Euro 6 – What’s Next?

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Fig. 1: Modal Split – European Freight Transport

Source: EUROSTAT
EMISSIONS EURO 1 – EURO 6

Fig. 2: Emissions Euro 1 – Euro 6

Fig. 3: DAF Truck
THE NEW EURO 6 – DAF XF

- Ultra low emissions
- Same low fuel consumption
- No weight impact
- All vehicle characteristics enhanced
- Prepared for the future

Fig. 4: The New Euro 6 – DAF XF

EURO 6 – WHAT’S NEXT?

- NOx and PM levels almost at zero emission level
- Focus on CO$_2$/ GHG
  - Air quality requirements and market forces strengthen each other
  - CO$_2$ = fuel consumption
- No legislation required
- No one size fits all regulation
- Work done principle
- Future shortage fossil fuels

Fig. 5: Euro 6 – What’s Next?
Fig. 6: No One Size Fits All

Fig. 7: Impact of Different Vehicle Sizes to Transport 106 EU Pallets

* 600 kg/pallet
Source: ACEA
**Fig. 8:** Impact of Different Vehicle Sizes to Transport 106 EU Pallets

**Fig. 9:** Impact of Different Vehicle Sizes to Transport 106 EU Pallets
EURO 6 – WHAT’S NEXT?

- Industry continues to further reduce fuel consumption
- Enhanced engine efficiency
  - Down speeding
  - Down sizing
  - Reduced parasitics
- Energy management
  - Waste heat recovery
  - Hybridization
  - Electrification

Fig. 10: Euro 6 – What’s Next?

EURO 6 – WHAT’S NEXT?
NEW AND EMERGING TECHNOLOGIES

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>Vehicle Type</th>
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<tbody>
<tr>
<td>Dual Fuel Systems</td>
<td>Low rolling resistance tyres</td>
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<tr>
<td>Variable flow / Electric water pump</td>
<td>Single Wide Tyres</td>
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<tr>
<td>Variable speed Oil pump</td>
<td>Automatic Tyre Pressure Adjustment</td>
</tr>
<tr>
<td>Hydrogen Fuel Cells</td>
<td>Spray Reduction Mud Flaps</td>
</tr>
<tr>
<td>Electric Vehicles</td>
<td>Aerodynamic Trailers</td>
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<tr>
<td>Stop/Start Hybrid</td>
<td>Aerodynamic Fairings (Cab, Chassis, Body &amp; Trailer)</td>
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<tr>
<td>Hydraulic Hybrid</td>
<td>Active Aero</td>
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<tr>
<td>Flywheel Hybrid</td>
<td>Lightweight Materials</td>
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<td>Pneumatic Booster System – Air Hybrid</td>
<td>Alternative Fuel Bodies</td>
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<td>Mechanical Turbo compound</td>
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<td>Electrical Turbo compound</td>
<td>Predictive Cruise Control</td>
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<td>Bottoming Cycles</td>
<td>Vehicle Platooning</td>
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<td>Controllable Air Compressor</td>
<td>Green Zone Indicator</td>
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<td>Electric Engine Accessories</td>
<td>Smart Alternator, Battery Sensor &amp; AGM Battery</td>
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<td>Drive Line</td>
<td>Acceleration Control</td>
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<tr>
<td>Automated Transmission</td>
<td>Governing Speed Control – Progressive Shift</td>
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<td>Full Hybrid</td>
<td>Eco-Run – Freewheel Function</td>
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Source: AEA study European Union

Fig. 11: New and Emerging Technologies
EURO 6 – WHAT’S NEXT?
THE INTEGRATED APPROACH

- Vehicle weights and dimensions
  - Eco combi’s
  - Enhanced aerodynamics
    - Productivity or efficiency?
- Technologies to avoid empty kilometers

Fig. 12: The Integrated Approach

EURO 6 – WHAT’S NEXT?
SMART MOBILITY

Fig. 13: Smart Mobility
Fig. 14: Euro 6 – What’s Next?

Fig. 15: Shortage of Resources
EURO 6 – WHAT’S NEXT?
SHORTAGE OF ENGINEERS

Fig. 16: Shortage of Engineers

EURO 6 – WHAT’S NEXT?
TRUE GLOBAL HARMONIZATION

Fig. 17: True Global Harmonization
EURO 6 – WHAT’S NEXT?
RELIABILITY IS KEY

Fig. 18: Reliability is Key

EURO 6 – WHAT’S NEXT?
INTERESTING CHALLENGES AHEAD

Fig. 19: Interesting Challenges Ahead
Fig. 20: DAF Truck