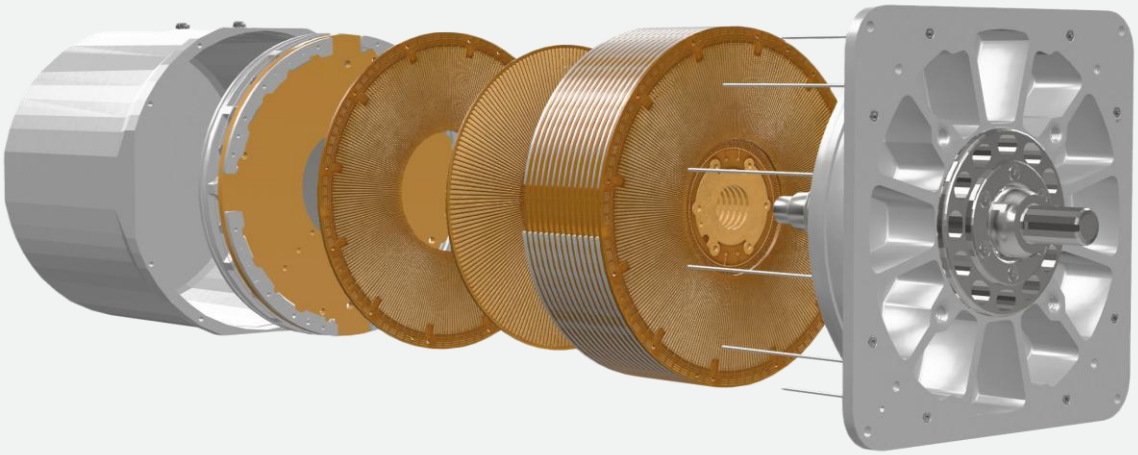
CASE STUDY

Efficiency and Safety Improvements Using Electrostatic Motors in Conveyor Applications

C·MOTIVE

INTRODUCTION

FedEx Supply Chain, a third-party logistics provider with facilities in Fort Worth, TX, operates 20 hours a day and six days a week, utilizing over 400 motors per site. Driven to enhance efficiency, streamline operations, and uphold best-in-class employee safety, FedEx Supply Chain partnered with C-Motive to evaluate its emerging electrostatic motor technology.



CHALLENGES

Poor Efficiency

Advanced electromagnetic motors remain costly and inefficient. Traditional systems are often oversized and rely on gearboxes, yielding just 55–60% overall energy efficiency.

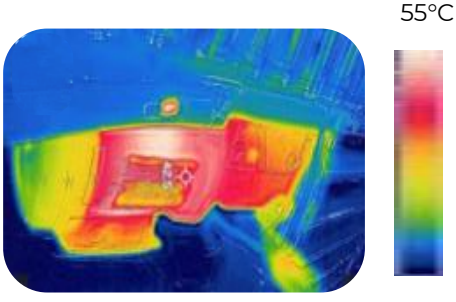
Costly Maintenance

Unusual noises like whining or clunking often indicate internal gearbox problems leading to unexpected downtime.

Ever-present Hazards

Facility surveys show traditional motors and gearboxes often reach 50–100°C, posing burn risks—second-degree burns can occur within three seconds at 60°C.

Standard 1 hp IE4 motors (gold) paired with 20:1 gearboxes (green)



SOLUTION

- C-Motive's electrostatic motor was installed on a production-levels materials handling equipment.
- The C-Motive motor delivered full torque and high efficiency at low speeds, without the need for oversizing or a gearbox.
- C-Motive products—based on electric fields and not magnetic fields—require no rare-earth metals and 90% less copper.

