



**Cooling cars with less fuel:
improving on road performance of motor vehicles**
IEA, Paris, 23 – 24 October 2006



Update in efforts in promoting MAC fuel efficiency in Europe

Guenter Hoermandinger
European Commission
DG Environment, Unit C3 “Clean air and transport”

Cooling cars with less fuel – IEA, 23-24 October 2006



Link with the CO₂ and cars policy



- ◆ Up to now, EU strategy on car fuel economy/CO₂ does not cover MACs: first need to define a test method to assess the energy efficiency of these equipment
- ◆ Increasing penetration rate of MACs and auxiliary heaters
- ◆ CO₂ reductions achieved by the strategy will partly be offset by an increase of HFC and CO₂ emissions from mobile air conditioning (“MAC”)
- ◆ EU environment Council in 2000 asked the Commission to address GHG emissions from MACs – both refrigerants & energy aspects

Cooling cars with less fuel – IEA, 23-24 October 2006



Refrigerants: legislation has been adopted



Directive 2006/40/EC relating to emissions from air conditioning systems in motor vehicles and amending Council Directive 70/156/EEC

PHASE – OUT OF MACs with F-GASES
WITH GWP>150 - (Art. 5.4 and 5.5)
From 1 January 2011 for **new types of vehicles**
From 1 January 2017 for **all new vehicles**

RETROFITTING - Art.6(1)

- For vehicles type-approved from 1 Jan. 2011: no retrofitting with MACs using GWP>150
- From 1 January 2017: no retrofitting with MACs using GWP>150 for any vehicles

REFILLING - Art. 6(2)

- For MACs fitted to vehicles type-approved from 1 January 2011: no refilling with F-Gases with GWP>150
- From 1 January 2017: no refilling with F-Gases GWP>150 for any vehicles.
Exception: refilling of MACs containing those gases and fitted before that date
- MACs must not be refilled by service providers if an abnormal amount of the refrigerant has leaked from the system, until the necessary repair has been completed.

Cooling cars with less fuel – IEA, 23-24 October 2006



Energy consumption: first defining a test procedure...



- ◆ **Estimates of additional fuel cons. / CO₂-emissions (source TNO)**
 - ❖ 0.21 l/100km / 5 gCO₂/km for North Europe
 - ❖ 0.28 l/100km / 7 gCO₂/km for Central Europe
 - ❖ 0.44 l/100km / 11 gCO₂/km for Southern Europe
- ◆ **TNO has attempted (2003-4) to develop a test procedure for energy use of air conditioning systems and other auxiliaries based on type-approval-framework (Directive 80/1268/EEC)**
 - ❖ **procedure could be used for more general monitoring**
 - average for all systems
 - trends for specific technologies
 - ❖ **BUT procedure is insufficiently accurate and reproducible for use in Type Approval**

Cooling cars with less fuel – IEA, 23-24 October 2006



Review of the EU strategy (2006)



- ◆ Commission carrying out impact assessment of the Community objective of 120 gCO₂/km by 2012:
 - ❖ What can be delivered on the vehicle technology side (type approval)?
 - ❖ What can be delivered by other measures taken by other stakeholders (e.g. **MAC**, low resistance tyres...)?
 - ❖ Focus on measures that are measurable, monitorable and accountable to a responsible stakeholder
- ◆ ECCP Working group ensuring wide stakeholder consultation
- ◆ Commission to present Communication on revised strategy in December 2006

Cooling cars with less fuel – IEA, 23-24 October 2006



CO₂ and cars review: contribution of MACs?



- ◆ Review of technical options carried out by TNO, including MACs
- ◆ Issues
 - ❖ Take account of developments already started by other policies in 2008– 2012 baseline, in particular due to Directive 2006/40/EC (no double counting of GHG savings, but need to account for technical implications of phase-out)
 - ❖ CO₂ resulting from MAC use not included in type approval so far
 - ❖ How to monitor progress?
- ◆ Potential savings:
 - ❖ TNO points to savings in the range of 1Mt CO₂ eq /year in 2012 and 2.7 Mton CO₂ eq /year in 2020

Cooling cars with less fuel – IEA, 23-24 October 2006



Useful links



- ◆ **EU CO₂ and cars Strategy**
 - ❖ http://ec.europa.eu/environment/co2/co2_home.htm
- ◆ **Previous studies (TNO 2003-4 on measurement method):**
 - ❖ http://ec.europa.eu/environment/co2/co2_studies.htm
- ◆ **ECCP working group on the review of the CO₂ and cars strategy:**
 - ❖ http://forum.europa.eu.int/Public/irc/env/eccp_2/library (click on working group 5)

Cooling cars with less fuel – IEA, 23-24 October 2006