

# Curriculum Vitae

## Maija Virta



Maija Virta is the Founder and Director of Santrupti engineers Private Limited. She has nearly 30 years of experience in construction and HVAC-industry. Her chief areas of expertise are indoor environmental quality, energy efficiency of buildings as well as sustainable building policies and technologies. During her career she has been involved in developing many technologies for sustainable buildings as well as user-centric IEQ measurement, verification and post-occupancy evaluation processes. She has over 5 years of experience of onsite work to improve IAQ both in Europe and in India. Before moving to India, Maija was CEO of the Green Building Council Finland.

Maija Virta has a M.Sc. (Eng.) degree from Helsinki University of Technology. Maija is a Fellow of REHVA, member of ISHRAE and ASHRAE. She was a vice-president of REHVA 2008-2011 and the president of Finnish HVAC-association SuLVI 2009-2013. Since 2015 she has been a member of ISHRAE's National Indoor Environmental Quality task force, who prepared the IEQ standard for India. She is also the founding member of The Indoor Air Quality Association (IAQA) Indian chapter that was founded in 2016. Maija is also a member of IGBC task force that prepares the wellbeing classification system for IGBC.

Maija Virta was participating national task force to develop an action plan for Finland to meet the national energy and carbon emission reduction targets in built environment 2010. Maija also participated the Train the Trainers program of the European project PROF-TRAC – professional multi-disciplinary training and continuing development in skills for nZEB principles in 2016 and became the training expert for nearly-zero energy buildings.

Maija Virta has been lecturing in many events around the world and has published 40 technical papers in international conferences. She has been lecturing at ASHRAE Learning Institute, REHVA and ISHRAE. She is the main author of two REHVA guidebooks: "Chilled Beam Applications" (2005), which has been translated to 7 different languages, and "HVAC in Sustainable Office Buildings – A bridge between owners and engineers" (2012). Maija Virta contributed also in writing award-winning book "Sick Building Syndrome in public buildings and workplaces" the article "Solving Indoor Environmental Problems: What Can Be Found Out through Individual Measurements? ". She was also a co-author of book "Climatic Beams: Design, Installation, Application (Климатические балки. Проектирование, монтаж, эксплуатация) (2011)", which is published in Russian language.

### **Education**

M.Sc. (Eng.), Helsinki University of Technology, 1984 – 1991, HVAC design and Construction Economics in the department of Mechanical Engineering.

## **Employment**

Founder, Director, Santrupti engineers Private Limited, India 2012 -

Santrupti engineers Private Limited is a service provider focusing on healthy and sustainable buildings. We provide all stakeholders custom-made solutions to existing and yet to-be developed buildings in India. The Organization's expertise in the field of indoor environmental quality, energy efficiency and building operations.

CEO, Green Building Council Finland 2010 –2012

Green Building Council Finland brings together experts in sustainable development in Finland and represents its members in related matters both domestically and internationally. FIGBC's activities cover the full range of the built environment and its associated life cycle.

Director and Indoor Environment Specialist, Halton Oy, Finland 1990 –2010

Halton Group specializes in indoor climate and indoor environment products, services and solutions. Halton's aim is to create comfortable and safe indoor environments that have energy efficient and sustainable life cycle.

## **Positions of Trust**

REHVA, Federation of European HVAC-associations

- REHVA Fellow (2011)
- Chair of REHVA-ISHRAE MoU Follow-up group (2011 – 2015)
- Chair of task force: HVAC for Building Owners (2011-2012)
- Member of editorial board of REHVA Journal (2008 – )
- Chair of publishing and marketing committee (2008 –2014)
- Vice President (2008 – 2011)
- Chair of supporters committee (2007 – 2008)
- Chair of task force: chilled beam cooling (2002 – 2005)

ISHRAE, Indian Society of Heating, Refrigeration and Air-conditioning Engineers

- Member of IEQ task force (2015 - )
- Member of national publishing committee (2014 - )
- Member of ISHRAE

ASHRAE, American Society of Heating, Refrigeration and Air-conditioning Engineers

- Lecturer of ASHRAE Learning Institute (2009 - )
- Member of ASHRAE

IAQA, The Indoor Air Quality Association

- Founding member of Indian chapter (2016 - )

IGBC, Indian Green Building Council

- Member of Wellbeing certification task force (2016 - )

Suomen LVI-yhdistysten Liitto ry. (Finnish HVAC-association)

- President (2009 – 2013)
- Vice President (2007 – 2009)

