



Guideline **CLEANER SHIPS**



Inland Waterway Navigation (IWT) is an important means of transportation, after road and rail transport. While they have low CO₂ emissions, their particulate matter (PM) and nitrogen oxide (NO)_x emissions are relatively high. And while they do not contribute very much to overall emissions in Europe, locally they can be of great significance. For many cities ships are not an issue. For others their emission contribution might be of extreme importance. And while there a number of good reasons to actually shift more transport onto our rivers and shores, air quality issues need to be resolved first.

The Problem

Inland waterway vessels usually operate with Diesel engines and almost always without filter systems. As a result their NO_x and black carbon emissions are so high that its environmental advantage of low CO₂ emissions is virtually nullified. Those two air pollutants alone account

for over 95% of the air pollution impact from ships in Europe's rivers and channels.

In Duisburg, the biggest inland waterway harbour in Europe, ships contribute of up to 25% of NO_x emissions. In Düsseldorf, a smaller port, 7% of NO_x emissions are expected to come from IWT. In cities with ports or rivers where IWT is active, often IWT is the 2nd biggest emitter of NO_x.



The Industry

Europe's IWT fleet has a market share of about 6,7%, in comparison with 18,3 rail transport and over 75% of road transport. Naturally, its share in some regions in Europe is significantly higher, whereas in regions without rivers or channels it plays no role at all. The Netherlands have an IWT share of almost 40%. Netherlands, Belgium, Romania, Bulgaria and Germany together account for over 80% of Europe's IWT transport.

Within the next decades, the IWT industry will undergo a necessary transformation. In recent years already a trend towards larger ships has been visible. Also new emission limits will eventually require many ships to apply after-treatment technology.

The industry itself has repeatedly voiced their concern that investments into emission reduction would be an economically unfeasible burden for many ship owners. NGOs also support subsidy programmes that help levitating these costs. There are several examples of such programmes already in place.

Solutions

The most logical solutions to PM and NO_x emissions from ships are filter systems. Particulate filters are already tested in a broad range of ships and there is also an increasing number of ships with NO_x filter (SCR) systems.

Another potential that is in the spotlight in recent years is the switch away from Diesel to liquefied natural gas (LNG) fuel engines. The technology promises lower emission levels in CO₂, PM and NO_x. For LNG to have a truly positive environmental impact it is imminent that the risk of a leakage of methane is eliminated.

When it comes to ships at shore, the ideal solution would be to connect them to land-line

power connections. Many harbours and cities shoulder the high investments at the beginning to install power-stations for ships. New initiatives even install small LNG combustion plants on small ships. These "LNG-hybrid barges" can produce cleaner energy for ships where needed.

There are also other initiatives that reduce emission levels in ships as well, such as the fuel-water emulsion (FWE) technique.

While there are many potential solutions to the NO_x and PM emissions of IWT ships, there is no widespread application until today. This is because there are no limit values requiring them.

Without the appropriate emission limit values, the industry has no sufficient incentives. Now we come to discuss the necessary incentives, as well as already existing initiatives to promote cleaner IWT shipping.

European Legislation

European laws are important for air quality of IWT ships in several aspects. With regard to fuel quality, the EU-regulation 2005/33/EG, relating to the sulphur content of certain liquid fuels, since 2010 requires diesel fuel used in IWT to have a reduced sulphur content (<10ppm). Modern after-treatment technology like particulate filters is only possible when fuel with low sulphur content is used. This necessary precondition for filters is thus in place in Europe.



Emission limits for new IWT ships are set in the Non-Road-Mobile-Machinery regulation 2005/33/EG. Only in June 2014, the European Commission has published its proposal for a renewed “NRMM”-directive that will set standards that effectively reduce PM and NO_x emissions from ships. It is absolutely necessary that the NRMM sets sufficiently low emission limits for IWT ships to require the employment of filter systems in the vast majority of ships.

