

**INVITATION TO BID NO. 15002552 AO/MP
PROJECT MP/ROM/06/005**

TECHNICAL SPECIFICATIONS

**FOR THE PURCHASE AND SUPPLY OF PUMPS AND FILTERS
TO PHASE OUT THE CTC IN THE PRODUCTION OF
DI(2-ETHYLHEXYL) PEROXYDICARBONATE (DEHPC) AT
OLTCHIM S.A., ROMANIA.**

1. AIM OF THE PROJECT

The project is designed to phase out CTC at the DEHPC production of Oltchim S.A. Romania. DEHPC is used in CTC solution as a catalyst. The project will phase out the use of 120.45 ODP MT of Carbon tetrachloride (CTC) at Oltchim S.A. Ramnicu Valcea, Romania.

2. ENTERPRISE BACKGROUND

Oltchim S.A. is one of the largest basic material manufacturer and petrochemical companies in Romania. Owned 95% by the state Oltchim manufactures chlorinated products from chlorine and petrochemicals.

3. CONSTRUCTION MATERIALS FOR THE EQUIPMENT

Considering the corrosive nature of the phosgene and hydrochloric gas used/produced in the manufacturing processes, and also the explosive nature of the Hydrogen peroxide and DEHPC used/manufactured, the construction materials used for producing reactors and containers shall be selected and manufactured very carefully. Any heavy metal content in the products may result not only loss in the quality of the product, but also a decomposition that may result in an explosion.

4. SPECIFICATION OF SCOPE OF EQUIPMENT AND SERVICE

The Technical Specifications shall be used for the purchase and supply of equipment to produce DEHPC at Oltchim S.A. Romania in order to phase out the CTC. This document specifies the scope of supply of goods.

The Contractor shall inform UNIDO in its bid on the origin of equipment.

Pressure equipment shall be certified according to Romanian and EU legislation (DIN 28063:1999).

Also the Contractor shall transfer clear proofs together with its bid that it can comply with the requirements of the certificates and documents in the list as follows:

- CE Certification, Marking and Declaration of Conformity to the EEC directives as follows: Pressure equipment directive: 97/23/EC, Dangerous substances and explosive atmospheres regulations;
- Machinery (98/37/EC);
- ATEX Directive (94/9/EC: ATEX II 3G);
- Code Mechanical design calculations.

The Contractor shall also comply with the following specifications:

- Any electric motors shall pass ATEX II 3G requirements

The Contractor shall transfer together with its BID:

- Spare part list for commissioning and 1 year together with the prices.
- Drawings of equipment needed for erection: main dimensions/weights, nozzle details/dimensions, allowable loads and weight.

The Contractor shall transfer - within maximum 4 weeks from the contract awarding - the detailed drawings of the equipment, to be used for civil works and mechanical detailed design engineering

The Contractor shall attach documents together with the equipment when transported to Oltchim

- Inspection and testing plan to be used after the equipment installed and operating
- Weld procedure specs and qualifications for manufacturing the equipment
- Weld map details
- Installation, maintenance and operation manual for the equipment
- Packing and preservation procedure for the equipment
- Surface cleaning and preparation procedure for the equipment
- If the equipment is under PED requirements, to be included are also the general assembly drawing with the main design parameters (temperature, pressure, working fluid), and also the detailed design of the equipment manufacturing, and the drawing for the name plate
- Conformity statement of the manufacturer and CE stamp on the nameplate

Further details of the equipment are given in Annex 1.

5. SERVICE

The Contractor shall provide clear evidence with the bid of its ability to ensure the completeness of its service ability.

Price given in the bid shall cover:

- cost of equipment including cost of documentations
- service manuals and operating manuals
- packing and transportation cost, included also the transport insurance, according to INCOTERM 2000, DDU Ramnicu Valcea, Romania
- cost of spare parts.

6. ELECTRICITY SUPPLY

220/380 V, 50 Hz

7. TIME SCHEDULE

Equipment shall be delivered up to 4 months after the placement of the Purchase Order.

8. SCOPE OF SUPPLY

Not only the complete offers for metering pumps and filters shall be considered by UNIDO but, due to the shortage of the project funds, also partial offers including even the selection of the cheapest equipment items among all the bids received on items-to-item basis. The contractor must endeavor to submit a complete offer for all the pumps as described above in the Annex 1. A partial offer can be also considered.

