

**Paper Number:** ICR0284

**Title of Paper:** Design Criteria for Energy Efficient Vertical Air Curtains in Display Cabinets

**Presenter:** M. Axell, SP Swedish National Testing, Sweden; P. Fahlen, Chalmers University of Technology, Sweden

**Session:** D1-5

**Person Contributing Discussion or Question:** O.R. Chambers, Rhodia Oreanique Fine Ltd., St. Andrews Rd., Avonmouth, Bristol

**Comment or Question:** Are there alternative ways other than air curtains to stop heat ingress into vertical display cabinets?

**Presenter's Reply:** Installation of glass doors will decrease the inward heat leakage. Another method is plastic strips combined with an air curtain.

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**Person Contributing Discussion or Question:** Infante Ferreira, C.A., Delft University of Technology Mekel WE62, 2628 CD Delft, The Netherlands

**Comment or Question:** The turbulence efficiency is introduced as being a very important parameter. Can you elaborate on how it was taken into account in your study?

**Presenter's Reply:** I have performed a parameter study on the influence of air curtain height, width and supply velocity. In the CFD models the inlet condition for the air supplied or blown into the air curtain is set to 0.1%. An optimisation would require optimisation of the velocity profile, the supply angle and design of the return extract, coupled with careful investigations of the influence of turbulence in the inlet jet.

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**Paper Number:** ICR0611

**Title of Paper:** Good Practice Guidance for Commercial Refrigeration

**Presenter:** P. J. Verhoef, Adviesburo Verhoef b.v., The Netherlands

**Session:** D1-5

**Person Contributing Discussion or Question:** Infante Ferreira, C.A., Delft University of Technology Mekel WE62, 2628 CD Delft, The Netherlands

**Comment or Question:** Did you consider the introduction of weighting factors for the different criteria of your spider diagram? In this way the selection would be easier?

**Presenter's Reply:** Weight factors are to be left to the user of the gpg. He should decide what criteria is most important in his specific situation.

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**Paper Number:** ICR0611

**Title of Paper:** Good Practice Guidance for Commercial Refrigeration

**Presenter:** P. J. Verhoef, Adviesburo Verhoef b.v., The Netherlands

**Session:** D1-5

**Person Contributing Discussion or Question:** Samnang Nos., 71 Rue D'Amiens, 60000 Beauvais, France

**Comment or Question:** You have presented an excellent spider graph for good practice guidance. How do you measure/determine the criteria of measurement. Example: external safety of the system.

**Presenter's Reply:** This is decided by a team. It is not easy. The team has decided what limits should be chosen for each criteria. Safety is a difficult criteria, as no one ever accepts a fatal accident. However, absolute safety will never be achieved.

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**Title of Paper:** Good Practice Guidance for Commercial Refrigeration

**Presenter:** P. J. Verhoef, Adviesburo Verhoef b.v., The Netherlands

**Session:** D1-5

**Person Contributing Discussion or Question:** Anders Lindborg  
Nypo. 24, 260 Yo Vibeu, Sweden

**Comment or Question:** It is not necessary to prefer about safety not to use NH<sub>3</sub> in pump circulation in supermarket as in Europe. This is not allowed according to EN378 in public places.

**Presenter's Reply:** That is correct. All facilities, having criteria that exceeds the chosen limits are left out of the design that can be selected.

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