

Paper/Poster-Abstract Form

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Title: UNECE Regulation concerning the approval of Retrofit Emission Control Devices (REC)

Abstract: (min. 300 – max. 500 words)

The abstracts for papers and posters must contain unpublished information on your research subject: background, investigation methods, results and conclusions. Graphs and references are very welcome. Acronyms should be avoided. Abstracts with < 300 words can not be considered. General information on products which are already commercially available can not be accepted as presentations for the conference but are very welcome at the exhibition of particle filter systems and nanoparticle measurement instruments.

Background:

The informal working group on Retrofit Emission Control devices (REC) was established in June 2010 within the Working Party on Pollution and Energy (GRPE) of the UNECE in order to evaluate harmonized requirements for retrofit emission control devices with the aim to facilitate testing and type approval of such devices. Furthermore, the group was given the task to develop a draft regulation for REC to be installed on heavy duty vehicles, non-road mobile machinery and tractors resulting from these evaluations and submit it for consideration by GRPE.

On June 6 2013, GRPE has approved the proposal for a new regulation prepared by the informal working group. To become effective, the regulation now needs to be accepted by the World Forum for Harmonization of Vehicle Regulations (WP 29). For formal reasons and in order to offer contracting parties to be able to chose from two levels of stringency, the informal group is working on an amendment to the regulation which is scheduled to be presented to GRPE in January 2014.

Scope of the Regulation:

The regulation covers REC to be installed on trucks, busses, non-road mobile machinery and tractors, for:

- C.I.(Diesel)- engine busses and trucks (categories M2, M3 and N)
- C.I. engines with net power >18 kW and ≤560 kW installed in non-road mobile machinery, operated under variable speed
- C.I. engines with net power >18 kW and ≤560 kW installed in non-road mobile machinery, operated under constant speed
- C.I. engines with net power >18 kW and ≤560 kW installed in tractors (T-category vehicles).

The regulation identifies 4 different classes of REC, distinguished by their purpose:

- Class I: PM reduction, zero increase in NO₂
- Class II: PM reduction, limited increase in NO₂
- Class III: NO_x reduction
- Class IV: Both PM and NO_x reduction

Performance Requirements

The regulation combines two different approaches regarding the requirements on the performance of a REC: The engine retrofitted with a REC must meet at least the limits of the next more stringent emission stage for the relevant pollutants (NO_x or PM, or both as appropriate for the REC class). In addition, the REC must have a certain minimum emission reduction efficiency in addition to meeting the next stage of emissions limits. The minimum reduction efficiency is currently set at 50% for PM and 60% for NO_x. However, the above mentioned amendment to the regulation is proposing to increase the minimum reduction efficiency for PM to 90% as well as to introduce a minimum reduction efficiency of 97% for particle number (PN).

In addition, the regulation contains various other requirements concerning for example secondary emissions, durability, monitoring or operator warning. All performance requirements as well as the defined test procedures may be found in the regulation:

<http://www.unece.org/fileadmin/DAM/trans/doc/2013/wp29grpe/ECE-TRANS-WP29-GRPE-2013-06e.pdf>

Short CV:

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P. Hallauer graduated from the University of Bern in Geographic sciences in 2007 (MSc. Geography). He worked for the Federal Finance Administration and changed to the FOEN in 2010. In 2011 he completed a Master's degree in Public Management & Policy.

Responsibilities: non-road emission reduction measures, particle filter systems and DeNO_x, market surveillance, stationary internal combustion engines (CHPs).

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UNECE Regulation Concerning the Approval of Retrofit Emission Control Devices (REC)

25.06.2013

17th ETH-Conference on Combustion Generated
Nanoparticles



Agenda

United Nations

ECE/TRANS/WP.29/GRPE/2013/6



Economic and Social Council

Distr.: General
22 March 2012

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Pollution and Energy

Sixty-sixth session

Geneva, 3-7 June 2013

Item 4(b) of the provisional agenda

Retrofit Emission Control Devices (REC)

Proposal for a new Regulation on uniform provisions concerning the approval of Retrofit Emission Control Devices (REC) for heavy duty vehicles, agricultural and forestry tractors and non-road mobile machinery equipped with compression ignition engines

Submitted by the Chair of the informal working group on Retrofit Emission Control devices (REC)*

The text reproduced below was prepared by the chairman of the informal working group on Retrofit Emission Control devices (REC) regarding a proposal for a new Regulation on REC.

