

# Questions & Answers

## Impacts of the IEC 60335-2-89 standard revision for commercial refrigeration

Follow-up Virtual MOP32 Side Event, 26th November 2020



On behalf of



Federal Ministry  
for Economic Cooperation  
and Development

Federal Ministry for the  
Environment, Nature Conservation  
and Nuclear Safety



# Recap: Agenda

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**Welcome Remarks**

GIZ Proklima

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**Climate relevance of the commercial refrigeration sector**

Philipp Munzinger, GIZ Proklima

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**Potential of the revised standard for different applications**

Marek Zgliczynski, Embraco North America

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**Experiences from Thailand's commercial refrigeration sector**

Ekkapong Tangsirimanakul, Patana Intercool

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**Questions and Answers**

All

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**Closing**

Philipp Munzinger, GIZ Proklima

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## “Why is Costa Rica's commercial refrigeration sector high on GHG mitigation? Is it because of technology options?”



**Philipp Munzinger:** The commercial refrigeration sub-sector in Costa Rica is responsible for approx. 1/4 of cooling-related GHG emissions, with still many low-mid efficiency HFC-based systems in place, resulting in a quite considerable mitigation potential, which can be realized by more efficient low GWP solutions and enhanced servicing practices. More information can be found in the Costa Rica inventory report

[https://www.international-climate-initiative.com/en/news/article/greenhouse\\_gas\\_inventory\\_of\\_the\\_refrigeration\\_and\\_air\\_conditioning\\_sector\\_in\\_costa\\_rica](https://www.international-climate-initiative.com/en/news/article/greenhouse_gas_inventory_of_the_refrigeration_and_air_conditioning_sector_in_costa_rica)



**“In Tunisia, our Parliament has just ratified the Kigali amendment. We started to think about replacing the refrigerant with high GWP. Following the experiences of other nations, what are the problems that have encountered as well as the dangers encountered especially with the application of hydrocarbon refrigerants? And that they are the alternative refrigerants used.”**



**Philipp Munzinger:** Congratulations for ratifying the Kigali Amendment, important step! Basically, low GWP refrigerants can be applied safely and efficiently, if the current IEC standards are applied, such as the IEC 60335-2-89:2019 in the case of commercial refrigeration sub-sector. Happy to provide further information in a bilateral talk, if required.



**“Under which standard are walk-in rooms covered? How are walk-in units addressed by the IEC standards?”**



**Marek Zgliczynski:** Walk-in units and remote systems are excluded from the scope of the IEC 60335-2-89 standard. The general safety standard has to be used. When using the general safety standard one needs to verify the safety through a specific risk assessment location by location.



**“Why is R290 easier for the PED (Pressure Equipment Directive)?”**



**Marek Zgliczynski:** Propane has lower pressures, so the product  $V \cdot p$  is lower.



**“You mentioned the lengthy and challenging process of approval of the IEC standard (4 years) - what were the sticky points? How may they affect the adoption by national standard bodies?”**



**Marek Zgliczynski:** The main discussion was about the A2L limits. Today the working group four is still working. There are several studies, particularly performed in the US, to include much larger charge limits of A2L refrigerant in the future and to amend the standard.



**“With this new charge limit, the refrigeration system can be directly or indirectly?”**



**Marek Zgliczynski:** In cooling systems the distribution can be either direct or indirect. Direct systems are those where the refrigerant is directly used in the cooling coils and can leak into occupied space. Indirect systems are using two separate cooling circuits with an intermediate fluid. Obviously the indirect refrigeration systems are not covered by the IEC-89 standard as the standard is normally working with the potential of leakages in occupied space.



## “When will the charge increase happen in IEC-40 standard?”



**Marek Zgliczynski:** I am also part of the 61 sub-committee that is taking care of air-conditioning. The new proposal of the IEC-40 edition was already voted in CDW. Now it is under solution of comments. To my understand there is no change in charge limits in this IEC-40 standard revision but there will be other changes that will allow much larger use of hydrocarbons or flammable refrigerants in air-conditioning applications.



## “There are other mixed hydrocarbon refrigerants (R290 and R600a). Are these refrigerants covered by the standard?”



**Marek Zgliczynski:** Yes, of course. Basically any hydrocarbon or flammable refrigerant are covered by the new standard. So you have just to consider the LFL of the specific mixture. In case of the Isobutane-Propane mixture, is it basically the same as for Propane as both have very similar LFL. There are other regulations that are related to mixing hydrocarbons, e.g. glide, that can be a problem.



**“Has Thailand adopted IEC-89 for commercial refrigeration units for higher charge?”**



**Ekkapong Tangsirimanakul:** If Thailand will adopt this standard in the future, we will follow and adopt it for our appliances.



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# Thank you!



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