A new EU Regulation for engines in non-road mobile machinery (NRMM)

GRPE session, June 2016

European Commission
Unit C.4 - Automotive and Mobility Industries
DG for Internal Market, Industry, Entrepreneurship and SMEs
DIRECTIVE 97/68/EC
OF THE EP AND OF THE COUNCIL
of 16 December 1997
on the approximation of the laws of the Member States relating to
measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery (NRMM)

- It’s about
  - Engines – not vehicles or machinery!
  - Pollutant emissions – gaseous (CO, NOx, HC) & particulate (PM)!
  - Emission limits & type-approval procedures
Guiding principles for revising EU legislation

Pathways for revision of Directive 97/68/EC

- Scope extension
- New emission limits
- Enhancing provisions

- Strive alignment with (higher) US EPA standards, where appropriate
- Address health-damaging evidence of ultrafine particulate matter
- Catch up with on-road technology trends
- Harmonise requirements across EU
- Simplification & closing loopholes in legislation
New NRMM Regulation

Land-based NRMM

SI – Spark-ignited (gasoline)

<table>
<thead>
<tr>
<th>SI 0-19kW</th>
<th>SI 19-56kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI 0-8kW</td>
<td>CI 8-19kW</td>
</tr>
<tr>
<td>CI 19-37kW</td>
<td>CI 37-56kW</td>
</tr>
</tbody>
</table>

CI – Compression-ignited (diesel)

Rail - Locomotives

>0kW

Rail - Railcars

>0kW

Inland Waterway Vessels (IWV)

<table>
<thead>
<tr>
<th>37-75kW</th>
<th>75-130kW</th>
<th>130-300kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>300-1000kW</td>
<td>≥1000kW</td>
<td></td>
</tr>
</tbody>
</table>

Snowmobiles

>0kW

All Terrain & Side-by-Side Vehicles

>0kW

Scope of Directive 97/68/EC

Scope extensions new NRMM Regulation

New scope of application

Internal market, Industry, Entrepreneurship and SMEs
Some key features of the new Regulation

• Regulation
• Enhanced market-surveillance provisions
• Simplification of administrative procedures
• New transition scheme, with staggered introduction dates
• Monitoring of emissions from in-service engines
• Type-approval also for gas-fuelled engines (partial/mono)
• Eliminating "greyzones" (field testing, sep. shipment, ATEX,...)
• Early type-approval for Stage V
Adoption process

NRMM Regulation
Co-Decision Act (CDA)
Delegated Act (DA)
Supplementing Regulation on NRMM
Delegated Act (DA)
Implementing Act (IA)
Supplementing Regulation on NRMM
Implementing Act (IA)
Commission

2014
Oct-Dec
2015
Jan-Dec
2016
Jan-Dec
TODAY
2017
Jan-Mar

Adoption by Legislators
Entry into force of NRMM Regulation

Application of NRMM Regulation + Repeal of Dir 97/68/EC

Internal market, Industry, Entrepreneurship and SMEs
Timetable - Application of New NRMM Regulation

Entry into force*

Date of application* (DA & IA adopted)

Mandatory dates of application of Stage V – Placing on the market of engines

New NRMM Regulation


YEAR 1 YEAR 2 YEAR 3

• SI engines 19-56 kW
• CI engines <19 kW
• Engines >560 kW
• SI engines for ATV & SBS
• SI engines for snowmobiles

TA

YEAR 1 YEAR 2 YEAR 3 YEAR 4

• SI engines <19 kW
• CI engines 19-56 kW
• Engines 130-560 kW
• Engines inland waterway vessels 19-300 kW

TA

YEAR 1 YEAR 2 YEAR 3 YEAR 4 YEAR 5

• Engines 56 -130 kW
• Engines inland waterway vessels >300 kW

TA

Mandatory dates of application of Stage V – EU Type-Approval of engines

* Floating date!

