

125 Park

Challenge

Known for its renowned architectural design and classically ornate structure, 125 Park Avenue selected BOCA Group as the vertical transportation consultant for the modernization of 15 elevators. The client wished to upgrade the devices with advanced energy-efficient systems, as the building's elevator equipment consisted of aging DC machines with AC/DC generators. The BOCA Group team was responsible for ensuring the service of old equipment throughout the duration of the project, while also conducting an entirely separate energy consumption analysis for the ConEd application process. Additionally, a cab upgrade was added into the scope of work midway through the modernization project. The client relied on BOCA Group's strong expertise and efficiency to establish an adequate elevator energy consumption reduction as a result of the modernization.

Scope of Work

BOCA Group's project management team completed the initial maintenance evaluation, project survey, and energy consumption analysis. Our team performed an estimated energy simulation using BOCA Group's proprietary software that was strategically developed by using actual energy measurements of over 100 elevators. The tool was developed for BOCA Group by a leading expert in the field of elevator energy measurement, using a methodology published by the American Society of Mechanical Engineers, *Developing a Methodology for Measuring the Comparative Energy Efficiency of Elevators (IMECE2013-66663)*. This paper was written in

collaboration with The Cooper Union for the Advancement of Science and Art in Manhattan, NY and the Center for Innovation and Applied Technology. Energy measurements for the existing equipment and measurements of similar new elevator equipment were input into the BOCA Group energy simulation tool. The input data for the simulation is indicated in the tables below.

ELEVATOR ENERGY REPORT
 125 Park Avenue
 New York, NY 10017
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Table 2. Performance characteristics

Car Number	Capacity (lbs.)	Speed (fpm)	Travel (feet)	Landing (qty.)	Load Factor (%)	Travel Factor (%)	Starts Per Year (per car)
1-6	2,500	600	155	13	7.5	39	200,000
7,8	2,500	600	305	26	7.5	39	32,625
9-14	2,500	600	289	13	4.5	40	200,000
15	2,500	600	330	27	7.5	39	250,000

Table 3. Energy characteristics

Phase	Counterweight (%)	Standby Power (watts)	MG Idling Power (watts)	Cab Lighting (watts)	Cab Ventilation (watts)	Hoisting Efficiency (%)	Regen Efficiency (%)
Old Equipment	40	889	4,025	150	70	67.2	36.6
New Equipment	40	245	0	35	70	77.2	-5.5

Once the simulation was complete, the application and analysis were both submitted to ConEd for approval. Upon approval, ConEd visited the building to take new readings which were then used for an internal rebate calculation process. In addition to the energy simulation and rebate application, BOCA Group specified the implementation of new Hollister Whitney AC gearless machines with VVVF AC drives. The implementation of Variable Frequency AC drives paired with new PMAC gearless machines provided the building with exceptional energy-efficient devices.

Results

There were significant energy savings associated with the 125 Park Avenue Street elevator modernization project. BOCA Group successfully managed this project from start to finish and submitted an energy rebate on behalf of SL Green for 13 out of 15 elevators, for a rebate of over \$50,000. BOCA Group continues to be a full-service elevator consulting partner for SL Green, conducting maintenance evaluations and third-party inspections, along with modernization work and due diligence equipment evaluations.