professional experience.

References: Bidder must include information regarding relevant previous contracted service provided by the company, which have been similar to the service requested in the procurement. The references must include contact person with e-mail and telephone numbers.

The supplier shall make its best efforts to ensure that all works will be carried out according to "good quality and adequate accessories". The supplier assumes the overall responsibility for the correct selection and installation of the equipment for the practical implementation of the project.

The supplier shall take into account all the details presented in these TSs (Technical Specification) and shall request any further information, which is considered necessary for the correct implementation of the works.

The supplier should be able to provide support and maintenance within 5 working days, if requested so.

The supplier should be able to supply and install the equipment and train personnel where requested and necessary as well as provide all services needed for the technical reception / acceptance of the equipment at the time CIP Havana and / or installation, start-up and training of /for it, as stipulated in the TS.

3.3 Language

The Official Project communication language shall be English. The drawings, catalogues, illustrations, printed specifications and other documentation related to the present project shall be preferably in Spanish, or otherwise in English.

4. Guarantee Requirements

At least 2 year(s) guarantee is required.

The supplier shall replace/refurbish (in place or at their facilities outside) without any further costs for the client including shipping for any or all the equipment in case of malfunctioning and/or incapable of achieving the required accuracy/specification relevant to the tests.

The availability for spare parts should be of 10 (ten) years and deviating duration should be indicated. In case that the spares are not available in Cuba, the nearest location where they are available must be indicated.

5. Delivery Period and delivery terms

The equipment should be delivered as soon as soon as possible. The latest expected date for delivery of equipment is 31 August 2019.



The Seller shall hand over the goods, and UNIDO shall take over the goods, at the place or places of delivery specified in this Contract form. Unless otherwise stipulated in the Contract form, the goods shall be delivered CIP (Carriage & Insurance Paid To) INCOTERMS 2010 Havana International Airport if delivered by airplane or El Mariel Harbor if delivered by ship.

If possible, the delivery of all offered equipment and accessories (all Lots) in one container would be preferred. Otherwise, the delivery of equipment and accessories in separate shipments are also acceptable, with assumption of observation of overall delivery period.

6. Award conditions

UNIDO reserves the right to split an award between any suppliers in any combination, as it may deem appropriate. If the quotation is submitted on an "all or none" basis, it should be clearly stated as such in your response to this RFQ.



**ANNEX TO TECHNICAL SPECIFICATIONS: FOR MORE COMPLEX EQUIPMENT
THE FOLLOWING ADDITIONAL SPECIFICATIONS NEED TO BE CONSIDERED**

NOTA BENE VALID FOR ALL LOTS:

- Kindly provide for all lots technical data and further documentations, prospect sheets, etc.
- The requested equipment must in principle comply with the images shown below as an illustrative example. The images are included here for convenience of reference only and do not represent the exact equipment that must be offered / will be purchased.



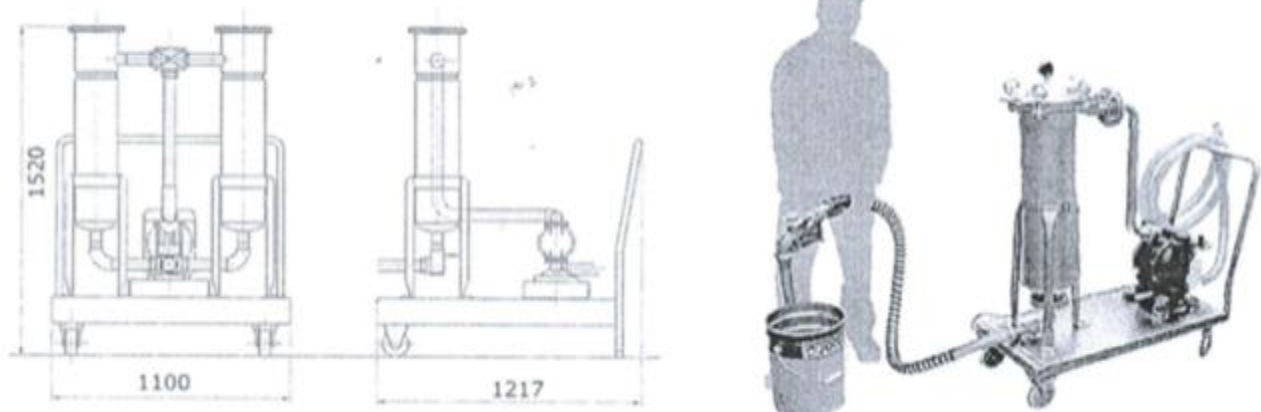
Lot 3 – Mobile filtration units - Technical Specifications

