



TERMS OF REFERENCE (TOR)

For the supply of various toolkit items to vocational schools in Bosnia and Herzegovina: “HCFC phase-out management plan (stage I)”

1. ORGANIZATIONAL CONTEXT

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations that promotes industrial development for poverty reduction, inclusive globalization and environmental sustainability. The mandate of UNIDO is to promote and accelerate inclusive and sustainable industrial development in developing countries and economies in transition.

The Montreal Protocol Division in the Department of Environment is responsible for assisting developing countries and countries with economies in transition to achieve the objectives of the Montreal Protocol on Substances that Deplete the Ozone Layer of the Vienna Convention for the Protection of the Ozone Layer, and to help these countries comply with the provisions of this Protocol. It does so by, inter alia, assisting the Governments of these countries in the preparation and implementation of policies, strategies and national and sectorial programmes.

The Unit oversees and manages all aspects of technical cooperation programmes and interventions, which fall under the auspices and funding of the Montreal Protocol. It acts as an Implementing Agency of the Multilateral Fund of the Montreal Protocol, representing UNIDO at meetings of the Executive Committee with the purpose of submitting projects for approval, and of reporting on achievements, inter-agency coordination, and dealing with compliance-related issues.

2. PROJECT CONTEXT

HCFC phase-out management plan (Stage I)

UNIDO, as the lead implementing agency, is supporting Bosnia and Herzegovina to meet its commitments under the Montreal Protocol on Substances that deplete the Ozone layer through the HCFC Phase-out Management Plan (Stage I) which was approved by the 66th Meeting of the Executive Committee (ExCom) of the Multilateral Fund for the Implementation of the Montreal Protocol for the period 2012-2020.

Although there is a huge demand for RAC technicians in the Bosnian labour market, they are in short supply and currently no vocational schools offer specific RAC technician courses. Numerous companies in the RAC sector are ready to employ such technicians, and vocational schools are ready to address the growing demand. Potential schools which have similar training components in their curricula have been identified and have agreed to provide 3-4 year courses for RAC technicians.

The training programme of the trainers, teachers and students of the vocational schools, as an approach to reduce HCFC consumption, aims to ensure the necessary level of theoretical knowledge and practical skills in good practices in RAC sector by exposing the stakeholders involved to contemporary knowledge and technology. The ultimate objective is to supply the market with a labour force which has the necessary level of knowledge and practical skills in HCFC-based refrigeration and air conditioning equipment servicing, the use of new technologies in manufacturing and service of refrigeration and air conditioning equipment using alternatives and

to ultimately contribute to fulfilment of the country's international obligations regarding the HCFC phase-out. Skilled technicians are vital in the transition to ozone and climate friendly refrigerant alternatives and energy efficient RAC technologies.

In order to facilitate the setting up of such training courses, it is necessary to procure refrigerant R&R equipment, basic tools and instruments for servicing refrigeration and air-conditioning appliances to be distributed to two identified vocational schools, and to provide training on their safe operation.

3. SCOPE OF SUPPLY

Quantity	Item
2	Toolbag/Trolley 35 liter, for the tolls below
2	Vacuum pump 42lpm 1.5cfm 220V Vi215H
2	Vacuum Gauge Wireless Appion (AV760)
2	Manifold Body 2-vlv
2	Pressure gauge HP R-134a,404A,410A,407C B/ PSI, C/F 80mm T-line
2	Pressure gauge LP R-134a,404A,410A,407C B/ PSI, C/F 80mm T-line
2	Hose set with ball valves 1.5 mtr
2	Adapter 1/4" MF x 5/16" FF swivel
2	Digital Manifold (conventional style) fieldpiece 380V
4	800 PSI Compound Pressure Temperature Gauge (Appion PTC800) - 2020
4	T-Fitting 1/4" flare for Appion G5
2	Ratchet wrench refrigeration
2	Scale 50kg (2 gram resolution)
2	Adjustable wrench Set 6"
2	Adjustable wrench Set 8"
2	Screwdriver combination Uniweld N1RS
2	Screwdriver set VDE (6 pieces)
2	Universal pliers
2	Long nose pliers
2	Cutting pliers

2	Stripping pliers
2	Water pump pliers 10"
2	Clamp meter with thermometer FP SC240
2	Allen Keys 2.5-3-4-5-6-8-10mm
2	1/4" Drive socket set (50 pieces) metric
2	Flaring and Swaging Tool 1/8" ~ 3/4" flaring / 3/16" ~ 3/4" Swaging Kit (275L)
2	Flare set Eccentric Cone inch size 5/8" 3/8" 1/2" 5/8" and 3/4"
2	Tube cutter 3 ~ 16mm + 7 ~ 41 mm (incl. spare wheel)
2	Deburring Tool Inside/Outside
2	Cutter Capillary Tube
2	Pinch-off pliers
2	Piercing pliers with spare needle
8	Scuffing pad
2	Bender Tube - 3 in 1 (1/4" - 5/16" - 3/8")
2	Sightglass A/C diagnosis
2	Recovery Unit Appion G5 Twin (230V) without Purge
4	Cylinder refrigerant 27.2 ltr
4	Cylinder refrigerant recovery 12.3 ltr / 48 bar
2	Hose 3/8" yellow 1/4" str. x 1/4" str. 0.90 mtr
2	Ball Valve 1/4"MFL x 1/4" FFL Yellow
2	Hose Set 1/4" str. x 1/4" vlv 5 ft. - 1.50m
2	Premium recovery/recharging scale Appion WS260
2	Electronic Leak Detector CFC, HCFC, HFC, HFO refrigerants
2	Ariazone 500.1 HD A/C Service Station or simalar
2	7-08-1234-30-0 Identifier Legend with printer
2	Training unit R600a for refrigerator (The main components the compressor, condenser,

	evaporator and expansion device (capillary tube), complete with system control electrical control systems. All components arranged systematically and clearly visible to allow their operation to be monitored. The temperature readings and pressure readings use to plot Pressure Enthalpy diagram of the refrigerant cycle so that an observation of the thermodynamic properties of the refrigerant can be done.)
2	UV leak detection kit
2	Nitrogen Regulator 0-55 bar (RHP800)
2	Manifold set (for nitrogen pressure decay test) 1 valve 0-50 bar
2	Automotive Training Unit for demonstration of the operation and performance of automotive air-conditioning systems. The performance characteristics of the air-con can be simulated and results observed under various operating conditions including trouble shooting. Basic thermodynamic experiments may also be performed by recording and monitoring the data given by the instrumentation.

IV. GUARANTEE REQUIREMENTS

The offered products must be certified to meet locally acceptable product and manufacturing standards. Guarantee should be for at least one year from the commissioning date. The guarantee and standards must be mentioned in the bid.

VII. DELIVERY TERMS

All goods are to be delivered (DAP) to Sarajevo, Bosnia and Herzegovina.

VI. TRAINING

Five days of training (split between Sarajevo and Banja Luka) are to be offered at a firm price including all travel and subsistence costs. A detailed description of the planned activities must be included. The description must detail the time estimated for each activity.

The training, including safe operation and consumables, should be conducted in the English language.

VIII. SERVICE

Please note that the availability of adequate services and after sales facilities is an essential requirement.

