

European Commission's feedback on MAC Directive implementation issues

A regular reader of Kyla recalls a number of questions surrounding the refrigerant choice for the future MAC systems. The transition towards the new refrigerant is driven by intention to reduce greenhouse effect associated with MAC operation. It is facilitated by requirements put by the Directive 2006/40/EC (MAC Directive). After being introduced almost 7 years ago, it is finally became applicable in all its effects from the beginning of current year.

MAC Directive is in force, in spite of the safety issues

In the previous issue of Kyla we have discussed the safety issues associated with the R1234yf refrigerant - an industry choice for the MAC systems [1]. The safety was questioned by Daimler in a series of tests, in which the refrigerant got ignited in 10 out of 14 occasions. It is not a surprise, that Daimler and other OEMs reflected the findings by announcing the wish to extend the enforcement of MAC Directive for about six months. Moreover, the German Federal Environmental Agency called for a 3-year deadline extension in order to develop CO₂ as an alternative to R134a and R1234yf in MACs [2]. To avoid misinterpretations, in mid-December last year the European Commission released the Declaration in which restated the entry into force of MAC Directive from 01 January 2013 [3]. Although the declaration doesn't state any new information, it clarified the situation with the Member States in order to avoid different interpretations that could result in inconsistencies in the internal market.

European Commission answering the questions

In face of continuing speculations regarding the matter, the Commission has recently published answers to the main questions regarding the implementation of MAC Directive [4]. According to the publication, it is clear that the Commission is neither willing to extend any exemption on enforcement of MAC Directive, nor introduces new ones. To support this position, EC is pointing out to the fact that the Directive does not prescribe any particular refrigerant or MAC system. Instead, there were manufacturers who have opted to use the so-called refrigerant R-1234yf [4]. The Directive demands the refrigerants to have GWP value not greater than 150 in order to be accepted for the usage in MACs. EC explains this value as being selected in order to comply with Kyoto obligations, and this limit is also applied in other regions world-wide [4]. It is also not planned to revise the GWP value as the Directive fully effective since just few weeks ago. Thus Commission complies with its principle to avoid proposing legal instruments that include design restrictive prescriptions which may interfere with other possible and innovative solutions.

It is premature to conclude on safety of R1234yf

A great part of the "Implementation of the Directive 2006/40/EC Q&A" is related to the covering the safety of R1234yf. The commission is aware on the safety concerns regarding the use of R1234yf in MAC systems and states that it is premature to conclude on R1234yf safety as competent authorities are still evaluating this and there is no deadline foreseen. For the moment, EC declares that it "has no evidence, until today, that there are no technical solutions to mitigate the flammability risks associated to the use of the HFO-1234yf gas in MAC systems" [4]. It considers the testing procedures by Daimler as

“controversial” and the safety risks revealed by Daimler as risks associated to specific MAC systems in specific vehicles and could be mitigated as vehicle manufacturers are well equipped to deal with flammable substances.

Meanwhile, the BMW, Daimler and Audi have dropped out of the SAE international research project investigating safety of R1234yf [2]. As BMW is “not convinced the methods applied are sufficient to achieve a definitive conclusion that guarantees our high safety standards”, BMW is continuing its own internal research of the safety issue [5].

CO₂ is still a viable option

BMW, Daimler and Audi had not only left the SAE research project, but also, together with Volkswagen and Porsche, have announced development of CO₂ technology in MAC systems. Commenting on this decision, the Daimler R&D development chief said: “We are delighted that we were able to agree on this sustainable and safe solution together with Audi, BMW, Porsche and Volkswagen, with the involvement of the VDA.” [6]. This is great news, meaning that the development on CO₂ – non-flammable natural refrigerant - will go on. The news, however, sounds *Déjà Vu* as this is not the first time German manufacturers make the similar announcement. Back in 2008, VDA (German Association of the Automotive Industry) has been confirmed to use CO₂ in MAC systems, while concluding R1234yf to be “no option” [7]. But, as we know, the decision has been changed later.

What stops the manufacturers to continue using R134a?

Given that Daimler has stated that they do not plan to use R1234yf for their new A and B Class cars, EC informs that in this case the vehicles, which will continue using R134a, will not be in conformity with MAC Directive and therefore the Member States (MS) would have to apply appropriate corrective measures. Same applies to any manufacturer which intends to use R134a in MAC systems of a vehicle type approved after 1 January 2011. Note, that even though the Directive is fully enforced since 1 January 2013, it regulates the MAC systems in vehicles models type-approved already since the beginning of 2011. This makes all the new vehicles, type-approved after 1 January 2011, produced starting from the beginning of 2013 to be not allowed using the R134.

In case of non-compliance, the EU legal framework does not provide for mechanism that would permit a ‘per car’ penalty system. The Commission does not take actions against specific economic operators as well. Instead, the MS responsible for the vehicle type approval will take this up with the manufacturer directly, while other MS will in the meantime refuse the registration of vehicles which are not in compliance. Note, that the MS have a clear obligation to take action towards manufacturers placing products on the market which do not comply with EU legislation. The Commission, in turn, will ensure the compliance of the Regulation in the entire EU, and may launch infringement proceedings against MS not applying the legislation, i.e. MS which issue the vehicle type-approval or allowed to register vehicle which does not comply with the legislation [4].

Lately, the public attention is attracted to news surrounding the selection of low global warming potential refrigerant. In automotive world, the refrigerant selection is bouncing between CO₂ and

R1234yf, reminding us that there is no perfect refrigerant and one should prioritize one property over another in order to make selection. In face of the upcoming European Parliament's report on the revised F-Gas proposal we might have some news regarding the F-Gas Regulation in the next Kyla+. The Regulation, which regulates the refrigerant use in wide range of refrigeration equipment, may bring new questions for the discussion. Keep updated!

Works Cited

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