

# Fortune 500 Company JLL Sees Big Savings in Energy Efficiency with Exhaust Fan Motor Upgrades

## The Challenge

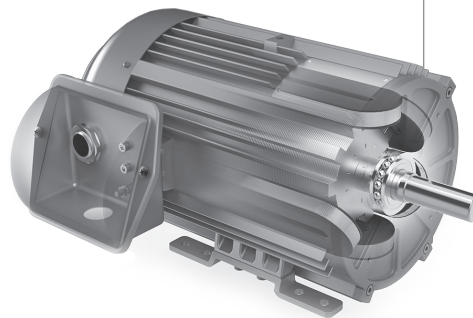
A leading professional services firm that specializes in real estate and investment management, JLL occupies and manages an impressive portfolio of buildings around the world. Recognized as both one of the most Ethical and Admired companies (Ethisphere Institute and FORTUNE respectively), JLL puts enormous focus on creating spaces, buildings, and cities that will lead to a sustainable future.

JLL's sustainability targets are specific and aggressive: it's on track with setting Science-Based Targets for Scope 1 and 2 emissions, and accompanying Scope 3 target, and every office space over 10,000 sq. ft. will be sustainably certified by 2030. Through Building a Better Tomorrow, JLL is focused on embedding sustainability into everything it does. Teams of energy services and sustainability people operate globally. And the firm is always on the lookout for the next innovation to support its goals.

## The Solution: The LED of Motors®

The Turntide™ Smart Motor System—the LED of Motors—meets the needs of JLL on several fronts. Durable construction that maximizes the use of raw materials. It requires less energy to provide the same level of comfort and air quality in the built environment—significantly less energy. To test the viability of the smart motor system in its HVAC systems, JLL selected a site to performance-test three motors with exhaust fans. The test was executed in three phases:

1. Baseline measurements. A third-party energy monitoring kit was installed on one 3HP, one 7.5HP, and one 10HP exhaust fan motors. The energy monitoring kits measured the existing induction motors power draw for a period of three weeks.
2. Motor upgrade. The induction motors were replaced by Turntide motor systems (motor + motor controllers). The installation was performed by the in-house JLL facilities team. Turntide used the energy monitoring kit installed during phase 1 to collect power draw for the smart motor system for a similar 3-week period and uploaded all measurements to the cloud.
3. Lastly, Turntide provided JLL with a dashboard that presented a comparative analysis between the original induction motor power draw and the Turntide system power draw.



## Profile

A world leader in real estate services, JLL buys, builds, occupies and invests in a variety of assets including industrial, commercial, retail, residential, and hotel real estate



**BUILDING TYPE**  
Parking Garage



**PROJECT TYPE**  
3 Exhaust Fan Motor Replacements

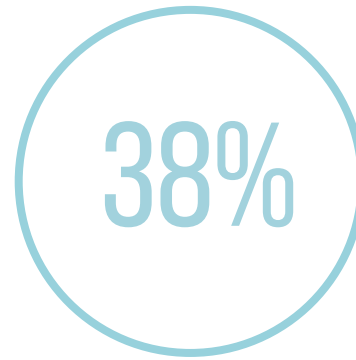


**SMART MOTOR SYSTEM SIZES**  
(1) 3 HP,  
(1) 7.5HP, (1) 10HP

# Results

Over the first three months, the combined energy draw savings were averaging 38 percent (36% on 3 HP, 24% on the 7.5 HP, 45% on the 10 HP\*). Along with the energy savings, JLL benefits from remote motor monitoring and control, allowing for fine-tuning of operations and alerts should anything be amiss. All with a payback that makes good business sense.

Based on these results, JLL has rolled out the Turntide solution to its energy and engineering services teams as the preferred HVAC/R retrofit for its many managed assets, getting one step closer to their sustainability goals. JLL has also presented Turntide as the new standard for failed motor replacement.



Annual kWh savings from combined retrofits of the 3 exhaust fans

## ROI

ROI has been calculated based on exhaust fan running constant speed during typical office hours of 4800 hours per year.

NAME	Motor Size (HP)	Energy Savings (kwh)	Motor % Energy Savings	Peak kW Savings	Utility Savings	Price after Rebate	Payback (years)
EF (4800 hrs, constant speed)	3.0	2,126	48%	0.4	\$367	\$1557	4.2
EF (4800 hrs, constant speed)	7.5	6,005	29%	1.3	\$1,036	\$2,287	2.2
EF (4800 hrs, constant speed)	10.0	6,467	26%	1.6	\$1,116	\$2,408	2.2

Example of a typical office building where baseline is constant speed and Turntide is multi-speed.

NAME	Motor Size (HP)	Energy Savings (kwh)	Motor % Energy Savings	Peak kW Savings	Utility Savings	Price after Rebate	Payback (years)
RTU (4800 hrs, multi-speed)	3.0	3,964	90%	0.4	\$661	\$1,336	2.0
RTU (4800 hrs, multi-speed)	7.5	17,653	86%	1.3	\$2,900	\$889	0.3
RTU (4800 hrs, multi-speed)	10.0	21,510	85%	1.6	\$3,522	\$603	0.2

### Assumptions

1. Typical office hours running 6 am - 10 pm (Mon to Fri), 6 am - 6 pm (Sat) and closed Sunday
2. Pricing includes a cell modem and controls package for tie into existing BAS or web-based access through Turntide's cloud platform
3. Total price includes materials and labor (\$125/hr)
4. Utility rebates based on \$0.12 per kWh of energy savings and \$150 per peak kW savings
5. Utility rate set to \$0.16 per kWh and demand charge of \$15 per kW

\* The original 10 HP induction motor was extremely overloaded, effectively drawing ~13 HP. Turntide reduced the power draws by 45% maintaining rated RPM and HP.



Turntide Technologies (formerly Software Motor Company) has developed the world's most efficient and intelligent electric motor system. The revolutionary Smart Motor System is based on proven switched reluctance technology, now managed with advanced cloud software and connected to precise controls via IoT. Turntide's vision is to eliminate the 25% of global electricity consumption that is wasted by legacy motors, thus accelerating the world's transition from fossil fuels. Turntide is based in Sunnyvale, Calif., with offices in San Francisco; Arlington, Wash.; and Kennesaw, Ga. Turntide has installed Smart Motor Systems with dozens of customers, reducing their motor electricity consumption by an average of 64%, and is powering the systems of leading OEMs. For further information, visit [www.turntide.com](http://www.turntide.com).