

Why is PECS not a mainstream product today?

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ABSTRACT

For decades, the use of Personal Environmental Control Systems (PECS) has extensively been studied by many researchers all over the world. There are, however, very few systems installed and used in real buildings. Why is that? The present presentations will discuss some of the hurdles and issues to overcome before it becomes mainstream of the shelf product. As the names say, it is systems that provide individual environmental quality (thermal comfort, IAQ, illumination, and acoustic) under personal control. The most used type of PECS is a personal fan for cooling and a desk lamp for illumination. The goal is to have PECS that influences two or more of the indoor environmental quality factors. Almost all studies with persons (laboratory or some field studies) show the benefits of PECS regarding acceptable environmental conditions, better individual comfort, and the benefits of personal control. Even studies show increased performance of users. That should support and provide incentives for manufacturers to bring products to market. Very few systems exist on the market. Probably heated/cooled chairs have had the largest market penetration even if it is small.

So what are the obstacles? Costs are certainly a factor. In most office applications, you still need a second general system to condition the space. Even if it can be scaled down, the total price for HVAC may increase. If however, the increase in performance is taken into the economic calculations, the increased costs will be compensated. In practice, one important challenge is to bring the outside air to all workplaces. Either through the general ventilation system or connection directly to the outside.

How big is the market? PECS requires that people have a fixed workplace and are not moving around a lot. Therefore, the focus has been on sedentary work in landscape offices. There may, however, be a future home market. People are in many companies now working at home 2-3 days a week. The companies may therefore cut down on office space. On the other hand, the discussion is if a company then has some responsibility for the working conditions at home. This would be a new market for PECS.

IEA-EBC Annex 87 Energy and Indoor Environmental Quality Performance of Personalised Environmental Control Systems (PECS) was established a couple of years ago to look at many of these issues and establish a better foundation for developing, testing, and installing PECS in real-life buildings.

The presentation is the opinion of the presenter and not of Annex 87, which are and will in the coming years work with the issue of market penetration.

KEYWORDS

PECS, Heating, Cooling, Ventilation, Illumination, Acoustic, Control