ELARA ENGINEERING

Big Picture Thinking. Practical Approach. Sustainable Design.

Legacy at Millennium Park

FIRST PLACE
ASHRAE Excellence in Engineering Award
Chapter Level

Project Highlights and Results

- 73-Story mixed use condominium and commercial space building constructed in 2009
- Elara ventilation study identified opportunity to convert makeup air system from electric heating to natural gas heating
- Determined that 73rd floor boiler plant could provide domestic hot water heating via double wall heat exchanger
- $330,000 annual energy cost savings (5.3 year payback)
- Project completed 17% under budget

Project Background

Owner:	**Legacy at Millennium Park Condominium Association**
Location:	**Chicago, IL**
Team/Team Lead:	**Dustin Langille**
Elara Role:	**MEPFP Engineer**
Type:	**Retrofit**
Construction Cost:	**$1,750,000**

Project Overview

Building Type:	**Residential Condominium, Commercial**
Building Attributes:	**73-Stories with 360 Condominium Units, 460 Parking Spaces, Commercial Space, including the Art Institute of Chicago and University Club; 753,790 SF**
Initial Construction:	**2009**
MEPFPIT Systems:	**Air handlers, boilers, domestic heat exchangers, pumps**

Innovation

- New hot water heating and re-heat coils for all four existing makeup air units sized to maximize efficiency; resulting in a negligible fan energy penalty over the electric coils and allowing for minimum boiler efficiencies of 94%.
- Hot water resets reduced return water temperatures to further improve boiler efficiency.
- Parallel ECM pumps utilized to reduce pump energy usage and pump controls stage themselves based on the best efficiency point.
- Elara's Ventilation Study determined that building was operating at a substantially negative pressure due to makeup air units being operated at reduced speeds during winter to maintain temperature control and from significant snow intake that was damaging the electric coils, requiring further speed reductions. New hot water system allows for precise temperature control and enables fans to operate at design capacity to increase ventilation capacity to the building.
- 13th floor boiler flues routed through a mid-level garden deck incorporate a unique, aesthetically pleasing architectural screening to conceal the flues.
- Project was phased to allow full building occupancy with minimal impact to residents.