



SUSTAINABLE WATERWAY TRANSPORT, CLEAN AIR

# Know-How Transfer Event Modernisation of Danube Vessels Fleet

7 March 2019





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## 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 fuels 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*



Partners in:

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



Budget: € 8,5 mio



Lead partner:

province of South Holland



Co-funding from the EU LIFE Programme.





## Approach of CLINSH fleet

- *Emission reducing technologies and alternative fuels are continuously monitored and discontinuously 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<sub>x</sub>, O<sub>2</sub>*
- *Discontinuous (three times): PM, CO*
- *Calculated: CO<sub>2</sub>*
- *Fuel consumption, pressure Rpm, sailing speed, engine load, tonnage, gps*
- *Socio-economic data*



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## Refit vessels

*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*





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## 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*



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## 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?*