

Guideline **CONSTRUCTION MACHINERY**

Version: November 2015



The multitude of mobile machines operating with diesel engines is a considerable emission source of particulate matter (which includes among others ultrafine soot particles). Although these machines are small in total numbers and gather only low mileage, they operate for many hours a day in the same location. With construction sites as hotspots, the machines contribute considerably to high local pollutant concentrations. However, while road transport in Europe is already subject to many measures that reduce harmful emissions, construction machinery has not been sufficiently regulated.

Installing emission reduction systems in construction machinery is of crucial importance, because the machinery is used for many hours and days at the same place, endangering the health of the construction workers as well as the people living around construction sites. Here, EU-wide emission limits for new machines are absolutely necessary.

Nevertheless, construction machinery can also be effectively managed by cities, because a significant proportion of construction machinery is used on sites commissioned by the municipalities themselves. In these cases, municipalities are able to decide directly what emission limits are set for the machinery used.



No obstante, la maquinaria de construcción puede ser gestionada eficazmente por los ayuntamientos, ya que una proporción significativa de dicha maquinaria es usada en áreas gestionadas por los municipios. En estos casos, los municipios pueden establecer directamente los límites de emisión para la maquinaria usada.

Potential

In comparison with heavy duty vehicles complying with EURO 5 or 6 standards, construction machinery complying with 3A standards emit up to 10 times more ultrafine particles. And while the 3B standard does reduce overall emissions of particulate matter (PM), machines complying with it often create smaller particles that are even more hazardous to health. Numbers from Switzerland suggest that up to 1000 times more ultrafine particles are emitted from these machines.

For old machinery, only the installation of effective particulate filter systems reduces particulates by the sufficient rate of around 95%. These retrofits are not only absolutely necessary they are proven to be both technically and economically feasible. Furthermore, particulate filters need to become mandatory for new machinery as well.

Legal regulations

That European limit value stages for construction machinery were not introduced until 1999 has also contributed to their disproportionate share of overall emissions.

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 of shortened lives in the EU. The resulting health problems cost society an estimated €330-940 billion 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).

For new engines, limit values according to standard 3B with a particulate mass limit of 0.025 g/kWh have gradually been introduced since 2012. Since 2014, they have had to comply with standard 4, however PM limits have not been made stricter and only cover machines between 56 and 560 KW. Other places are way ahead of the EU, already requiring particulate filters. Good examples are Japan, California and Switzerland.

Today's legislation on exhaust emission standards for Non-Road Mobile Machinery (NRMM) is technologically outdated and does not stipulate

regular pollution checks for exhaust gases.

What needs to be done?

While EU limits and national law are preferable levels of regulation, municipalities can already act at the local level. The goal: Operating machinery has to be fitted with emission-reduction technology.



Here we formulate what needs to be done to reduce ultrafine particulate emissions from construction machinery effectively at the different policy levels:

At the European level

The revision of the guideline 97/68/EC of the European commission for the restriction of exhaust emissions of combustion engines for NRMM was delayed by several years, but the European Commission submitted its proposal in July/August 2014. European Parliament and Council have negotiated until the end of 2015 and have decided new exhaust limit stages for many different non-road emission sources within the next years. These will introduce a lot of exhaust filter solutions to these sectors.

The Swiss example

Switzerland is considered to be the role model for other countries in combating particulate matter. To avoid adverse health effects caused by these particles, the Federal Environmental Agency (BAFU) of Switzerland passed an ordinance on protecting air quality on construction sites (known as BauRLL) which came into force on 1 September 2002.

In 2008, the air-pollution control regulation was nationally harmonised and from then on applied to all construction machines in Switzerland. The legislation sets limit values for particle mass as well as particulate number. These limit values cover new as well as stock vehicles and consciously set a filter obligation for these machines.

Bremen

The German city of Bremen has decided to set emission limits for construction machinery used in all publicly tendered construction projects. Sadly, the city has not included a filter in the requirements for the machines.

At the national level

- Limit values in low-emission zones can and must apply to construction machinery as well.
- Appropriate labelling of Construction Machinery, i.e. comparable to sticker systems for Low-Emission Zones.
- Immediate filter obligations in tenders for government construction contracts.

At the local level

Several municipalities have already recognised construction machinery as a, important source of emissions. To reduce these emissions, the municipalities will have to include specific conditions in public tenders, construction planning & development plans and air quality regulations (such as air quality action plans).

Final Words

The Swizz example shows that it is already possible to achieve emission reduction in construction machinery. In the EU, the NRMM directive needs to require an additional limit of particulate numbers and an obligation to retrofit particulate filters. Switzerland has shown that regulation of construction machinery is less of a burden than argued. Cities can already lead the way and require filters for municipal construction.



CONTACT

Municipalities interested please contact us for further information:



Bund für Umwelt und Naturschutz Deutschland
(BUND) e.V. | Friends of the Earth Germany

Arne Fellermann | Phone: + 49 30 275 86-484 |
Email: arne.fellermann@bund.net

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

