**Program Summary**

**Advanced Ventilation Goes Mainstream October 26, 2022**

*Program Brief*

On October 26, 2022, NYSERDA and Building Energy Exchange hosted the fifth event of their High Rise / Low Carbon Series, focusing on the advanced technology and benefits of modern ventilation systems used in high performance building retrofits.

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| The **Empire Building Challenge** (EBC) is a $50 million NYSERDA program that accelerates the decarbonization of tall buildings through public-private partnerships to bring scalable carbon-neutral retrofit approaches to the New York market. | The **High Rise / Low Carbon Series** highlights NYSERDA’s EBC and the commitments of the Challenge Partners. The series is designed to inspire action among New York’s building industry stakeholders and invite the world’s top solution providers to join New York on its journey towards a low-carbon future.  |

*Project Highlights*

This EBC partner project showcases advanced ventilation systems that provide exemplary air quality and comfort, limit the loss of heating and cooling energy, and improve carbon performance.

**345 Hudson •** Hudson Square Properties’ 345 Hudson retrofit project decouples ventilation from heating and cooling systems using a high energy recovery Dedicated Outdoor Air System (DOAS). The DOAS, located on the rooftop, provides fresh air to chilled beams in tenant spaces, which induces additional airflow across heating/cooling coils. Water running through the ceiling mounted coils tempers the air. Nearly 90% of the energy from the conditioned exhaust air is recaptured, using an Energy Recovery Ventilation unit, reducing heating and cooling loads, while maintaining high levels of fresh, outdoor air.

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| **Panelists**:**Vinnca Bonde, Sales Director, Energy Machines****Grace Kolb, Mechanical Engineer, AKF Group****Tony Abate**, Vice Presdient and Chief Technology Officer, AtmosAir**Presenters****Daniel Bersohn, Associate, BuroHappold Engineering****Benjamin Rodney**, Vice President, Construction, U.S. East Region, Hines**Moderator****Benjamin Rodney**, Vice President, Construction, U.S. East Region, Hines**Opening Remarks****Alexander Jahn, Senior Project Manager, NYSERDA** |

*Program Takeaways*

**Ventilation has taken center stage in the building industry in response to the COVID-19 pandemic.**We spend about 90% of our time indoors (*U.S. Environmental Protection Agency. 1989. Report to Congress on indoor air quality: Volume 2. EPA/400/1-89/001C. Washington, DC*.). As awareness around indoor air quality increases, so does demand for heightened ventilation with 100% outside air.

**Decoupling ventilation from heating and cooling can meet strict ventilation requirements *and* improve energy efficiency.** Separating ventilation from space conditioning allows for optimal control of both systems. Decoupled systems are better equipped to *follow the load*—or maintain high levels of performance in occupancy scenarios that demand a shift in heating or cooling, but not ventilation, or visa-versa. By decoupling these systems, the risk of over-conditioning, or simultaneous heating and cooling, is reduced.

Meanwhile, heating and cooling, provided by hydronic systems like chilled beams or radiant flooring, in tandem with water-source heat pumps, can provide heating and cooling closest to the point of use, reducing distribution inefficiencies associated with centralized air handling units.

**Energy Recovery Ventilation drastically improves ventilation system efficiency, recovering energy from the outgoing air and transferring it to incoming air.** Energy Recovery Ventilators enable the downsizing of cooling and heating systems, reducing energy use and floor space requirements, as the incoming fresh air is delivered at a temperature closer to operative conditions, relative outdoor air. This is essential efficiency feature, particularly when operating at high ventilation rates.

**Education is critical to getting stakeholder buy in for novel ventilation strategies.** All relevant parties, including developers, consulting engineers, and facilities managers, should be included in the conservation, detailing how systems work, how they are installed, operated, and maintained, and how occupants will benefit in terms of comfort and health.

**Lease language is a potential barrier to implementing advanced ventilation systems in commercial buildings.** Using language that avoids static temperature requirements, enables more targeted heating, cooling, and ventilation levels based on real-time occupancy data and day-to-day space uses—particularly useful as hybrid work schedules become the new normal.

*Additional Topics for Future Consideration:*

* *Phased solutions for advanced ventilation upgrades*
* *Heating & cooling solutions for decoupled ventilation systems*
* *Resource Efficient Decarbonization framework*
* *Advanced ventilation in the context of building electrification*
* *Runaround loop energy recovery systems*