





CLEAN INLAND SHIPPING (CLINSH)

The main objective:

Improve air quality in urban areas by accelerating emission reductions in Inland Waterway Transport.



CLean INland SHipping main objectives

- demonstrate the environmental impact of emission reduction technologies, alternative fules and OPS in real world conditions
- Develop models on how emission reduction can be applied to the existing European IW fleet in relation to costs and benefits,
- Increase awareness and support among ship-owners and policymakers on cleaner inland shipping

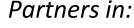












- * Belgium
- * Germany
- * Netherlands
- * UK



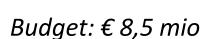


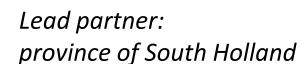


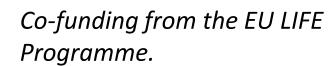
































Approach of CLINSH fleet

- Emission reducing technologies and alternative fuels are continiously monitored and discontiniously measured in practice on the CLINSH ships, until June 2020.
- In this way the effectiveness and the operating costs of different emission reduction technologies are tested.
- Measurement results are collected in a database, analysed and policy recommendations will be formulated, to provide a tool for policymakers, harbours, shipowners, etc.



Collected data

- Continuously with sensor: $NO_{X_i}O_2$
- Discontinuous (three times): PM, CO
- Calculated: CO₂
- Fuel consumption, pressure Rpm, sailing speed, engine load, tonnage, gps
- Socio-economic data



Vessels refitted with a 50% CLINSH contribution: 11 (+1 reference vessel)

- After-treatment (SCR+DPF): 5
- (including 1 with EURO VI engine + 1 reference vessel)
- Fuel-Water Emulsion: 2
- Hybrid / diesel electric: 1
- GTL: 2
- HVO (biodiesel): 1



Monitoring vessels

Vessels already equipped with emission reduction technology: 22

- SCR (DPF): 6
- GTL: 4
- Diesel electric: 4
- Hydrogen injection: 2
- LNG electric 1
- Parallel monitoring LNG (liquified natural gas): 1 (+ 1 reference vessel)
- Parallel monitoring diesel electric: 1 (+ 1 reference vessel)
- Test ship



New tender

- New tender: opening March 11 th, closing April 22th
- Refit techniques: SCR/ DPF, FWE & GTL, Euro VI, Full electric, diesel- electric, Hybrid and optimised fuel injection.
- Monitoring: LNG, CNG, Euro VI, Hybrid, CCRI, CCRII



OPS: Onshore power supply

- NOx reduction through installation of OPS
- Demonstration project in the Port of Ghent with two installations (4 connection points)
- Pilote "OPS as a service": private parties offering OPS on private quays in Nijmegen and Ghent



Lessons learned so far

- Tenderprocess has to be user friendly
- Technical and organisational challenge to install the equipment on the ships and validate the data
- Need for incentives to stimulate greening transition: no approved certification for adjustments on engines afterwards



Midterm conference CLINSH

- On March 13th in Brussels
- Provisional results CLINSH
- What needs to be done to accelerate the greening transition?