The supplier shall provide complete lists of spare parts for the equipment together with their prices and delivery periods, including those provided by sub-suppliers. The price of these spare parts shall include labeling and packaging for preservation for a period of one (1) year in the destination country based on the agreed Incoterm DDU Ramnicu Valcea Republic of Romania.

9. SERVICES FOR INSTALLATION, COMMISSIONING, TRIAL RUNS AND START-UP

Installation will be performed by local companies, which will be involved in commissioning, trial runs and start-up. Electrical design will be also provided by a local company, which will also specify the control and monitoring equipment needed for technological line operation. However, the supplier shall provide control and monitoring devices specified in the Annex 1 together with the equipment because these devices should be assembled on the equipment.

Installation and commissioning costs should not be included in the supplier's offer.

10. CERTIFICATES

The Contractor shall provide certificates, which shall clearly state how they refer to the identified part of equipment.

11. WARRANTY

EXTENT OF THE WARRANTY

The Contractor warrants that the equipment is in accordance with all the requirements of the Technical Specifications, new, of first quality, of tested design, safe and fit for purpose and use for which it is intended under the Technical Specifications.

WARRANTY PERIOD

The equipment or any part of it is warranted for a minimum period of 24 months from the date of receipt at Oltchim's stores of the equipment or 18 months from the date of commissioning, whichever is later.

Table of Scope of Supply

UNIDO ITB No. 15002552 AO/MP MP/ROM/06/005						
UNIDO REQUIREMENTS		TO BE COMPLETED BY THE INVITEE				
Item	Name and required parameters	Qty.	Unit price	Total item price	Compliance	Remarks
			US\$	US\$	yes/no	
	I. Equipment, parts, supplies					
1	Metering pump (P-109)	1				
2	Metering pump (P-201)	2				
3	Metering pump (P-205)	2				
4	Metering pump (P-208)	1				
5	Metering pump (P-211)	1				
6	Filter (F-1, F-4, F-7, F-10, F-25, F-110)	6				
	Sub-total:					
	II. Transportation costs DDU Ramnicu Valcea					
	Total price DDU Ramnicu Valcea, ROMANIA					

Annex 1. DETAILED REQUIREMENTS FOR THE EQUIPMENT TO BE SUPPLIED

1. Equipment: CFO Pump
Item: P-109
No. of pieces : 1
Function: pumping of CFO

PROCESS DATA

Fluid name 2-ethylhexyl chloroformate
Temperature ($^{\circ}\text{C}$) 15
Density at 20 $^{\circ}\text{C}$ (kg/m^3) 991
Flow ($\text{cu.m}/\text{h}$) 3
Suction pressure (bar a) min. 1
Discharge pressure (bar a) 4

PUMP DATA

Working regime continuous
Suction head, mCA 2 m
Discharge head, mCA 20 m
Process connection flange acc. DIN, sealing surface, acc. DIN 2512
Form N
Material polypropylene / PTFE / , C-steel lined with PFA
Electric motor:

- Explosion proof protection Ex II A T₃
- Mechanical protection IP55
- Voltage / frequency 3 x 400V / 50 Hz
- Thermistors included

Placement inside

The offer should also specify:

- catalogues and technical drawings for pump, included functional diagram
- weight of the pump.

2. Equipment: Metering Pump
Item: P201
No. of pieces: 2
Function: pumping of hydrogen peroxide from storage tank

PROCESS DATA

Fluid name 10% hydrogen peroxide in water
Temperature ($^{\circ}\text{C}$) 25
Density at 25 $^{\circ}\text{C}$ (kg/m^3) 1028.5
Viscosity (cP) 0.93
Flow (l/h) 40

Suction pressure (bar a) min. 1
Differential pressure (bar) 3-4

PUMP DATA

Working regime continuous
Stroke adjustment manual and from control board 4/20 mA d.c.
Range, l/h 20-200
Process connection flange acc. DIN, sealing surface, acc. DIN 2526
Form C
Material Hastelloy C
Electric motor:
• Explosion proof protection Ex II A T₃
• Mechanical protection IP55
• Voltage / frequency 3 x 400V / 50 Hz
• Thermistors included
Placement inside

ACCESSORIES

Suction strainer, Pulsation damper discharge, Safety / Pressure relief valve,

The offer should also specify:

- Catalogues and technical drawings for metering pump, stroke adjustment equipment, strainer, pulsation damper, safety/pressure relief valve
- Piping connection drawing for metering pump and accessories
- the weight of each item.

