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SOP-046

Contractor Maintenance of AC Units

Last Review Details – Refer to QPulse for full history

Review Comments	Review Owner	Date
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Latest Revision Details – Refer to QPulse for full history

Revision number	Revision Details
4	Changes to reflect the current working practice.

Approval details for latest Revision

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1 Aim and scope

The objective of this operational procedure is to specify methods, frequency and responsibilities related to maintenance of air conditioning units at any Enemalta plc site as required.

The SOP is addressed to all work performed by a contractor in connection to Air Conditioning Maintenance or installation of new units for Enemalta plc.

2 References

EN ISO 14001:15, clause 8.1

EN ISO 14001:15, clause 9.1

EN Standards EN378-1/2/3/4:2016

Regulation (EU) No.1005/2009 (as amended)

Regulation (EU) No. 517/2014

Commission Implementing Regulation (EU) No 1191/2014 (as amended)

Commission Implementing Regulation (EU) 2015/2067


Commission Implementing Regulation (EU) 2016/879

S.L. 549.58 (LN 280/2010) – Substances Depleting the Ozone Layer Regulations, 2010

S.L. 427.94 (LN 143/2018) – Fluorinated Greenhouse Gases (Implementing) Regulations

3 Terms and Definitions

CMP	Contractor's Maintenance Personnel
CRO	Contractor's Responsible Officer
DPS	Delimara Power Station
EMS	Environmental Management System
ENE	Enemalta plc
ERO	Enemalta Responsible Officer
MCCAA	Malta Competition and Consumer Affairs Authority
MPS	Marsa Power Station
SOP	Standard Operating Procedure

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4 Responsibilities

4.1 Contractor's Responsible Officer (CRO)

- Informs ERO about any discrepancies in the information of the installed units at a specific location
- Notifies ERO of any irregularities in the list
- Keeps Air Conditioning Units' Logbook updated from the job sheets provided by CMP:
- Sheet 1 – Faults
- Sheet 2 - Preventive Maintenance
- Sheet 3 – Waste
- Keeps records as per SOP

4.2 Enemalta Responsible Officer (ERO)

- Annually defines the Air-conditioning Preventive Maintenance plan
- Updates AC list as and when required
- Keeps all relevant records for 5 years

4.3 Contractor's Maintenance Personnel (CMP)

- Act in accordance with this procedure and any other related operative instructions
- Make records on job sheets as per SOP

5 Frequency

This document should be reviewed and updated every 24 months, or when changes require so.


6 Detailed Procedural Rules

6.1 Preventive maintenance of air conditioning units

Preventive maintenance shall be carried out by the CMP. This shall include, but is not limited to:

- Cleaning/renewal of air filters;
- Cleaning of evaporator;
- Checking the efficiency of the unit;
- Checking the refrigerant charge;
- Checks for leaks, the condition of all copper pipe work, insulation material, drain pipe and the general state of the indoor and outdoor units.

If any faults/abnormalities are encountered during the preventive maintenance, corrective actions have to be carried out accordingly as indicated below.

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The preventive maintenance should be recorded by the CRO on **sheet 2 (Preventive Maintenance)** of Air Conditioning Units logbook.

6.1.1 Cleaning/renewal of air filters

Air filters should be taken off the indoor unit and washed with clean water

Before re-fitting into indoor unit, the air filters should be dry

If any filters are damaged, these should be renewed.

6.1.2 Cleaning of evaporator, Blower fan, Vertical/Horizontal Flaps, and Indoor Unit Cover

The evaporator should be cleaned using an evaporator cleaner with antibacterial properties found in aerosol spray packaging, which crumbles and emulsifies any dirt present. Blower fan, Vertical/Horizontal Flaps and Indoor Unit cover must be wiped from any dirt build up using a damp cloth or under running water as appropriate.

6.1.3 Checking the efficiency of the unit

The temperature meter is used, indicating the room temperature and the indoor unit's air flow temperature. Unit is checked to ensure superheat is per parameters (5°C -10°C).

6.1.4 R22 Refrigerant

As from 1st January 2015, no virgin or recovered R22 can be used to service air-conditioning units.

If leaks are detected in any air-conditioning unit that is still in service and it contains R22 gas, all the R22 gas is to be extracted and the possible solutions should be considered:


- Drop-in refrigerant replacement
- Replacement of the unit

Record of any R22 extracted from the Enemalta AC units is to be kept on **either sheet 1 (Faults) or sheet 2 (Preventive Maintenance)** of Air Conditioning Units logbook . The reclaimed R22 gas is to be disposed of as EWC 14 06 01* (chlorofluorocarbons, HCFC, HFC) in a permitted waste management facility as per **SOP-045 – Waste Management Procedure for Contractors**.