RESULTS

Reliable Performance → Streamlined Operations

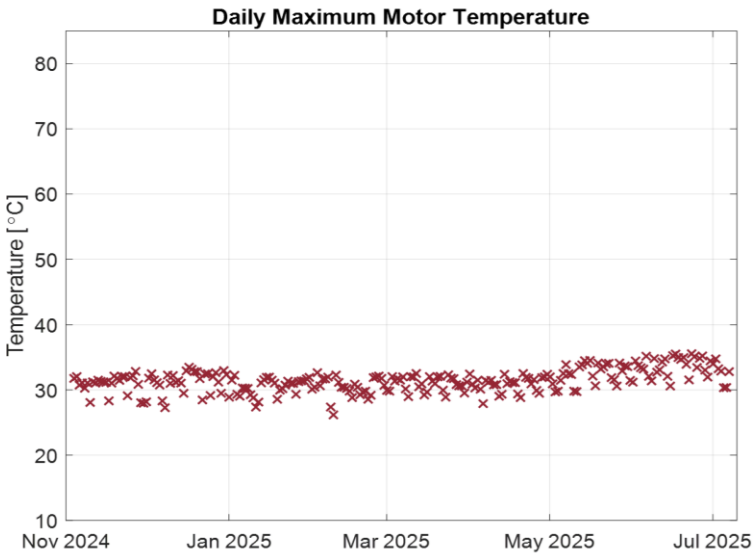
The C-Motive motor operated continuously for 9 months—approximately 20 hours per day, 5 to 6 days a week—without any motor-related downtime.

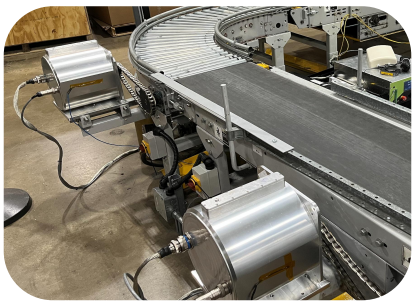
Cooler Motors → Lower HVAC Costs & Safer Work Environment

Motor temperatures stayed consistently below typical levels throughout the pilot, showing only a 5°C shift between on/off states and a 5°C seasonal rise from winter to summer.

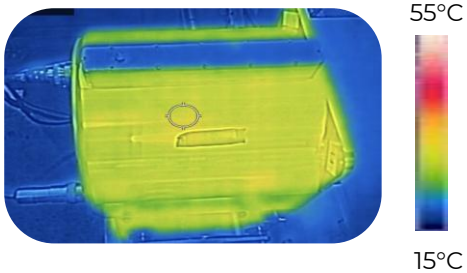
Simplicity, Efficiency & Safety → Reduction in Total Cost Ownership

When combining all facility costs, C-Motive motors have the potential to significantly reduce the total cost of motor ownership. For a facility like a single FedEx Supply Chain location, this can result in over $100,000 in savings annually.





C-Motive Electrostatic machines connected via chain drives



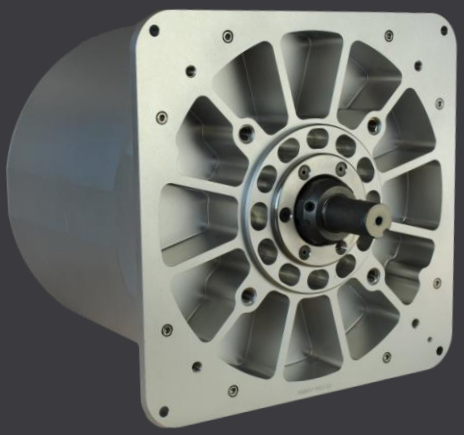
"Other motor technologies are kind of iterations on a theme, but they all work on the same physics. This is turning everything on its head. I don't use the term 'disruptive technology' lightly, but this could be that. It could change the game."

- Mark Crowley, Automation Technician at FedEx Supply Chain

CONCLUSION

While advanced electromagnetic motors remain costly and inefficient, traditional systems are often oversized and depend on gearboxes—resulting in just 55–60% overall energy efficiency. C-Motive's motor eliminates the gearbox and operates at significantly higher efficiency, reducing operating costs, HVAC demand, and carbon footprint. Its lower operating temperature also contributes to a safer workplace for all employees.

If your facility is looking to improve overall efficiency, streamline operations and improve employee safety, contact C-Motive today to explore how our electrostatic motors can transform your operations with cooler, quieter, and more energy-efficient performance—eliminating gearboxes, reducing HVAC load, and enhancing workplace safety from the ground up.



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