



## New concept for improving indoor air quality

### CURRENT SITUATION

Poor indoor air quality caused by high particle concentration is a common problem in urban areas. Normally, the indoor air quality is maintained by air conditioning system based on efficient particle filtration and high supply air flow rate. Main disadvantages of this approach are high energy consumption and large space required for air handling units and ductwork.

Health problems caused by fine particles and climate change are driving forces which affect the development of future technologies to air conditioning markets. It's therefore obvious that innovations which aim at better indoor air quality without increasing energy consumption are required.

### INVENTION

VTT has developed a new concept for cleaning indoor air from fine particles. The concept is based on the cleaning of the secondary air flow induced by the supply air flow (Patent pending). In principle, the concept can be utilized in any supply air device or diffuser, but VTT has identified active chilled beams as the most promising application.

### SOLUTION BENEFITS

Air conditioning systems based on the use of chilled beams have many advantages such as energy and space efficiency, and high cooling capacity.

By integrating air cleaning into the chilled beams, the particle concentration in indoor air can be reduced by approximately 70 %. Energy consumption of the new air cleaning solution is negligible.

### APPLICATION AREAS

The new air cleaning concept can be used in almost any kind of building (e.g. hotels, offices etc.). A significant advantage of this technique is that the indoor air quality can be improved in existing buildings without major changes in the ventilation system and without increasing air flow rates.

Besides the air conditioning systems of buildings, the new concept can also be used to improve air quality in cruisers, trains and buses.

VTT produces research services that enhance international competitiveness of companies, society and other customers at all stages of their innovation process, and thereby creates the prerequisites for growth, employment and wellbeing.

VTT promotes the realisation of innovative solutions and new businesses by foreseeing the future needs of its customers already in strategic research.

With its 2,700 employees, VTT is the largest research organization in Northern Europe. VTT's Ventures operation creates profitable and growing technology and wellbeing as well as more effective use of VTT produced Intellectual Property Rights.

### Contact

Juhani Pesälä  
Business Development Manager  
Tel. +358 20 722 5679  
GSM: +358 40 522 7179  
Email: [juhani.pesala@vtt.fi](mailto:juhani.pesala@vtt.fi)  
P.O. BOX 1000  
02044 VTT, FINLAND