ELARA ENGINEERING

Big Picture Thinking. Practical Approach. Sustainable Design.

LUC Lewis Towers

Project Highlights and Results

- Assessment identified and evaluated alternatives to replace 228 Packaged Terminal Air Conditioning (PTAC) units in historic 1920s high-rise building to enhance operation, temperature control, and efficiency
- In-depth survey of existing conditions was necessitated by the need to create vertical paths for new DOAS infrastructure and confirm above ceiling conditions for routing new ductwork
- Completed design for replacement includes a new water cooled Variable Refrigerant Flow (VRF) system incorporating a new Dedicated Outside Air System (DOAS) for mechanical ventilation
- Phased design approach allows building occupancy throughout construction

Project Background

Owner:	**Loyola University-Chicago (LUC)**
Location:	**Chicago, IL (Water Tower Campus)**
Team/Team Lead:	**Don McLauchlan, Jay Parikh, Matt Swanson, Chad Von Holten, Nimesh Raje, Bhupendra Tailor**
Elara Role:	**MEPFP Engineer**
Type:	**Historic Building Retrofit**
Construction Cost:	**$4,000,000**

Project Overview

Building Type:	**Higher Education; Classroom, Offices, Loyola University Museum of Art**
Building Attributes:	**18 Stories; 225,000 SF**
Initial Construction:	**1926, Historical Building Status**
MEPFPIT Systems:	**Low pressure steam boilers, steam to hot water heat exchangers, air cooled chiller, fluid cooler, 4-pipe fan coil units, air handling systems with hot & chilled water coils, steam radiators, VRF system**

Innovation

- Historic 1920s high-rise building provides office, support, and gathering spaces for Loyola University Chicago while lower levels have retail space and the University's Museum of Art.
- The building contained different space heating systems on different floors: PTACs with operable windows or air handling systems
- The existing PTAC units had limited capability to meet outside air needs per City of Chicago ventilation requirements, limited flexibility for office arrangements, impeded space renovations, and had limited ability to serve interior spaces.
- The PTAC replacement design includes a new water cooled variable refrigerant flow (VRF) system that incorporates a dedicated outside air system (DOAS) for mechanical ventilation. Specific elements include approximately 153 evaporator units, a new condensing water loop, two new DOAS units in modified mechanical rooms, a new rooftop fluid cooler, new heat exchangers, new piping and ductwork risers and supporting electrical and controls infrastructure.
- Design required detailed phasing to ensure the existing steam and condensate system serving the PTACs remained operational until the final floor's construction was completed.