SOP-046

Contractor Maintenance of AC Units

Last Review Details – Refer to QPulse for full history

Review Comments	Review Owner	Date
<QPulse_DocLastReviewDetails>	<QPulse_DocLastReviewOwner>	<QPulse_DocLastReviewDate>

Latest Revision Details – Refer to QPulse for full history

Revision number	Revision Details
2	Changes to reflect current practice, changed document reference numbers as per Q-Pulse, updated legislations and added new legislations.

Approval details for latest Revision

Approver	Date	Response
Xuereb, Graziella	15/05/2018 13:19	Accept
Baldacchino, Damian	11/05/2018 15:39	Accept
Mallia, Alvin	14/05/2018 11:03	Accept
Abela, Carmen	14/05/2018 15:57	Accept

Revision list

Revision no.	Description	Written By/ Reviewed By	Date
0	First issue	P. Conti	07-05-2015
1	Revision of section 3, section 4, section 5.1.4 and section 5.4 to update responsibilities. Revision of section 6 to update Legal Notices and EU regulations. Update of form FRM 3.3	G. Xuereb	18-08-2016
2	Changes to reflect current practices	G. Xuereb /A. Mallia	03-05-2018

Contents

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
Regulation (EU) No. 517/2014
Regulation (EU) No 1191/2014
Amended by Regulation (EU) 2017/1375
Regulation (EU) 2015/2067
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

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

4. Responsibilities

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 updated Air Conditioning Units Logbook from job sheets provided by CMP
  Sheet 1 – Faults
  Sheet 2 - Preventive Maintenance
  Sheet 3 – Waste
- Keeps records as per SOP

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

Contractor's Maintenance Personnel (CMP)

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

5. Frequency

This document should be reviewed and updated every twenty-four (24) months, unless it is deemed necessary that it should be reviewed prior.

6. Detailed Procedural Rules

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.

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

The evaporator should be cleaned using an evaporator cleaner with antibacterial properties found in aerosol spray packaging, which crumbles and emulsifies any dirt present.

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 MCCAA every six months and the calibration certificate is to be available by the contractor to Enemalta on demand.

6.1.6 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 (3kg and over) and calibration records are to be available by the contractor to Enemalta on demand. All hardware checking is done visually.

Any damaged material should be replaced.

2) 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.

3) 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.