Internal market, Industry, Entrepreneurship and SMEs
**Land-based NRMM**
*(CI <56kW & Engines >56kW)*

<table>
<thead>
<tr>
<th>CI engines &lt; 56kW &amp; Engines &gt;56kW</th>
<th>Directive 97/68</th>
<th>New NRMM proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>emissions in g/kWh</strong></td>
<td>Stage</td>
<td>CO</td>
</tr>
<tr>
<td>CI engines 0 - 8 kW</td>
<td>variable &amp; constant</td>
<td>-</td>
</tr>
<tr>
<td>CI engines 8 - 19 kW</td>
<td>variable &amp; constant</td>
<td>-</td>
</tr>
<tr>
<td>CI engines 19 - 37 kW</td>
<td>variable &amp; constant</td>
<td>-</td>
</tr>
<tr>
<td>CI engines 37 - 56 kW</td>
<td>variable</td>
<td>IIIA</td>
</tr>
<tr>
<td>CI engines 56 – 130 kW</td>
<td>constant</td>
<td>IIIA</td>
</tr>
<tr>
<td>Engines 56-75 kW</td>
<td>variable</td>
<td>IV</td>
</tr>
<tr>
<td>Engines 75 – 130 kW</td>
<td>constant</td>
<td>IIIA</td>
</tr>
<tr>
<td>Engines 130 – 560 kW</td>
<td>variable</td>
<td>IV</td>
</tr>
<tr>
<td>Engines P &gt; 560 kW</td>
<td>variable &amp; constant - Gen-Sets</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>variable &amp; constant - others</td>
<td>-</td>
</tr>
</tbody>
</table>

- Limit values in line with US legislation
- Limit values more stringent than US legislation

**Scope of Directive 97/68/EC**
- Additional in new NRMM proposal
## Land-based NRMM (SI engines)

**Snowmobiles**

<table>
<thead>
<tr>
<th>Category</th>
<th>Power Range</th>
<th>Stage</th>
<th>CO</th>
<th>NOx</th>
<th>HC</th>
<th>PM</th>
<th>PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI engines 0-19 kW - handheld</td>
<td>&lt;20cc</td>
<td>II</td>
<td>805</td>
<td>50</td>
<td>-</td>
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<td></td>
<td>20-50cc</td>
<td>II</td>
<td>805</td>
<td>50</td>
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<tr>
<td></td>
<td>&gt;50cc</td>
<td>II</td>
<td>603</td>
<td>72</td>
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<tr>
<td>SI engines 0-19 kW - non-handheld</td>
<td>&lt;66cc</td>
<td>II</td>
<td>610</td>
<td>50</td>
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<td>-</td>
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<tr>
<td></td>
<td>66-100cc</td>
<td>II</td>
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<tr>
<td></td>
<td>100-225cc</td>
<td>II</td>
<td>610</td>
<td>16.1</td>
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<tr>
<td></td>
<td>&gt;225cc</td>
<td>II</td>
<td>610</td>
<td>12.1</td>
<td>-</td>
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**All Terrain & Side-by-Side Vehicles**

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<th>NOx</th>
<th>HC</th>
<th>PM</th>
<th>PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI engines 19 – 30 kW</td>
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<tr>
<td>SI engines 19 – 56 kW</td>
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<tr>
<td>Engines for snowmobiles</td>
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<td>Engines for ATV &amp; SBS</td>
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</tbody>
</table>

### Limit values in line with US legislation

- CO: 805
- NOx: 50
- HC: 72
- PM: 12.1
- PN: 400

### Directive 97/68

- CO: 805
- NOx: 50
- HC: 72
- PM: 12.1
- PN: 400

### New NRMM proposal

- CO: 805
- NOx: 50
- HC: 72
- PM: 12.1
- PN: 400

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1) Limit values depending on (NOx+HC) / CO combinations

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**Scope of Directive 97/68/EC**

- Land-based NRMM
- Industry, Entrepreneurship
- SMEs

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**Additional in new NRMM proposal**

- SI 0-19kW
- SI 19-56kW
- SI 19-30kW
- SI 19-56kW
- Engines for snowmobiles
- Engines for ATV & SBS
UNECE Regulation 96

on

Uniform provisions concerning the approval of compression ignition (C.I.) engines to be installed in agricultural and forestry tractors and in non-road mobile machinery with regard to the emissions of pollutants by the engine

- *R 96 covers part of the scope of new EU Regulation on NRMM*
- *Need to align R 96 with new EU Regulation on NRMM*
Thank you

For further information