

Discussion of possible eco-design measures for walk in cold rooms

Agenda for Thursday 13 December 2012

Venue: Offices of PU Europe, Av. Edmond van Nieuwenhuysse 6, B-1160 Brussels
Metro station: Demey, Line 5. Website: www.pu-europe.eu.

Timing: Registration and coffee **from 9.30**.
Start at 10 AM; close by 3 PM. A light lunch will be provided.

You are kindly requested to register with PU Europe beforehand if you wish to attend - RSVP to Eva Paz at secretariat@pu-europe.eu, tel + 32 2 676 73 52.

Agenda:

1. Welcome by PU Europe (Oliver Loebel)
2. Introductions; adoption of the agenda & AOB items (Ugo Miretti)
3. Overview of the eco-design regulatory process and where we are now (Ugo Miretti)
4. Brief recap of conclusions from the regulatory impact assessment study, main options going forward and overview of the discussion paper (Jeremy Tait & Ugo Miretti)
5. Overview of the CEN TC44 WG4 initiative developing harmonised methodologies for thermal performance of insulated enclosures for walk in cold rooms and any issues arising (Mauro Freguglia / Nicola Labanca)
6. Discussion of main issues raised:
 - a. Who takes eco-design responsibility?
 - b. Stringency of U-value requirements and timing of requirements
- 12.30 LUNCH
7. Continuation of discussion:
 - c. How to raise quality of installation work
 - d. Necessary harmonised standards to underpin current and future regulations
 - e. AOB
8. Conclusions and next steps (Jeremy Tait & Ugo Miretti)

Note: In order to ensure adequate time for other items in joint discussion, we suggest that the discussion document items on requirements for doors/joints, reducing air infiltration and on blowing agents are dealt with in correspondence. Any burning issues from these can of course be tabled on the day under AOB.

Eco-design measures for walk in cold rooms

Discussion paper for meeting on 13 December 2012

Context of the meeting

This discussion paper presents some background on the main issues to be discussed at a stakeholder meeting to be held on 13 December 2012 at the offices of PU Europe (www.pu-europe.eu) in Brussels. The meeting was called by the European Commission in order to give stakeholders the chance to review and discuss proposals for EU eco-design measures affecting walk in cold rooms.

A Commission working document on eco-design measures was made available in December 2011 and discussed with stakeholders at a consultation forum on 19 January 2012. An impact assessment study was carried out between January and September 2012 which included a stakeholder consultation process in April/May 2012. The contractor's impact assessment study report and associated documentation can be found at http://www.taitconsulting.co.uk/Ecodesign_Consultation.html. A copy of the executive summary of that report is provided with these notes.

The impact assessment study and stakeholder feedback identified several key issues considered important to resolve. It is the Commission's aim to discuss as many of these as possible on 13 December; other issues are invited to be added to the list:

1. Ensuring the development of harmonised standards regarding product performance and installation practice that should underpin current and future regulations
2. Agreeing appropriate stringency for insulation U-value requirements, given cultural differences between northern and southern Europe (plus the associated timing of requirements). Also consideration of whether temperature differentials across panels might provide a suitable basis for requirements in due course.
3. Who in the supply chain takes eco-design responsibility for the product?
4. How to raise the standards and quality of installation work and establish more focus on life-cycle costs to end users
5. Adequacy and appropriateness of specific requirements for doors and joints on prefabricated cold rooms, including measures to reduce air infiltration
6. Checks to ensure no unintended consequences on the insulation blowing agents used in the market, particularly environmental regarding GWP and economic regarding SMEs

Other issues are invited from stakeholders but of course time is limited on the day – priorities will be set by agreement.

The following sections summarise some background to these issues and suggest some discussion issues for each. See the impact assessment study report for further details.

1. Developing harmonised standards

CEN TC 44 working group 4 is now underway developing an EU harmonised standard for the **thermal performance of the insulated enclosure** for walk in cold rooms. Specific issues include:

- a) Under the standard being developed by CEN TC44 WG4, does the **planned scope** match the anticipated regulatory requirements?
- b) It is not yet decided whether and how **WICRs installed without floor** should be covered by the standard to be developed. One suggestion is to include in the eco-design regulation specific requirements for WICRs installed without floors based on the calculation of overall thermal transmittance performances of these types of WICRs - how certain is it that a suitable calculation formula can be elaborated and included in the standard?
- c) A test methodology for the performance of a **combined insulated enclosure and refrigeration system** is being developed in the USA. When and how should this approach be initiated for the EU?
- d) Are additional harmonised standards required that have not yet been initiated? For example for **thermal properties of windows and doors** for cold storage under CEN/TC33 (with currently no plans to address these products?); **adaptation of EN14509** to cover panels for cold storage applications; energy consumption of **electrical components**; measuring the cooling capacity, power input and coefficient performance of the **refrigeration system** (?developed from EN 13215/EN 13771).