Suomen Rakennusinsinöörien Liitto RIL (Finnish Association of Civil Engineers)

- Board member of energy and building services group (Energia- ja talotekniikkaryhmän johtoryhmän jäsen) (2009 – 2012)

Haminan Satama Oy (Port of Hamina)

- Member of board (2009 –2010)

ERA 17 Energiaviisaan rakennetun ympäristön aika – toimintaohjelma (ERA17 for an energy efficient built environment – action plan 2017 for Finland)

- Member of task force (2010)

## **Publications and presentations**

M.Sc. thesis

- Säteilikonvektorin säätö jäähdytyksessä ja lämmityksessä (Control of radiant and convective room unit in cooling and heating) (1990), Helsinki University of Technology.

Books

- Virta, M., et.al. (2005) Chilled Beam Application Guidebook, REHVA Guidebook n:o 5.
- Sabah A. Abdulh-Wahab et.al. (2011), Sick Building Syndrome in public buildings and workplaces, Springer-Verlag Berlin Heidelberg.
- Brodach, M., Virta, M., Ustinov, V. (2011), Climatic Beams: Design, Installation, Application (Климатические балки. Проектирование, монтаж, эксплуатация), АВОК.
- Virta, M., Hovorka, F., Litiu, A., Kurnitski, J., (2012) HVAC in Sustainable Office Buildings – A bridge between owners and engineers, REHVA Guidebook n:o 16.
- Woollet, et.al. (2015) Active and Passive Beam Application Design Guide, shared publication between ASHRAE and REHVA (n:o 21).

Training courses

- Chilled Beam Technology for Excellent Indoor Climate in Energy Efficient Manner, ASHRAE Learning Institute Short Course, Chicago, USA (2009), Orlando, USA (2010), Acrex, Mumbai, India (2010), Las Vegas, USA (2011)
- Chilled Beam Technology, REHVA course, Clima 2010, Antalya, Turkey (2010)
- Emerging HVAC Technologies - Chilled Beam, Under-floor, Displacement, DOAS, Acrex, New Delhi, India (2011)
- Design Considerations and Modern HVAC Systems for High Performance Buildings, Acrex, Bangalore, India (2012)
- Design of Surface Cooling, Acrex Mumbai, India (2013)
- HVAC in sustainable office buildings - A bridge between owners and engineers, REHVA course, Clima 2013, Prague, Czech Republic (2013)
- Radiant cooling, full-day workshops, ISHRAE, Bangalore, Hyderabad and Chennai, India (2013-2014)
- HVAC Commissioning, full-day workshop, Hyderabad, India (2014)
- Chilled Beams, full-day workshop, Mumbai, India (2015)
- Indoor Air Quality in Hospitals, workshop for doctors and hospital microbiologists, Mohali, India (2016)

