

Policy Strategies and Market Perspective of Personalized Environmental Control Systems

Rajan Rawal*¹, Bjarne Olesen², Ongun Berk Kazanci², and Arsen Krikor Melikov²

1 CEPT University

Navarangpura

Ahmedabad 380 009 India

**Corresponding author: rajanrawal@cept.ac.in*

2 Technical University of Denmark (DTU),

Koppels Allé, 402, 220,

2800 Kgs. Lyngby, Denmark

SUMMARY

This session will begin with providing an overview of presence Personal Environmental Control Systems (PECS) related mention in various countries national codes and standards formulated by industry organizations. It will then articulate possible entry points for PECS in policy document such as building codes, health and safety code and voluntary building performance rating programs. Towards end, it will identify market barriers, market challenges and market opportunities that may aid widespread deployment of PECS.

KEYWORDS

Indoor Environment, Personalized Environmental Control Systems (PECS), Technology Readiness Level (TRL), Policy intervention, market transformation, health and well being

1 INTRODUCTION

Personal Environment Control Systems (PECS) can generate a microenvironment within the buildings and around the building occupant that is in the control of the occupant and provides preferred thermal, luminous and aural environments. Apart from promoting desired environmental conditions, PECS is also known to provide higher energy efficiency and conducive healthy environments. Design, development and deployment of any technological advancements needs to have a suitable policy environment. Inclusive codes and standards towards modern approaches to gain comfort within the built environment provide a favourable market transformation environment for newer design approaches, technologies and products to flourish. Certain policy initiatives are also known to offer higher opportunities for industry to engage in newer areas and engage in economic activities. This session will provide an overview of reference codes and standards documents that deal with comfort concerning thermal comfort, lighting and acoustics. Extensive literature exists to understand the benefits of the PECS, further, available literature also provides suitable guidance to ideate, design and produce PECS in all three domains of thermal, lighting and acoustics. However, the inclusion of the PECS domain in codes and standards has not been advanced as expected. This session will discuss the possible entry points for codes and standards for the inclusion of PECS. The session will also elaborate on the possible market transformation pathways for the wider adoption of PECS, after discussing the barriers and challenges that must be overcome.

2 METHODOLOGY

The reference codes and standards document prepared by various countries as part of their national codes, best practices manuals prepared by industry organizations, actions plan such as cooling actions plans, and recommendations for ventilation and overheating risk mitigation

plans prepared by various countries were reviewed to find the possible reference to PECS, even the closest references that may have the possibility of PECS meeting the requirements were identified. The standards and guideline documents prepared by industry organizations such as the Federation of European Heating, Ventilation and Air Conditioning Associations (REHVA), The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and The Chartered Institution of Building Services Engineers (CIBSE) for thermal aspects, (International Association of Lighting Designers (IALD) and International Commission on Illumination (CIE) for lighting and Acoustical Society of America (ASA) for acoustics, as well as ISO and CEN were reviewed for likely PECS. The building codes, health-safety codes and voluntary rating program documents were reviewed. The mention was categorised into two broad categories, prescriptive and performance-based approaches. The strategy approaches were also studied from the perspective of PECS's reliance on building envelope systems, furniture systems, HVAC systems and stand-alone systems with a high degree of mobility. Toward the end, available PECS technologies were reviewed on their technology readiness level (TRL) to consider the suitable nature of policy intervention, possible policy entry points and means to achieve it.

3 RESULTS AND DISCUSSION

During the workshop on PECS during the 44th AIVC – 12th Tight Vent & 10th Venti cool Conference, this session will propose the following

- Pathways and entry points for the inclusion of PECS in codes, standards and voluntary rating programs
- Ways and means to develop a roadmap for the industry to rely on available knowledge to develop technologies and products
- Identification of stakeholders, methods to inform them and outreach strategies to advocate PECS in practice.

4 ACKNOWLEDGEMENTS

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