

EMISSIONS TO AIR MONITORING METHOD STATEMENT

In line with ERA “Methodology for Monitoring of Emissions to Air from Medium Combustion Plants”

MARINE AQUATIC LIMITED

MALTA NATIONAL AQUARIUM,
TRIQ IT-TRUNCIERA, QAWRA,
SAN PAWL IL-BAHAR, SPB 1500

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1. Purpose & Scope

This method statement outlines the procedure for monitoring emissions to air from the stack of the Generator-01 combustion plant, in compliance with the ERA-approved methodology. It covers preparation, sampling, analysis, reporting, and quality assurance for the determination of pollutant concentrations.

2. Plant & Stack Details

Installation Name: Generator-01

Location: Malta National Aquarium, Triq it-Trunciera, Qawra, San Pawl il-Bahar

Combustion Plant Type: Diesel power generator

Thermal Input Rating: 1.56MWth

Stack ID/Reference: PS1

Stack Height & Diameter: 4m

Abatement Equipment: Exhaust silencer and acoustic container

3. Competent Expert

Monitoring will be carried out and signed off by a competent expert meeting ERA's requirements:

- Qualifications: MQF Level 6 in a relevant science/engineering discipline.
- Experience: Minimum 3 years in stack monitoring and analysis.
- Name & Contact: Ing. Jordan Cutajar

4. Operating Conditions

Monitoring will be undertaken under normal, stable operating conditions, representative of typical plant performance.

Startup, shutdown, and abnormal operating periods will be excluded.

Load during sampling: 50 % of full load.

5. Monitoring Approach

Type of Monitoring: In-situ

Reference Standards:

- EN 15259: Requirements for measurement sections and sites
- EN 13284-1: Determination of low range mass concentration of dust
- EN 14792: Measurement of NO_x

- EN 15058: Measurement of CO
- EN 14791: Measurement of SO₂
- EN 14181 (if CEMS is used)

Pollutants Measured:

- Sulphur Dioxide (SO₂)
- Nitrogen Oxides (NO and NO₂ expressed as NO₂)
- Carbon Monoxide (CO)
- Total Particulates
- Oxygen (O₂) for normalization
- Moisture content (H₂O) for correction

Detection Limits: As per manufacturer's specifications and compliant with ERA's requirement to be ≤10% of relevant ELV.

6. Sampling Location

Sampling ports are located downstream of all abatement systems, at a position compliant with EN 15259 ensuring stable, homogeneous flow.

Stack access complies with health and safety requirements, with safe platform, guardrails, and lighting.

Diagram showing port location relative to plant outlet is appended in Annex A.

7. Sampling Procedure

1. Preparation:
 - Confirm plant operation at steady load.
 - Calibrate equipment on-site before measurements.
2. Execution:
 - Conduct at least three 30-minute sampling runs for each pollutant.
 - In-situ measurements performed using certified portable flue gas analyzers.
 - For particulates, use isokinetic sampling in accordance with EN 13284-1.
3. Recording:
 - Document stack temperature, pressure, velocity, O₂ %, and moisture content during each run.
4. Quality Control:
 - Apply zero and span checks for gas analyzers.
 - Use blanks and replicate measurements where applicable.

5. Post-Sampling:
 - For lab-based analysis, seal and label samples immediately, with chain-of-custody forms completed.

8. Data Processing

Correct results to reference conditions: dry gas, 273.15 K, 101.3 kPa, and 15% O₂ (unless otherwise stated in the permit).

Apply moisture corrections as determined on-site.

Express results in mg/Nm³ and compare with ERA's Emission Limit Values (ELVs).

9. Reporting

The monitoring report will include:

- Installation and permit details.
- Date, time, and duration of sampling.
- Operating load and fuel type during monitoring.
- Description of sampling location and access arrangements.
- Equipment details, calibration certificates, and detection limits.
- Results table with measured values, normalized results, ELVs, and compliance statement.
- Measurement uncertainty (95% confidence).
- Qualifications of the monitoring team.
- Photographs and diagrams of sampling setup.
- Statement of any deviations from the method.

10. Health & Safety

All work to be conducted in compliance with the site's health & safety plan.

Fall protection and PPE (harness, helmet, safety glasses, gloves) to be used at all times when accessing stack platforms.

Gas detection for oxygen deficiency or hazardous atmospheres prior to work.

11. References

ERA, "Methodology for Monitoring of Emissions to Air from Medium Combustion Plants"
EN 15259, EN 14791, EN 14792, EN 15058, EN 13284-1
S.L. 549.122 Ambient Air Quality Regulations (Second Schedule)

