



# Legislation on Mobile Air Conditioning Systems – A European Perspective

R Meininghaus  
ACEA

VDA Wintermeeting, Feb 2008

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## Legislation on MAC – A European Perspective

### **Who is ACEA**

- ACEA is an industry association, established in 1991 by the major European car, truck and bus manufacturers
- ACEA members:  
BMW Group, DAF Trucks, Daimler, FIAT, Ford of Europe, General Motors Europe, MAN Nutzfahrzeuge, Porsche, PSA Peugeot Citroën, Renault, Scania, Volkswagen, Volvo and since January 2008 Toyota Motor Europe.



## Legislation on MAC – A European Perspective

### **Why ACEA**

- Represent vital interests
  - 12 million families depend on the sector for employment
  - yearly investment in R&D €20 billion;
  - vehicle taxes deliver 3.5% of EU gross domestic product
- Maintain a dialogue with the institutions and stakeholders



## Legislation on MAC – A European Perspective

### **Why ACEA**

- Automotive industry one of the most regulated sectors in EU
  - > 80 EU directives, >115 pieces of legislation have been internationalized (UN/ECE)
  - much of this concerns type approval
  - very technical in nature and cannot be drafted without the specialist knowledge of vehicle manufacturers
  - ACEA secretariat in Brussels: collects the necessary information through working groups → EU institutions



## Legislation on MAC – A European Perspective

### **Seven priority fields (selection)**

1. Reducing over-regulation and conflicting objectives of legislation via adequate and independent impact assessment studies, and reasonable lead-time periods for implementation.
2. Global harmonisation of technical regulations and standards for motor vehicles.
3. Adoption of an Integrated Approach to important societal issues such as road safety and CO<sub>2</sub>-emissions, involving all relevant actors and factors.
4. - ... [www.acea.be](http://www.acea.be)



## Legislation on MAC – A European Perspective

### **MAC Specific Legislation**

- Directive 2006/40/EC  
“...emissions from air-conditioning systems in motor vehicles...”
- Regulation 706/2007  
“...administrative provisions for the EC type-approval of vehicles, and a harmonized test for measuring leakages from certain air conditioning systems”

### **Other Potentially Relevant Legislation**

- Regulation 842/2006  
“on certain fluorinated greenhouse gases”
- Directive 97/23/EC (Pressure Equipment Directive)  
“on the approximation of the laws of the Member States concerning pressure equipment”



# Legislation on MAC – A European Perspective

## Directive 2006/40/EC

“...Emissions from air-conditioning systems in motor vehicles...”

### MAC specific Environment Targets, Timeline

L 161/12 EU Official Journal of the European Union 14.6.2006

DIRECTIVE 2006/40/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
of 17 May 2006  
relating to emissions from air-conditioning systems in motor vehicles and amending Council  
Directive 70/154/EEC  
(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE  
EUROPEAN UNION,

Having regard to the Treaty establishing the European Commu-  
nity and in particular Article 95 thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and  
Social Committee<sup>(1)</sup>,

Acting in accordance with the procedure laid down in Article 251  
of the Treaty<sup>(2)</sup>, in the light of the joint text approved by the  
Constitution Committee on 14 March 2004,

Whereas

(1) The internal market comprises an area without internal  
frontiers in which the free movement of goods, persons,  
services and capital must be ensured, and to that end a  
Community type-approval system for motor vehicles is in  
place. The technical requirements for the type-approval of  
motor vehicles with regard to air-conditioning systems  
should be harmonised to avoid the adoption of require-  
ments that differ from one Member State to another and to  
ensure the proper functioning of the internal market.

(2) A growing number of Member States intend to regulate the  
use of air-conditioning systems in motor vehicles as a  
consequence of Council Decision 2002/358/EC of 25 April  
2002 concerning the approval, on behalf of the European  
Community, of the Kyoto Protocol to the United Nations  
Framework Convention on Climate Change and the joint  
fulfilment of commitments thereunder<sup>(3)</sup>. The Decision  
commits the Community and its Member States to reduce  
their aggregate anthropogenic emissions of greenhouse  
gases listed in Annex A to the Kyoto Protocol by 8 %  
compared to 1990 levels in the period from 2008 to 2012.  
The uncoordinated implementation of these commitments  
carries the risk of creating barriers to the free movement of

motor vehicles in the Community. Therefore it is appro-  
priate to lay down the requirements to be fulfilled by air  
conditioning systems fitted to vehicles in order to be  
allowed on the market and to prohibit from a certain date  
air conditioning systems designed to contain fluorinated  
greenhouse gases with a global warming potential  
higher than 150.

