Benefits of Industrial Electrification

Bringing Efficient, Clean Energy to Industrial Processes

Clean air is essential to the health of communities and the economy across northern Illinois. To help support our region's clean air goal, ComEd is building on the strength and reliability of our smart grid to drive innovation, power new clean technologies and build a better environment for future generations. To do this, we're working with business customers across northern Illinois to discuss beneficial electrification, which is the use of electricity for end-uses that would otherwise consume fossil fuels. Industrial electrification is particularly promising for ComEd's large commercial and industrial business customers.

WHAT ARE ELECTROTECHNOLOGIES?

Electrotechnologies are the application of electricity in technology. They create a broad range of environmentally smart business solutions that enable large commercial and industrial customers to establish or achieve their sustainability goals. Large commercial and industrial customers can use electrotechnologies to save money, improve efficiency and protect the environment.

ComEd has identified seven electrotechnologies that can provide a significant impact on the operations of large commercial and industrial customers:

Forklifts

Companies choose electric alternatives to forklifts powered by internal combustion engines for their societal benefits and lower costs over the life of the vehicle. Of the seven classes of forklifts, Class IV and Class V forklifts offer the greatest opportunity to convert to beneficial electrification because all Class IV forklifts have electric alternatives, while over half of the Class V market has commercially available Class I alternatives, which can lift up to 20,000 pounds. Electric forklifts cut carbon monoxide emissions, an environmental, health and safety hazard that can lead to worker fatigue and even death in enclosed spaces. Electric forklifts cost less to maintain (37.5 percent less in one Electric Power Research Institute analysis) and have lower fuel costs than traditional options. Newer models of forklifts are more efficient and environmentally friendly than those available years ago.

Fleet Electrification

Fleet electrification transitions fleets from conventionally fueled vehicles (gasoline and diesel) to cleaner, more efficient battery electric vehicles (EVs). The transportation sector represents about one-third of total U.S. greenhouse gas emissions, and reducing emissions from medium- and heavy-duty fleets can have a major impact on our environment. Companies like Amazon, DHL, Lyft, and public transit agencies like Chicago's CTA are deploying EVs to decarbonize operations, meet sustainability goals and reduce costs. ComEd's goal to electrify 30 percent of our fleet by 2025 will eliminate 2,000 metric tons of greenhouse gas emissions annually, in addition to the 4,000 metric tons our current fleet enables us to avoid annually.

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Commercial & Residential Buildings: Heat Pumps for Space Conditioning (ASHPs) & Heat Pump Water Heaters (HPWHs)

Using electricity as the main energy source for a building's space and water heating is cleaner and more cost-effective than using fossil fuel sources. Constructing high-performance, all-electric buildings represents a small, upfront cost and offers substantial cost savings over retrofitting existing buildings that use natural gas. ComEd Energy Efficiency is currently conducting a study of the current market size, homebuyer demand and growth trajectory of the all-electric homes market in Illinois, along with associated program costs and energy-savings potential. Findings from the study will inform an all-electric homes pilot.

Infrared

Infrared heating is generated by lamp sources and has several industrial processing applications, such as heating (plastics thermoforming, space heating), curing (coatings on metal parts) and drying (textiles). Companies choose infrared technology in place of or in addition to natural gas ovens to boost productivity and improve product quality. By using an infrared system in its boost oven, a major automobile manufacturer reduced its energy consumption by 50 percent.

Induction

Induction happens when an AC current is run through a coil to induce a current in a conducting object. Induction can be applied in a variety of metal working industries for companies that need to melt, heat, heat treat, join or bond, or surface temper metals. Companies choose to adopt induction technology in place of natural gas furnaces to increase productivity and improve product quality. Induction technology can produce energy savings of up to 40 percent over natural gas.

Radiofrequency (RF) & Microwave

This technology creates an electromagnetic wave that generates heat from the inside out. Because it directly transfers energy to a product, RF and microwave technology is primarily used in food services. Companies choose RF and microwave technology to meet high production rates, achieve uniform heating and instantly control on/off functions for heat-sensitive materials. In some applications, this technology can double production speed while reducing overall energy use per part by 40 percent.

Ultraviolet

Ultraviolet technology creates an electromagnetic wave between X-Rays and visible light in the electromagnetic spectrum that reacts to UV radiation. This technology is excellent for heat sensitive products. Companies choose ultraviolet technology for its high production rates, space savings and energy savings. Frequently used in the printing industry, ultraviolet technology is 60-80 percent more efficient than traditional technology.

Benefits of Electrotechnologies

Companies across the U.S. apply electrotechnologies to their industrial processes to decarbonize their operations, meet sustainability goals, protect the environment and reduce operating costs.

By choosing electrotechnologies, large commercial and industrial customers can:

Save money.
Over time, companies that choose electrotechnologies realize savings due to greater energy efficiency.

Boost productivity.
Because they can be instantly turned on and off, electrotechnologies can help companies make more product, faster.

Improve product quality.
Electrotechnologies can help companies refine industrial processes and create better products.

Create healthier communities.
By shifting from locally burned fossil fuels to cleaner electricity produced in state, Illinois can realize significant reductions in the emissions of carbon dioxide (CO2), nitrogen oxides (NOx) and particulate matter, which reduces public health impacts.

Increase manufacturing flexibility.
Electrotechnologies offer more control and more options for manufacturers.

Ensure reliability.
Electrotechnologies work off of ComEd's resilient smart grid and continue to deliver record reliability to customers.

Demonstrate environmental stewardship.
Electrotechnologies reduce emissions and address growing concerns about sustainability and health, as it relates to air quality in local communities.

TAKING THE NEXT STEP TO USING ELECTROTECHNOLOGIES

ComEd Large Customer Services account managers are prepared to help customers learn more about electrotechnologies that can lower energy consumption, reduce carbon footprints and improve business performance.

Start the conversation:

- **Estimate the baseline electricity requirements for electrotechnology application**
- **Estimate and controlling of bill impacts and direct billing for third-party charging installations**
- **Learn about potential cost-saving opportunities through ComEd's off-peak charging programs**
- **Explore opportunities to partner with ComEd**

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