2. Insulation panel U-value stringency levels

Draft regulatory proposals include maximum U-values for walls and ceiling panels used in chilled and frozen walk in cold rooms. However, stakeholders have indicated that typical U-values in use in **northern Europe** are at a significantly better thermal performance than typical practice in **southern Europe** (although this was disputed by some stakeholders). For example, a typical insulation thickness for a chilled cold room in the UK was quoted as 100 mm; compared to 60 mm in Italy (typical of southern Europe); for frozen cold rooms, 150 mm appears common in northern Europe compared to 100 mm in southern Europe. A key challenge is to raise the U-value standards of poor installations at an economically acceptable rate, whilst ensuring that good practice does not backslide due to price pressures. There seems little doubt that the life-cycle economics justify the investment in achieving a good practice U-value for the end-user. Specific issues include:

- a) Could standards be raised to a good practice level across all of Europe by means of a **single tier requirement** if an adequate warning period is signalled? How long is 'an adequate warning period'?
- b) Could a **form of energy labelling** for at least some types of insulation panel begin transformation of the market and so mitigate the later market shock of a single tier U-value requirement (which might increase panel price by 40% to 50%)?
- c) The effectiveness of insulation is dependent upon the temperature differential across it: a bigger differential justifies a better U-value. Requirements could be based upon a **maximum heat transmission rate instead of a maximum U-value**. (PU Europe noted that Spain has set requirements based on temperature differentials). Would compliance assessment and enforcement be prohibitively complex under such an arrangement?

3. Who takes eco-design responsibility?

Any measure will have to establish who in the supply chain should take unambiguous legal responsibility for the quality and performance of the product – the designer/architect, component supplier, installer etc? This is straightforward in the case of prefabricated cold room kits - but for customised cold rooms (majority of the market) it is much more complex unless a single contractor supplies all components, assembled and ready to start operation. Complications are possible even in the case of regulating key components such as insulation panels and doors. Issues include:

- a) The panel supplier will not know usage at the point of sale (cold rooms constitute a very small proportion of panel manufacturer sales).
- b) The installation contractor may have nothing to do with the specification or design of the cold room.
- c) The designer of the cold room may not have any specific responsibility for its construction.
- d) The general approach under eco-design regulation is that the supplier is responsible for inherent performance of the product that is placed on the market – but the compliance (or not) of insulation panels is entirely dependent upon the application.

4. Quality of installation

The quality of installation is acknowledged as a significant problem in the sector and an intractable challenge. The possibility of a harmonised annex on installation standards was discussed under CEN/TC 44 WG4 but they decided not to pursue it until the standard on measurement and calculation procedures for thermal performance of the enclosure has been completed. A cultural change is required in the sector, combined with an acceptance by users that a good quality job attracts a fair price. Problems include poor joints between insulating panels allowing both heat and moisture to penetrate; weaknesses in system design such as poorly matched enclosure and refrigeration system; almost total lack of oversight or post-construction inspection. Issues include:

- a) The majority of customised enclosures are erected by SMEs but there are few national and no Europe wide **professional bodies** representing them. Which bodies can or should represent the interests of installers and contractors that assemble the insulated enclosures? Is FIEC the most relevant? And/or HVAC/refrigeration associations?
- b) Policing is challenging, price pressures very high so **compliance may be poor**. How can regulation be effective in these circumstances?
- c) A harmonised European standard or **code of practice for installation** work could be useful, perhaps based upon the French standard DTU45-1. How and to whom should this be mandated?
- d) How can the supply industry be mobilised to bring about the **cultural changes** necessary and deliver the training and verification essential to secure better standards? Could lessons be learnt from the training of refrigerant handlers, or certification of companies competent to manage refrigerants? (e.g. from the UK)

5. Specific requirements for doors, joints and air infiltration

Issues include:

- a) The proposed Tier 1 **U-value requirements for doors** appeared widely accepted. But what is the balance of arguments for and against the proposed Tier 2 for doors? Would consequent constraint of innovation and/or (for example) reduction in use of rapid closing doors outweigh the savings from better insulated but heavier doors?
- b) Specific limits for heat ingress through **thermal bridges in the joints** of prefabricated kits could be set, although this could be seen as unfairly penalising prefabricated cold room producers whose joints should be inherently better anyway: thermal bridges are a much more significant problem in *customised* cold rooms but almost impossible to police in that application. Is there any way to mandate thermal bridge performance in customised cold rooms?
- c) Savings from measures to **reduce air infiltration through doors** could save 0.7 TWh per year and were generally supported by stakeholders. Soft door closers could be mandated, as well as requiring some means to reduce air infiltration whilst a door is open, without being prescriptive. But some door manufacturers cited possible installation problems as most cold room doors are overlapping or partially-housed doors and soft door closers are not available (at least in Southern Europe). Are there any specific suggestions to improve effectiveness of this requirement?

6. Blowing agents

Over 90% of the cold room market is served by continuously produced insulation panels from the larger producers which use hydrocarbon blowing agents with very low GWP. Around half of the discontinuously produced panels are made in smaller quantities by SME suppliers, most often for prefabricated kits and use HFC blowing agents with GWP around 1000. Other SME panel suppliers use water or formic acid with low GWP. Since HFC blown panels tend to have a better U-value, such regulations could push the (smaller) discontinuous market towards higher GWP blowing agents, although crude analysis implies that direct emissions of blowing agents are significantly outweighed by energy savings from more effective insulation. Issues include:

- Are there any unintended environmental or economic consequences regarding blowing agents that should be taken into consideration? (For example for countries where HFC's are already banned, or impacts on SMEs?)