(3) Emissions of hydrofluorocarbon-134a (HFC-134a), which  
has a global warming potential of 1 300, from air-  
conditioning systems in motor vehicles are of growing  
concern because of their impact on climate change. Cost-  
effective and safe alternatives to hydrofluorocarbon-134a  
(HFC-134a) are expected to be available in the near future.  
A review should be carried out to establish, in the light of  
progress in potential constraints of emissions from, or  
replacement of, fluorinated greenhouse gases in such  
systems, whether this Directive should be extended to  
other categories of motor vehicle and whether the  
provisions concerning the global warming potential of  
these gases should be amended, taking account of  
technological and scientific developments and the need to  
respect industrial product planning timescales.

(4) In order to ensure that the prohibition of certain  
fluorinated greenhouse gases is effective, there is a need  
to limit the possibility of retrofitting motor vehicles with  
air-conditioning systems designed to contain fluorinated  
greenhouse gases with a global warming potential higher  
than 150 and to prohibit fitting air-conditioning systems  
with such gases.

(5) In order to limit the emissions of certain fluorinated  
greenhouse gases from air conditioning systems in motor  
vehicles it is necessary to establish limit values for leakage  
rates and the test procedure for the assessment of leakage in  
air conditioning systems designed to contain fluorinated  
greenhouse gases with a global warming potential higher  
than 150 which are fitted to motor vehicles.

(6) In order to contribute to the fulfilment of the commitments  
of the Community and its Member States under the  
UN Framework Convention on Climate Change, the Kyoto  
Protocol and Decision 2002/358/EC, Regulation (EC)  
No 842/2006 of the European Parliament and of the  
Council of 17 May 2006 on certain fluorinated greenhouse  
gases<sup>(4)</sup> and this Directive, which both contribute to the  
reduction of emissions of fluorinated greenhouse gases,  
should be adopted and published in the Official Journal of the  
European Union simultaneously.

<sup>(1)</sup> OJ C 105, 30.4.2004, p. 62.

<sup>(2)</sup> Opinion of the European Parliament of 3 March 2004 (OJ C 103 E,  
29.4.2004, p. 600), Council Common Position of 21 June 2003 (OJ  
C 153 E, 26.7.2003, p. 17) and Decision of the European Parliament of  
26 October 2003 (not yet published in the Official Journal),  
Legislative Resolution of the European Parliament of 6 April 2006  
and Council Decision of 25 April 2006.

<sup>(3)</sup> OJ L 150, 15.5.2002, p. 1.

<sup>(4)</sup> See page 1 of this Official Journal.



## Legislation on MAC – A European Perspective

### **Directive 2006/40/EC**

#### **Key Elements**

- Requirements for type approval on emissions from and the safe functioning of MAC
- Target definitions for phase out of greenhouse gasses  
GWP>150
- M1 N1 vehicles
- Requirement: Manufacturers provide information on refrigerant type



# Legislation on MAC – A European Perspective

## Targets: Phase Out / Type Approval

When	What	How
<b>6 months</b> from date of adoption of harmonised leakage detection test:	new type of vehicle	No refusal for a new type of vehicle, to grant EC / National type approval, or prohibit registration, sale or entry into service of new vehicles, if MAC with GWP > 150 complies with requirements
<b>12 months</b> from date of adoption of a harmonised leakage detection test or 1 January 2007, whichever is later	type of vehicle leakage rate 40/60	<del>no longer grant EC / national type-approval for a type of vehicle with MAC with GWP &gt; 150, unless leakage rate does not exceed 40 / 60 g per year single evaporator / dual evaporator system</del>
<b>24 months</b> from the date of adoption of a harmonised leakage detection test or 1 January 2008, whichever is later	new vehicles leakage rate 40/60	new vehicles fitted with MAC with GWP > 150, unless leakage rate does not exceed 40 / 60 grams single evaporator / dual evaporator system MS shall <del>consider certificates of conformity to be no longer valid for the and (b) refuse</del> registration and prohibit sale and entry into service
<b>1 January 2011</b>	type of vehicle GWP > 150	<del>no longer grant EC / National type-approval for a type of vehicle fitted with MAC GWP &gt; 150</del>
<b>1 January 2017</b>	new vehicles GWP > 150	in respect of new vehicles which are fitted with MAC GWP > 150, Member States shall <del>consider certificates of conformity to be no longer valid; and</del> refuse registration and prohibit sale and entry into service.



