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Paul Pieper, Eng., is the Marketing Manager for Venmar CES Inc., an innovative manufacturer of cost effective, energy efficient, energy recovery solutions for the commercial ventilation market.

Mr. Pieper has over 15 years of Sales and Product Management experience in designing high performance HVAC systems and equipment for commercial and industrial applications. He holds a degree in Pure and Applied Science from Marianopolis College, a Bachelor of Engineering degree from the Department of Building, Civil and Environmental Engineering and a certificate in Software Development from Concordia University in Montreal.

Mr. Pieper is a member of the Quebec Order of Professional Engineers as well as the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) and the U.S. Green Building Council (USGBC). He currently represents Venmar CES Inc. with the Air-Conditioning, Heating and Refrigeration Institute (AHRI) on the Air-to-Air Energy Recovery Ventilation Equipment Section.

Mr. Pieper is the Chair of ASHRAE TC 8.12 Desiccant Dehumidification Equipment and Components and is an active member of ASHRAE TC 5.5 Air-to-Air Energy Recovery.

**LECTURE TOPICS:**

**Characteristics of High Performance Schools: Energy and Indoor Environmental Quality**

Green building in education provides numerous benefits: operational cost savings, reduced energy use, greater health and well-being and improved student performance. There are many resources available to the mechanical designer however few resources focus exclusively on HVAC systems and how to optimize space heating and cooling requirements while providing a superior indoor environment. This program examines the most common guidelines and best practices in the industry for the successful implementation of high performance HVAC systems in education with particular emphasis on K-12 Applications.

**Meeting and Exceeding High Performance Standards, Codes and Guidelines with Air-to-Air Energy Recovery Systems and Equipment**

As we move towards net zero energy buildings and a sustainable future for the built environment, many designers struggle with the seemingly conflicting requirements of the latest standards, codes and guidelines when trying to provide high performance HVAC systems that are energy efficient and capable of delivering superior IEQ. Fortunately, air-to-air energy recovery systems and equipment provide one of the most cost-effective and efficient ways to recycle waste energy while creating quiet and comfortable indoor environments. An overview of current and proposed standards and guidelines will be presented to identify areas where energy recovery is mandated and where energy recovery can be employed to meet and exceed performance requirements for efficiency, thermal comfort and ventilation air.

## Understanding and Evaluating Air-to-Air Energy Recovery Technologies

Industry emphasis on the advancement of sustainable building design and operations has created a rapidly growing market for energy recovery systems and equipment. However, for many the fundamentals of air-to-air energy recovery remain poorly understood. The basic concepts of energy recovery will be reviewed and an overview of the primary standards and guidelines relating to energy recovery devices will be presented. In addition, the most popular technologies will be explored in detail to understand the advantages, performance benefits and key specifiable differences with a view towards practical application and successful integration.