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Name	Zhang Lin	
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<h2>Invited Plenary Lecture</h2>		
Presentation Title	How to dye the building green - install more equipment or reduce equipment energy consumption?	
Abstract (Approximately 200 words)	<p>There are two approaches to low-net-energy buildings: one is adding renewable energy installations to the buildings; the other is applying more energy (including the embedded energy)-efficient equipment. Life cycle analysis is necessary to determine actual economic and environmental costs for the former, whereas qualitative analysis may be sufficient for the latter. To demonstrate this, ventilation in buildings is used as an example. Building ventilation system largely determines the indoor environmental quality and building energy use. However, there are still few studies concerning the life cycle assessment of various alternative ventilation systems incorporating the combined effect of life cycle cost and carbon emission in the supply-and-installation phase, and energy performances in the operation phase. The supply-and-installation phase of the system materials and components significantly contributes to the total energy consumption and environmental loads of buildings. This talk covers a systematic approach to estimate their environmental impact, which was counted in terms of energy demand and CO₂ emission in the two phases. This approach has been applied to an actual typical classroom served by mixing ventilation, displacement ventilation and stratum ventilation. The results show that SV has the least environmental impact and life cycle cost. This approach may be generally applied to a sustainability analysis of ventilation methods in various scales of air-conditioned spaces.</p>	
Biographical Sketch (Approximately 200 words)	<p>Zhang Lin graduated from Tsinghua University in air conditioning engineering in 1983, and completed his Ph.D. in Process and Environmental Technology at Massey University in New Zealand in 1994. He has been engaged in engineering consultancy for seven years. He is currently a chair professor and head in the Division of Building Science and Technology at the City University of Hong Kong. His major research interests include advanced room air distribution (ventilation), associated thermal comfort, indoor air quality (IAQ), energy efficiency, and outdoor thermal comfort and tolerance. As the PI/co-PI, he has been in charge of twelve highly competitive research projects (RGC-TRS, RGC-CRF, NSFC and RGC-GRF). He has published more than 280 articles, including more than 170 SCI articles. His Google Scholar H-index is 55, and the number of citations is > 10,000.</p>	