National and regional initiatives

While emission standards are set on the EU-level, there are different initiatives in several member states that aim at reducing IWT emissions. The following initiatives are examples for possible action on different policy levels:

The **German federal transport ministry** provides co-financing subsidies for emission reduction measures on ships. It covers new engines with lower emission profiles, LNG engines, other emission reduction measures, fuel consumption reduction measures, noise reduction measures, LNG storage and distribution systems for engines with reduced emissions. The fund gives subsidies of between 30% and 50% of the total costs. While all kinds of emission reduction measures would receive co-financing, in reality the industry has used the funds almost solely to finance new engines. With regard to a retrofit of filter systems, the success of the measure has

been very limited. This is due to missing incentives for ship owners to invest in additional emission reduction.

The **Dutch province of South Holland, the urban region of Rotterdam as well as the city of Rotterdam** are cooperating in a subsidy programme for NO_x reduction measures for IWT ships. They support NO_x reduction measures with a total of up to 6.2 Million Euros. The subsidy programme potentially covers installation as well as operating costs, depending on potential NO_x reduction as well as days the ship is active within Rotterdam.

What can cities do?

On the one hand cities can make sure, that ships are able to connect to landline power stations. Many cities are investing into landline power programmes, including Cologne, Düsseldorf or Rotterdam. There are many international initiatives in this aspect.

Furthermore, there are discussions of including ships into low emission zones (LEZ), thereby banning unfiltered ships from city centres. National regulation on LEZs needs to allow for this measure.

European regulation requiring ships to be retrofitted with filter systems is still a long way ahead. Currently, there a few subsidy programmes in place. What is missing are incentives for ship owners to actually reap economic benefits from retrofitting their ship.

Air pollution & Health

In 2010, more than 400,000 people died prematurely in the EU due to air pollution. That makes air pollution the main environmental cause for shortened lives in the EU. The resulting health problems cost society estimated 330-940 billion Euro per year. Over 90% of the urban population in the EU is exposed to concentrations higher than the limit values recommended by the World Health Organisation (WHO). Among the most important pollutants are black carbon (BC), which is a part of particulate matter (PM), Nitrogen Dioxide (NO₂) and ozone (O₃)



Otherwise the industry will penalise the early movers.

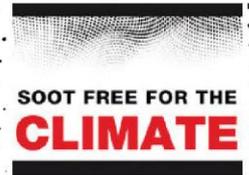
The discussion on additional measures to give incentives for cleaner ships therefore needs to be intensified. Cities and ports are in principle able to introduce port-fees based on emission levels. In some countries regional authorities are responsible for this. In any case, cooperation between regions and cities is vital, even cross-border cooperation will have benefits in this aspect, as rivers are international transport routes.

Final Words

New ships emissions are regulated by the NRMM regulation that is to be discussed in the European Parliament and Council in the second half of

2014 and beyond. For existing ships, the limits are set later. In the NAIADES II communication the European Commission sets its timetable for this on 2016/2017. Only then there will be a decision on emission limits that would require older existing ships to be retrofitted. With transitional periods we could end up waiting a full decade for binding limits.

The industry can act before that. It is also a matter of national, regional and local measures rewarding early movers. Subsidy programmes and a mix of economic levies for emission levels could speed up the transition towards cleaner Inland Waterway Navigation.



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ABOUT US

Clean Air is a project by nine European environmental organisations that fight for clean air in European cities. Despite the existing legislative framework and the citizens' right to clean air, continuing violations of air pollution limits remain a problem in many cities. Air pollution threatens health, environment and climate. It's time to take action!

www.cleanair-europe.org

Started in 2009, the associated campaign "Sootfree for the Climate" aims to reduce diesel soot emissions, which accelerate climate change and pose a threat to public health. To this day twelve European NGOs have joined the campaign.

www.sootfreeclimate.org

a project by



project coordination

co-financed by the
EU's LIFE financial
instrument



associated
campaign