- **The UNECE REC Regulation**
- **News from the GRPE meeting June 3-7**
- **Implications for Switzerland?**



The UNECE REC Regulation: Scope

- The regulation will cover Retrofit Emission Control Systems (REC) to be installed on trucks, busses, non-road mobile machinery and tractors, for
 - C.I.(Diesel)- engined buses and trucks
 - C.I. engines with net power >18 kW and ≤ 560 kW installed in non-road mobile machinery (variable & constant speed)
 - C.I. engines with net power >18 kW and ≤ 560 kW installed in tractors (T-category vehicles).
- Light-duty vehicles - those approved according to UN Regulation 83 - are not covered.



How does it work?

- Four classes of REC, distinguished by purpose:
 - Class I: PM reduction, zero increase in NO₂
 - Class II: PM reduction, limited increase in NO₂
 - Class III: NO_x reduction
 - Class IV: Both PM and NO_x reduction
- Main requirements:
 - The retrofitted engine shall not exceed the emission limits of the next higher emission stage;
 - **AND:** Compliance with minimum reduction efficiency!
- Two levels: base-regulation and amendment 01



Series of amendments 01

United Nations

ECE/TRANS/WP.29/GRPE/2012/[-]



Economic and Social Council

Distr.: General
[Day / Month / Year]

Original: English

(New template)

Key changes:

Economic Commission for Europe
Inland Transport Committee
World Forum for Harmonization of Vehicle
Working Party on Pollution and Energy
[Sixty-sixth] session
Geneva, [dd/ June/ 2013]
Item [X] of the provisional agenda
Retrofit Emission Control Devices (REC)

Proposal for an amendment

- Minimum reduction efficiency for PM (class I, II and IV REC): 90% (instead of 50%)
- **Particle Number emissions requirements: reduction efficiency of at least 97%**
- Maximum increase in NO₂–emissions from class II REC?



GRPE meeting June 3-7

- REC base-regulation has been approved by GRPE on June 6.
 - **Next step: WP29.**
- Amendment 01 was accepted by GRPE as informal document.
- To be resolved for amendment 01:
 - Maximum %NO₂ increase for class II REC?
 - „Scope“
 - Only one meeting of the REC informal group is left to resolve the open issues.

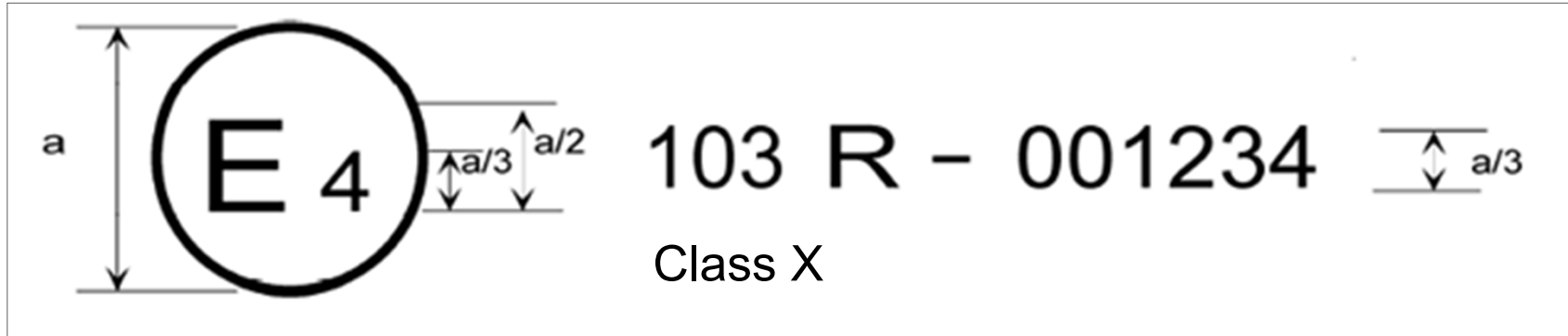


Implications for Switzerland

- No immediate effect of the regulation.
 - However: important signal: **first harmonised retrofit regulation on UNECE level!**
- Swiss legislation concerning DPF-retrofit (construction sites, public busses, heavy vehicle charge discount) may refer to the REC regulation once amendment 01 comes into effect.
- **Meanwhile:** Conformity procedure for particle filter systems: Testing according to REC Regulation instead of Swiss Norm SN277206 is now possible.



Questions?



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