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IPRO 338: Retrofitting Crown Hall

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TECHNEWS WRITER

The Interprofessional Project course (IPRO) at IIT is a team-based learning environment in which students from various concentrations and disciplines work together to solve real-world problems. IPRO 338, sponsored by the Electrical Contractors Association of City of Chicago and Operation Green Jobs, is tasked with participating in the NECA Green Energy Challenge. For the NECA Green Energy Challenge, the IPRO team was challenged to identify a facility on campus that is in need of energy efficiency improvements. IPRO 338 chose to consider Crown Hall for

analysis, as it is considered the most historically significant building on campus, as well as the most energy inefficient. T

he team then conducted an energy audit of the building's power and lighting systems and a preliminary design of an energy retrofit for power and lighting systems. Additionally, they designed a new solar PV energy generation system for the facility.

Crown Hall was built between 1950 and 1956, during Mies van der Rohe's tenure as director of Illinois Institute of Technology's department of architecture. The modern-style steel and glass building is regarded as one of the most architecturally significant buildings of the 20th century modernist movement. Due to the limited technology available in the

1950s, Crown Hall does not meet the current minimum standards set by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

IPRO 338 sought to perform an analysis on possible smart technologies that could be implemented in the building. The next step was to eliminate those technologies that would be considered aesthetically unacceptable due to the historical significance of Crown Hall.

Upon elimination of those technologies, the team performed an economic analysis to determine the energy savings and payback timeframe for each possible implementation or combination of implementations. The following categories were considered for Crown

Hall renovation analysis: lighting, building envelope renovation, geothermal technology, and photovoltaic technology.

Based on research conducted by the team, lighting retrofits and geothermal technology were the two most viable options to consider. The lighting retrofit would pay for itself after 14 months and the geothermal installation would pay for itself after 15 years. After the pay back dates, these two technologies combined could generate over \$100,000 per year in energy savings.

For more information, or to request the full report, visit <http://www.facebook.com/pages/Chicago-Hawks-Retrofitting-Crown-Hall/348277218523961>.



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