# Legislation on MAC – A European Perspective

## Regulation 706/2007

administrative provisions for the EC type-approval of vehicles, and a harmonized test for measuring leakages from certain air conditioning systems

MAC specific  
Environment  
Technical Details

22.6.2007	EN	Official Journal of the European Union	L 161/33
<b>COMMISSION REGULATION (EC) No 706/2007</b> of 21 June 2007			
laying down, pursuant to Directive 2006/40/EC of the European Parliament and of the Council, administrative provisions for the EC type-approval of vehicles, and a harmonized test for measuring leakages from certain air conditioning systems (text with EEA relevance)			
THE COMMISSION OF THE EUROPEAN COMMUNITIES,	HAS ADOPTED THIS REGULATION:		
Having regard to the Treaty establishing the European Community,	Article 1 Subject matter		This Regulation lays down certain measures for the implementation of Articles 4 and 5 of Directive 2006/40/EC.
Having regard to Directive 2006/40/EC of the European Parliament and of the Council of 17 May 2006 relating to emissions from air-conditioning systems in motor vehicles and amending Council Directive 70/154/EEC <sup>(1)</sup> , and in particular Article 7(1) thereof,	Article 2 Definitions		for the purposes of this Regulation the following definitions shall apply:
Whereas			1. 'vehicle type' with regard to emission from air-conditioning systems' means a group of vehicles which do not differ as regards the refrigerant used or other main characteristics of the air-conditioning system or as regards the evaporator system, whether single or dual;
(1) Directive 2006/40/EC is one of the separate directives under the EC type-approval procedure established by Directive 70/154/EEC <sup>(2)</sup> .			2. 'type of air-conditioning system' means a group of air-conditioning systems which do not differ either as regards their trade name or mark of their manufacturer or as regards their leak components included therein;
(2) Directive 2006/40/EC requires vehicles which are fitted with air-conditioning systems designed to contain fluorinated greenhouse gases with a global warming potential higher than 150 to be type-approved with regard to emissions from those air-conditioning systems. It also establishes limit values for leakage rates from such systems. It is therefore necessary to establish a harmonised detection test for measuring the leakage rate of such gases and to adopt provisions necessary to implement Directive 2006/40/EC.			3. 'leak component' means any of the following parts of an air-conditioning system or an assembly of such parts: (a) hose including crimping; (b) individual connections, whether male or female; (c) valves, switches and sensors; (d) thermal expansion valves with connections; (e) evaporator with external connections; (f) compressor with connections; (g) condenser with integrated serviceable dryer; (h) receiver/dryer with connections; (i) accumulator with connections;
(3) Directive 2006/40/EC prohibits from a certain date the placing on the market of new vehicles fitted with air-conditioning systems designed to contain fluorinated greenhouse gases with a global warming potential higher than 150. At this moment, the only identified fluorinated gas with a global warming potential higher than 150 used as refrigerant in mobile air-conditioning systems is HCFC-134a. The leakage detection test should therefore be established for that gas.			
(4) The measures provided for in this Regulation are in accordance with the opinion of the Committee for Adaptation to Technical Progress.			
<sup>(1)</sup> OJ L 161, 14.6.2006, p. 12.			
<sup>(2)</sup> OJ L 42, 23.2.1970, p. 1. Directive as last amended by Directive 2009/64/EC (OJ L 343, 20.12.2009, p. 81).			



## Legislation on MAC – A European Perspective

### **Regulation 706/2007**

#### **Key Elements**

- 5 January 2008 in force
- Test for compliance with leakage limits of 2006/40/EC
- Grant EC component type-approval to type of leak component / type of air-conditioning system in compliance
- Manufacturer to submit a leak component or an air-conditioning system (worst case sample)
- Annex II: harmonized leakage detection test



## Legislation on MAC – A European Perspective

### **“ACEA members will replace cooling refrigerants in accordance with EU law”**

- “The European automobile manufacturers will change the refrigerant used in the airconditioning systems of their vehicles in accordance with the European requirements ..., to better meet environmental needs.”
- “EU decided... to leave the technological decision to the automotive industry, stimulating competitive research to find the best technical solution(s) and respecting the important principle of technology neutrality.”
- ...

