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# **Breakthrough LNG deployment in Inland Waterway Transport**

## **Activity 1.5 Specification of pilot test settings**

**Pilot test settings for the bunkering station**

Nieuwegein; the Netherlands  
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## Revision History

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# 1 Introduction

This document will describe the performance indicators that are to be monitored during the pilot test for the bunkering station as described in the Grant agreement. The pilot test will be performed over an approximate 6 month period starting from the launch of the installation.

Analyses will be made on the following parameters:

- **Emissions** due to LNG technology
- **Efficiency** due to LNG technology
- **Quality, Safety** and **Security** with new LNG technology in place

The data obtained will be used to show the quality of the bunker installation itself, the improvement in efficiency the operations can make in the period of testing and the negative environmental contribution it adds to the equation.

## 2 The data

The data collected during the 6 month period will be processed every month.

### 2.1 Data sources

- SCADA – via our remote data acquisition system we can acquire data concerning alarms, venting of types of gas and technical malfunctions;
- Incident reports – number of incidents and type of incidents;
- Bunker safety checklist – The current checklist that will be used will be the IAPH checklist. Monitoring the number of customers and quantity of LNG sold and also the timestamps required to monitor the efficiency of the transition;
- Reports – emission report and audits.

### 2.2 Emission control

The Bunker installation has been designed for zero boil off. Liquid nitrogen will be used to cool the LNG during normal operation. During normal operation venting of nitrogen gas is expected but natural gas is not. During the test period any and all venting will be monitored.

- Register and report all venting of BOG – measured in minutes venting;
- Register and report all leaks – reported in # of work orders;
- Monthly LIN usage – Reported in KG of LIN;
- Noise report – one-time noise report from a 3<sup>rd</sup> party.

### 2.3 Efficiency

We expect that during the start of the installation there will be a learning curve in managing the operations. This will be reflected in the efficiency in how quick we can run the operations. We expect to make this visible by measuring the total time per service, the total time spent for the vessel and the total time spent for the operator:

- Total time per service;
- Time for cooling system;
- Number of customers/month;

- Number of LNG drops/month;
- Number of LIN drops/month.

Parameter	Frequency	Units
<i>Emission control</i>		
venting of BOG	monthly	[minutes]
LIN usage	monthly	Number of drops & kg
Noise report	1 report	Single report
<i>Efficiency</i>		
Efficiency report	monthly	Monthly report [minutes]
<i>Maintenance</i>		
Maintenance report	Monthly	Number of incidents and maintenance events
<i>Safety and Security</i>	when relevant	Number incidents and non-conformities

## 2.4 Maintenance

The maintenance report will effect the OPEX, durability, reliability and quality of service for our installation. The results from the report will give a qualitative indication and not a quantitative of what to expect.

- Generic report;
- Nr small, medium of large failures.

## 2.5 Audits

- Number and type of audits (fire, safety, class).