

## **Beam Systems for Excellent Indoor Climate in Sustainable Buildings**

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23 May, 2016

09.00-12.00

### **Course description:**

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This three hour short course gives an insight on the state-of-the art of chilled beam technology and design methods. It is intended for HVAC-Engineers, Facility Owners and Architects. Course level is intermediate; a basic knowledge of HVAC system design and air diffusion is required.

Chilled beam technology is used for cooling, heating and ventilation in spaces where good indoor climate and individual space control are appreciated. A chilled beam system provides quiet and comfortable thermal conditions in an energy efficient manner. Thermal comfort conditions are comparable to radiant ceiling systems. The system operation is simple and trouble-free with minimum maintenance requirements. Since the chilled beam system is based on high temperature cooling and low temperature heating chilled beam technology is a potential solution for sustainable buildings.

Primary airflow rates are usually close to the ventilation requirements. Thus, chilled beam system can be designed with dedicated outdoor air system. Nowadays, chilled beam system can be designed with demand-based ventilation, where operation changes (unoccupied, occupied or office-meeting room) are managed by modulating outdoor airflow rate.

Participants will be given an update on the state-of-the art of the technological developments. As learning outcomes, individuals who complete this course will be able to understand performance of chilled beam technology and basic principles of design methods. Participants will be able to use chilled beam technology, taking into account the specific climate conditions and building requirements. They will know how to design a chilled beam system in order to achieve excellent indoor climate conditions and will understand the benefits of chilled beam systems in terms of indoor climate quality, energy efficiency and life cycle costs. During the session the system limitations are also discussed in regards to the building type and indoor environment quality.

### **Learning Objectives:**

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Attendees will receive information on:

- The whole beam system concept;
- Operation of Chilled Beam System;
- Demand-based ventilation with chilled beam systems;
- Control of room space, zones and air-handling units;
- Primary air calculation regarding ventilation, dehumidification and sensible cooling;
- Practical example of chilled beam concept design;
- Details of Chilled Beam Technology;
- Product Selection;
- Installation and Commissioning.

## Teachers:

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### **Teacher: Risto Kosonen**



Dr. Risto Kosonen is Professor at the Aalto University School of Engineering. His professorship is in the area of HVAC technology. He has contributed to the development of chilled beam technology over two decades. He has published more than 120 international papers. He is an ASHRAE member and member of the REHVA/ASHRAE chilled beam application guidebook committee. Dr Kosonen is a REHVA Fellow and a member of REHVA Technical Committee.

### **Teacher: Julian Rimmer**



Julian Rimmer was chair for the REHVA/ASHRAE chilled beam application guidebook committee. Julian is currently Vice President for Design and Business Development at Price Industries.

### **Teacher: Carlos Lisboa**



Carlos Lisboa is Director of the engineering consulting company “BLC navitas, Lda”. He is a Consulting Engineer in the field of HVAC and energy efficiency with over 25 years of professional experience. He has been a user of building simulation programs since 1987 for the design of new buildings, HVAC systems and energy audits of existing buildings. He is an AHSRAE member and member of the REHVA/ASHRAE chilled beam application guidebook committee.