([www.acea.be](http://www.acea.be))



# Legislation on MAC – A European Perspective

## Regulation 842/2006 on certain fluorinated greenhouse gases

- Not MAC specific
- Environment

L 161/12 EN Official Journal of the European Union 14.6.2006

DIRECTIVE 2006/40/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL  
of 17 May 2006  
relating to emissions from air-conditioning systems in motor vehicles and amending Council  
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Having regard to the Treaty establishing the European Community  
and in particular Article 95 thereof,

Having regard to the proposal from the Commission,

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Social Committee<sup>(1)</sup>,

Acting in accordance with the procedure laid down in Article 251  
of the Treaty<sup>(2)</sup> in the light of the joint text approved by the  
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Whereas

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frontiers in which the free movement of goods, persons,  
services and capital must be ensured, and to that end a  
Community type-approval system for motor vehicles is in  
place. The technical requirements for the type-approval of  
motor vehicles with regard to air-conditioning systems  
should be harmonised to avoid the adoption of requirements  
that differ from one Member State to another and to  
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use of air-conditioning systems in motor vehicles as a  
consequence of Council Decision 2002/358/EC of 25 April  
2002 concerning the approval, on behalf of the European  
Community, of the Kyoto Protocol to the United Nations  
Framework Convention on Climate Change and the joint  
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their aggregate anthropogenic emissions of greenhouse  
gases listed in Annex A to the Kyoto Protocol by 8 %  
compared to 1990 levels in the period from 2008 to 2012.  
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carries the risk of creating barriers to the free movement of

motor vehicles in the Community. Therefore it is appropriate  
to lay down the requirements to be fulfilled by air-  
conditioning systems fitted to vehicles in order to be  
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No 842/2006 of the European Parliament and of the  
Council of 17 May 2006 on certain fluorinated greenhouse  
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reduction of emissions of fluorinated greenhouse gases,  
should be adopted and published in the Official Journal of the  
European Union simultaneously.

(1) OJ C 105, 30.4.2004, p. 62.

(2) Opinion of the European Parliament of 3 March 2004 (OJ C 303 E,  
29.4.2004, p. 400), Council Common Position of 21 June 2005 (OJ  
C 163 E, 26.7.2005, p. 17) and Position of the European Parliament of  
26 October 2005 (not yet published in the Official Journal),  
Legislative Resolution of the European Parliament of 6 April 2006  
and Council Decision of 25 April 2006.

(3) OJ L 150, 15.5.2002, p. 1.

(4) See page 1 of this Official Journal.



## Legislation on MAC – A European Perspective

### **Regulation 842/2006**

on certain fluorinated greenhouse gases

#### **Key Elements**

- Objective: contain, prevent and thereby reduce emissions of the fluorinated greenhouse gases covered by the Kyoto Protocol
- containment, use, recovery and destruction / fluorinated greenhouse gases
- labeling and disposal of products and equipment
- reporting of information (importer / exporter)
- training and certification of personnel and companies



# Legislation on MAC – A European Perspective

## **Regulation 842/2006**

on certain fluorinated greenhouse gases

### (3) Containment

Stationary applications - refrigeration, air conditioning and heat pump equipment, including their circuits – with FGG: prevent leakage / repair any detected leakage

### (4) Recovery

FGG in mobile equipment: recovery by appropriately qualified personnel, to ensure recycling / reclamation / destruction

### (5) Training and Certification

Training programs / certification: companies + relevant personnel involved in installation / maintenance / servicing of Article 3; personnel involved in the activities of Articles 3 and 4

### (6) Reporting

Report to competent authority / Member State; Importer > 1 ton FGG / year: quantity of each FGG imported / placed on market, identifying main applications; Exporter > 1 ton FGG / year: quantity of each FGG exported, any quantities of each FGG exported for recycling / reclamation / destruction, but (1493/2007): report-format not for pre-charged equipment

### (7) Labeling

MAC exempted



# Legislation on MAC – A European Perspective

## Directive 97/23/EC (PED Directive)

on the approximation of the laws of the Member States concerning pressure equipment

[http://ec.europa.eu/enterprise/pressure\\_equipment/ped/index\\_en.html](http://ec.europa.eu/enterprise/pressure_equipment/ped/index_en.html)

- Safety /Health
- Vertical

The screenshot shows a Mozilla Firefox browser window displaying the European Commission website. The page title is "Enterprise & Industry - Pressure Equipment - PED - PED: The Text". The address bar shows the URL: [http://ec.europa.eu/enterprise/pressure\\_equipment/ped/directive/index\\_en.html](http://ec.europa.eu/enterprise/pressure_equipment/ped/directive/index_en.html). The page content includes a navigation menu on the left with links to "Pressure Equipment Sector", "PED / Pressure Equipment Directive", "SPVD/Simple Pressure Vessels Directive", "ADD/Aerosol Dispensers Directive", and "TPED/Transportable Pressure Equipment Directive". The main content area is titled "PED: THE TEXT" and features a navigation bar with links from "PREAMBLE" to "17-21". The text of the directive is displayed, starting with the PREAMBLE: "Directive 97/23/EC of the European Parliament and of the Council of 29 May 1997 on the approximation of the laws of the Member States concerning pressure equipment (OJ L 181, 9.7.1997, p. 1)". A red warning message states: "This text is for information only, it has no formal status." The text continues with the PREAMBLE and the beginning of the first article: "1. Whereas the internal market is an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured;".