6.1.5 Checking the refrigerant charge

The air conditioning unit is set to 'cool' and with the lowest temperature possible. The low pressure side (blue) of the pressure gauge manifold is connected to the suction line (larger tube) of the outdoor unit. The pressure gauge should read the corresponding average pressure of the respective refrigerant at room temperature.

If refrigerant top-up is needed, the middle hose (yellow) of the pressure gauge manifold is connected to the appropriate refrigerant cylinder and the unit is charged accordingly, taking note of the amount of refrigerant charged by weighing the refrigerant cylinder before and after the charge. A calibrated electronic weighing scale is used. This is to be calibrated by an appointed lab from MCCA every year and the calibration certificate is to be made available by the contractor to Enemalta on demand. Record of any gas topped up must be logged on either **sheet 1 (Faults) or sheet 2 (Preventive Maintenance)** of Air Conditioning Units logbook.

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6.1.6 Cleaning of Outdoor unit condenser Fins / Fan Blades and Cabinet

Brush off gently any dirt buildup on the condenser fins using a soft brush or air blower. Wipe fan blades and outdoor unit cover.

6.1.7 Checking against leaks and the condition of all copper pipe work, insulation material, drain pipe and the general state of the indoor and outdoor units

Refrigerant leaks are checked using an appropriate and calibrated gas leak detector. Calibration of the instrument is performed during every maintenance procedure and calibration records are to be made available by the contractor to Enemalta on demand. All hardware checking is done visually.

Any damaged material such as but not limited to insulation material and drain pipes should be replaced.

6.1.8 Maintenance, repairs or disassembling of part/all of the refrigerant circuit of a unit

The CMP should do the pump-down of the refrigerant from the air conditioning unit using a refrigerant recovery unit as the first step before starting any maintenance, repairs or disassembling which affects the refrigerant circuitry.

If the unit is repaired and the refrigerant circuit is once again complete, the CMP should then vacuum the system before this is re-charged with the proper refrigerant. The charging amount is specified on the manufacturer's label found on the outdoor unit.

6.1.9 Leak testing for air conditioning units with a rated refrigerant capacity of 3 kg or more

Leak test on any air conditioning unit with the rated total capacity of refrigerant being 3 kg or more as per manufacturer's specifications shall be carried out once per year by the CMP in line with the yearly preventive maintenance plan established by the ERO. Together with the yearly preventive maintenance, any amount of refrigerant recovered from or charged into such an air conditioning unit should be quantified and recorded by CRO on **sheet 2 (Preventive Maintenance)** of Air Conditioning Units logbook from job sheets handed in by the CMP. Leakages, maintenance and follow-up actions of these units should also be reported on this Log Sheet.

6.1.10 Reporting


All reporting is to be done on the Air Conditioning Units logbook (in Excel format) as follows:

Sheet 1 (Faults) of Air Conditioning Units logbook should be filled in by the CRO for any maintenance work done on the units from job sheets handed in by the CMP and are to be made available to the ERO upon request.

Sheet 2 (Preventive Maintenance) of Air Conditioning Units logbook as mentioned previously.

Sheet 3 (Waste) of Air Conditioning Units logbook should be filled in by the CRO from job sheets handed in by CMP of any generated waste resulting from works carried out on Air conditioning units installed at Enemalta premises.

An updated list of all the Air conditioning units at MPS, Enemalta Stores and District Offices/Distribution Centers should be kept by the ERO and any required changes to be highlighted by the CRO.

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6.2 External Audits

The CRO should keep all records needed for external audits updated and readily available to the ERO upon request. Any queries should be discussed and tackled within specified timeframes. Audits are usually carried out annually between May and August.

7 Reference Documents

Number	Type	Title
SOP-045	Non- Restricted\Procedures (SOP/WI/Mg.Proc)	Waste Management Procedure for Contractors
SOP-072	Non- Restricted\Procedures (SOP/WI/Mg.Proc)	Internal & External Communication

The documents below are held at the Facilities Office:

Sheet 1 – Faults of Air Conditioning Units logbook

Sheet 2 - Preventive Maintenance of Air Conditioning Units logbook

Sheet 3 – Waste of Air Conditioning Units logbook

Air-conditioning Preventive Maintenance Plan

Air-conditioning units list