3. Equipment: Metering Pump

Item: P205
No. of pieces : 2
Function: pumping of 20% sodium hydroxide from storage tank

PROCESS DATA

Fluid name 20% sodium hydroxide
Temperature (°C) 25
Density at 25 °C (kg/m³) 1217
Viscosity (cP) 3.4
Flow (l/h) 40
Suction pressure (bar a) min. 1
Differential pressure (bar) 3-4

PUMP DATA

Working regime continuous
Stroke adjustment manual and from control board
Range, l/h 20-200
Process connection flange acc. DIN, sealing surface, acc. DIN 2526
Form C

Material	W14541
Electric motor:	
• Explosion proof protection	Ex II A T ₃
• Mechanical protection	IP55
• Voltage / frequency	3 x 380V / 50 Hz
• Thermistors	included
Placement	inside

ACCESSORIES

Suction strainer, Pulsation damper discharge, Safety / Pressure relief valve,

The offer should also specify:

- Catalogues and technical drawings for metering pump, stroke adjustment equipment, strainer, pulsation damper, safety/pressure relief valve
- Piping connection drawing for metering pump and accessories
- the weight of each item.

4. Equipment: **Metering Pump**

Item:	P208
No. of pieces :	1
Function:	pumping of 85% ethanol from storage tank

PROCESS DATA

Fluid name	85% ethanol
Temperature (°C)	25
Density at 25 °C (kg/m ³)	814
Viscosity (cP)	1.0
Flow (l/h)	40
Suction pressure (bar a)	min. 1
Differential pressure (bar)	3-4

PUMP DATA

Working regime	continuous
Stroke adjustment	manual and from control board
Range, l/h	20-200
Process connection	flange acc. DIN, sealing surface, acc. DIN 2526 Form C
Material	W14541
Electric motor:	
• Explosion proof protection	Ex II A T ₃
• Mechanical protection	IP55
• Voltage / frequency	3 x 380V / 50 Hz
• Thermistors	included
Placement	inside

ACCESSORIES

Suction strainer, Pulsation damper discharge, Safety / Pressure relief valve,

The offer should also specify:

- Catalogues and technical drawings for metering pump, stroke adjustment equipment, strainer, pulsation damper, safety/pressure relief valve
- Piping connection drawing for metering pump and accessories
- the weight of each item.

6. Equipment:	Metering Pump
Item:	P211
No. of pieces :	1
Function:	pumping of 2-ethylhexyl chloroformate from storage tank

PROCESS DATA

Fluid name	2-ethylhexyl chloroformate
Temperature (°C)	25
Density at 25 °C (kg/m ³)	980
Viscosity (cP)	1.75
Flow (l/h)	40
Suction pressure (bar a)	min. 1
Differential pressure (bar)	3-4

PUMP DATA

Working regime	continuous
Stroke adjustment	manual and from control board
Range, l/h	20-200
Process connection	flange acc. DIN, sealing surface, acc. DIN 2526 Form C
Material	Hastelloy C
Electric motor:	
• Explosion proof protection	Ex II A T ₃
• Mechanical protection	IP55
• Voltage / frequency	3 x 380V / 50 Hz
• Thermistors	included
Placement	inside

ACCESSORIES

Suction strainer, Pulsation damper discharge, Safety / Pressure relief valve,

The offer should also specify:

- Catalogues and technical drawings for metering pump, stroke adjustment equipment, strainer, pulsation damper, safety/pressure relief valve
- Piping connection drawing for metering pump and accessories
- the weight of each item.

7. Equipment: Filters
Item: F-1, F-4, F-7, F-10, F-25, F-110
No. of pieces : 6
Function: hydrogen peroxide, caustic soda, ethanol, CFO, isododecane and
CFO product filter

PROCESS DATA

Fluid name 10% hydrogen peroxide/ 20%caustic soda/ 80%ethanol/ CFO/
isododecane/CFO product
Temperature (⁰C) 15-25
Density at 25⁰C (kg/m³) 1028/1217/814/980/745
Flow (cu.m/h) 0,03 – 0,1
Pressure (bar a) 3

FILTERS DATA

Type: PALL MCY 1002 JO 12 H 13
Dimension D x L=70 x 508 mm (www.pall.com)
Working regime continuous
Material PP/PTFE
Placement inside

The offer should also specify:

- technical drawings for filters
- weight of the filter.