Quantity: 1

Technical characteristics:

- Maximum flow 6 m³ / h
- Filtration area 0.09 m²
- Capacity: 3 liters; 3,5 kg.
- Installation (cm) app. 59 Height 25x25 space
- Material: AISI-316
- Maximum pressure: 9 bar
- Temperature: 120 ° C
- Operational data: 9 max. bar; 120 C .
- Input connection: app. 1 ½" BSP
- Output connection: app. 1 ½" BSP
- Particle sizes for the filter tissues: 97% less than 150 microns.
- The scope of supply must include spare parts for a 2-year operation.

“The requested equipment must in principle comply with the concepts shown below as examples (illustrative):





Lot 4 - Semiautomatic dosing machine - Technical Specifications

Description of the process: the required machine is used to fill containers with volumes controlled in a precise way with different volumes with liquid fertilizers. The machine comes in a plug and play condition, which allows it to be put into operation after connecting it to electricity. The scope of supply must include spare parts for a 2-year operation.

Quantity: 1

Technical characteristics:

- Dosing speeds: 2 different dosing speeds
- Dosing range from 100 cc to 25 liters
- Sparkling products with viscosities of up to 15,000 cp
- Electricity: 220 volts, 60 Hz
- Type: semi-automatic with manual handling of bottles / containers
- The scope of supply must include spare parts for a 2-year operation

“The requested equipment must in principle comply with the concepts shown below as examples (illustrative):





Lot 5 – Reactors of 5 liters and 20 liters with accessories for laboratory and pilot plant

Please provide prices for each reactor including its accessories separately. Scope of supply has to be complete for each reactor, that it is ready for operation.

I. Reactors for laboratory and pilot plant of 5 liters and 20 liters similar to the pictures below.

The requested equipment must comply in principle with the images shown below as an example (illustrative). The images are included here for convenience of reference only and do not represent the exact equipment that must be offered / purchased.



Applications

Equipment specially designed for reflux and distillation operations with agitator element, for all operations of laboratory pilot plant and small productions.

Characteristics

Integrated reactor module in epoxy enameled steel, equipped with stirring unit and reaction vessel in transparent borosilicate glass 3.3 or on demand in amber, with graduation and double chamber to temper, for a volume of 1 to 5 liters in requested 5 liters-capacity reactor and from 4 to 20 liters in the 20 liters-capacity reactor. Agitation blade and elements in contact with the reaction liquid or vapor composed of borosilicate glass and PTFE.



Control panel

General switch ON / OFF. Control regulator of the agitator speed from 0 to 800 rpm with digital reading.

Models with approximate data:

Capacity reactor	Total measurements (cm) Height / Width / Depth			Work temperature	Consumption W	Weight Kg
	Height	Width	Depth			
5 liters	130	70	35	-30 °C a 200 °C	90	10
20 liters	180	62	50	-30 °C a 200 °C	250	68

II. Accessories

pH analyzer/Redox and temperature from -10°C up to 130°C. Backlit graphic display. For pH/ ORP measurement, temperature by probe measurement, temperature automatic compensation. 1 relay output for alarm or temperature, 1 relay output for electrode wash or temperature. pH measurement: 00.00÷14.00Ph.

1. Redox $\pm 1500\text{Mv} \pm 1\text{Mv}$.
2. HT glass sensor pH 0-14 + Ta -10 to 100 C.
3. Glass sensor adapters for 5 liter model
4. Glass sensor adapter for 20 liter model
5. Digital thermometer. Preferred Temperature range: -200 C to 1370 C.

Universal drain tap in PTFE and bellows for disposal of different density and viscosity liquid / liquid and liquid / solid suspensions.

6. For 5 liter model
7. For 20 liter model

Over elevation support base.

8. For 5 liter model Height app. 38 cm.
9. For 20 liter model Height app. 65 cm.



III. Complements

1. Peristaltic dosing pump. For stabilization of pH (acid-base). Also applicable to dosages in process.

For the 5 liters-capacity reactor

2. Recirculation thermostat for adjustable temperatures from ambient + 5 C to 200 C.
3. Recirculation cryothermostat for adjustable temperatures from -30 C to 100 C.

For the 20 liters-capacity reactor

4. High power recirculation thermostat. For adjustable temperatures from ambient + 5 C to 90 C.
5. Water refrigerator and recirculator. For temperatures from -20 C to 40 C.