## Legislation on MAC – A European Perspective

### **Directive 97/23/EC**

#### **Key Elements**

- “New Approach Directive” / horizontal
  - Health and safety relevant
  - Formulates essential requirements
  - conformity pressure equipment / assemblies with the CE marking / EC declaration of conformity
- 
- Conformity assessment bodies: right to check for compliance
  - Manufacturer show compliance to conformity assessment bodies, e.g. via relevant standard



## Legislation on MAC – A European Perspective

### **Directive 97/23/EC**

- Essential requirements (non-exhaustive)
  - Design for adequate strength
  - Provisions to ensure safe handling and operation
  - Means of draining and venting
  - Corrosion or other chemical attack
  - Provisions for filling and discharge
  - Manufacturing procedures
  - Marking and labelling
  - Requirements for materials for pressurized parts
  - ...



# Legislation on MAC – A European Perspective

## **Directive 97/23/EC**

- 21 Articles
- 7 Annexes
- Guidelines (215 in total):
  - Scope and exclusions of the directive (52)
  - Classification and categories (38)
  - Assemblies (17)
  - Evaluation assessment procedures (13)
  - Interpretation of the essential requirements on design (7)
  - Interpretation of the essential requirements on manufacturing (14)
  - Interpretation of the essential requirements on materials (25)
  - Interpretation of other essential requirements (17)
  - Miscellaneous (24)
  - General/Horizontal issues (8)

## **Working Groups Pressure WGP**

- Who: Representatives of Conformity Assessment Bodies, Technical Experts
- How often: every 2-3 months
- Deliver guidance



# Legislation on MAC – A European Perspective

## MEETING OF WORKING GROUP PRESSURE (WGP)

- DRAFT Meeting Minutes – (document: PE-07-06 – Minutes WGP\_07\_DEC\_2007 draft.doc)

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**Date:** 7 December 2007

**Starting time:** 09:30

**Venue:** meeting room AB-4D Centre Borschette, rue Froissart 36, 1040 Brussels

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Documents for this meeting can be found in circa interest group “ENTERPRISE: PED - (WGP & WPG) Pressure equipment working groups” in section “A. WGP – Working Group Pressure (Meetings & Documents)/Year 2007/2007-12 (Dec) 07 WGP

In order to avoid confusion with regard to the application of the PED to mobile airconditioning systems installed in vehicles (MACs), the Commission proposed an editorial change to Guideline 1-45. The new proposal emphasizes that the exclusion from the scope of the PED directive on the basis of art. 3.5 (equipment intended for the functioning of vehicles) is only valid if "the pressure equipment is directly contributing to the functioning of the vehicle". As a result, the guideline makes it clear that mobile airco systems installed in cars are not excluded from the PED.



## Legislation on MAC – A European Perspective

- **Compliance with Directive PED 97/23/EC?**

- Different stages of interpretation:
  - MAC is/is not in the scope
  - MAC is not excluded from PED (PWG)

- **Ongoing discussion:**

*"MAC integral part of heater system, system for defroster / demister. MAC be considered contributing directly to the functioning of the vehicle. Those functions are mandatory and covered by separate directives. "*

*"The automotive industry is entirely vertically regulated, and therefore a horizontal regulation is not applicable."*

*"The automotive manufacturer is responsible to use safe components in his vehicle".*

- Safety relevant vehicle type approval regulation



## Legislation on MAC – A European Perspective

### **CARS 21 : A Competitive Automotive Regulatory System for the 21st century**

- High Level Group
- Final Report 2005
- Some Key Recommendations:
  - Simplification and better regulation, through impact assessments and adopting cost-effectiveness as a guiding principle
  - Environment: endorsement of an integrated approach to CO2 reductions, combining policies covering vehicles, fuels, infrastructure measures and drivers.



## Legislation on MAC – A European Perspective

Thank you very much for your attention.