## Conference papers and presentations

- Virta, M. (2003) Energy Performance of Buildings and Holistic Building Labelling, HEVAR Show presentation in Chelsea, London (presentation only)
- Virta, M. (2004), Design Methodology for Chilled Beam System, VI. International HVAC+R Technology Symposium in Istanbul, Turkey
- Virta, M., Kosonen, R. (2005) Chilled Beams in Heating, design criteria and case study, Cold Climate conference, Moscow.
- Kosonen, R., Virta, M. (2006) Kuormien vaikutus huonetilan ilmapvirtauksiin, Sisäilmastoseminaari 2006, Helsinki, Finland
- Kosonen, R., Virta, M. (2006) Joustavuuden huomioonottaminen ilmastointipalkkijärjestelmän suunnittelussa, Sisäilmastoseminaari 2006, Helsinki, Finland
- Virta, M. (2006) Chilled Beam Design Criteria and Case Study, IIR-IRHACE Conference, Auckland, New Zealand
- Virta, M. (2006) Heating with Chilled Beams, IIR-IRHACE Conference, Auckland, New Zealand
- Virta, M. (2006) Ensuring good indoor environment in energy efficient office building, AICARR conference, Italy
- Virta, M. (2007) Systematic Method for Finding Technical Problems in Indoor Environment through Occupant Satisfaction Surveys, Work Air Conference 2007 in Helsinki (presentation only)
- Takki, T. & Virta, M. (2007). A systematic method for improving indoor environment quality through occupant satisfaction surveys. 9th REHVA World Congress Clima 2007, Proceedings.
- Virta, M., Kosonen, R. (2007) Ensuring good indoor environment in energy efficient office building: case chilled beams, Climamed 2007, Genova, Italy
- Virta, M., Villberg, K. (2008) Sisäympäristöongelmien ratkaiseminen, yksi näkökulma vai kokonaisuuden selvittäminen, Sisäilmastoseminaari 2008, Helsinki
- Virta, M., Villberg, K. (2008) Solving Indoor Environmental Problems: What Can Be Found Out with Individual Studies?, Indoor Air 2008, Copenhagen, Denmark
- Villberg, K., Kajaala, M., Virta, M., Tuomainen, M. (2008) Occupant satisfaction survey as a tool to improve IEQ: a case-study in a hospital, Indoor Air 2008, Copenhagen, Denmark
- Virta, M., (2008) Refurbishment of Ventilation in Respect of Indoor Environment Quality and Energy Efficiency, AICARR workshop in Milan, Italy
- Virta, M., Itkonen, H., Mustakallio, P., Ruponen, M., Kosonen, R., (2009) Sustainable Chilled Beam Design, AICARR conference in Tivoli, Italy
- Virta, M., (2009) Sustainable Future of European Buildings, Danvak dagen 2009, Copenhagen, Denmark
- Seppänen, O., Allard, F., Virta, M., (2009) European Policy of Energy Efficient Buildings, KredEx conference, Tallinn, Estonia (presentation only)
- Virta, M., Itkonen, H., Mustakallio, P., Kosonen, R., (2009) Energy Efficient Building and System Design, International HVAC-conference of KGH, Belgrad, Serbia
- Virta, M., (2010) Use of Chilled Beams in Air-conditioning System Design, Acreconf, New Delhi, India
- Virta, M., Itkonen, H., Kosonen, R., Mustakallio, P., Jokisalo, J. (2010) Optimization of Cooling System in the View of Energy Efficiency and Indoor Environment Quality, Ashrae Winter Conference, Orlando, USA (presentation only)
- Virta, M., Itkonen, H., Mustakallio, P., Kosonen, R., (2010) Energy Efficient HVAC-system and Building Design, 10th REHVA World Congress Clima 2010, Proceedings.

- Virta, M., Kosonen, R., Itkonen, H. Mustakallio, P., (2010) Sustainable Office Building: Should I Focus on HVAC-system Design or Building Envelope, SB10 Finland conference, Helsinki, Finland
- Virta, M. (2011) HVAC-technologies in nearly net zero energy buildings, ASHRAE Winter Conference, Las Vegas, USA (presentation only)
- Virta, M., Lippo, A. (2012), Finnish Design and Management Models towards Low Carbon Cities, Acreconf, Delhi, India
- Virta, M., (2012) Energy Efficient Ventilation for Healthy Indoor Air, Ventconf, Kolkata, India (presentation only)
- Virta, M., (2013) BIM and Energy Simulation Enables the Use of Life Time Indicators during the Design, Acreconf, Delhi, India
- Virta, M., (2013) Modern HVAC-systems for Nearly Zero Energy Buildings, Acrex, Mumbai, India (presentation only)
- Virta, M., Hovorka, F., Lippo, A., (2013) Building passport as a tool to evaluate sustainability of building, Clima Conference, Prague, Czech Republic
- Virta, M., (2013) Energy Recovery Ventilation, Ventconf conference, Delhi, India (presentation only)
- Virta, M. (2013, 2015) Opportunity to Combine High Temperature Cooling Systems with Ground and Wastewater Energy Sources, Renewable Energy Expo, Noida (presentation only)
- Virta, M., (2014) India specific challenges in Commissioning, Acrex Delhi, India (presentation only)
- Virta, M., (2014) HVAC-industry to Breathe in Life through Healthier Indoor Air, Ventconf, Delhi, Urjavarán, Jaipur and Chandigarh, India.
- Virta, M., (2015) Commissioning Challenges in India, Acrex Bangalore, India (presentation only)
- Virta, M., (2015) Building's energy efficiency and energy storage, Renewable Energy Expo, Noida, India (presentation only).
- Virta, M. and Mathur, S. (2016), Indoor Air Quality Improvement in a School Building in Delhi, Clima 2016 Conference, Aalborg, Denmark.
- Virta, M. (2016), Role of Indoor Air Quality Monitoring- Focus on User's Health & Comfort, Green Building Conference 2016, Mumbai, India (presentation only).
- Virta, M. (2017), European solutions and technologies for Better IAQ – what can India learn?, Acrex Delhi, India (presentation only).