Electrification

March 5, 2020

evergy™

What is Electrification?

The conversion of end use technologies to electric in industry processes, buildings and the transportation sector

However, for it to be beneficial it must reduce overall costs and emissions.

Beneficial Electrification

Must meet one or more of the following conditions without adversely affecting the other two:

1. Saves businesses money over the long term;
2. Reduces negative environmental impacts; and
3. Enables better grid management

Source: Regulatory Assistance Project (RAP) June 19, 2018

Industry Trends

Sustainability and Carbon Reduction Goals are hot topics

- In 2017, nearly half of Fortune 500 companies – 48 percent – have at least one climate or clean energy target.
- Evergy announced its own carbon reduction plan of 80% below 2005 levels by 2050. (Source: Evergy press release 1/30/2020)
- By end of 2020, Evergy will have reached an estimated 40% reduction.

Electrification Technologies

Airport equipment

Heat Pumps

Infrared curing and dying

Light Duty Vehicles

Ultraviolet curing

Yard Hustlers

Induction Cooktops

eTRUs

Induction melting and treating

Electric Fryer

Water Heater

Forklifts

Electric Feed Pusher

Med and Heavy Duty Trucks

Customer Benefits of Electrification

Non Energy Benefits can outweigh ROI requirements

- Reduce/remove a bottleneck – Improve production processes
- Cleaner - Not discharging combustion products indoors
- Safer – No open flame, better indoor air quality
- Quieter – Allows for better communication
- Greener – Carbon reduction, not consuming a fossil fuel
- Less Maintenance – Reduces downtime, improves production
- Savings – Often lower total cost of ownership

- Electrification is seen as the best and quickest way to move towards customer's clean energy and carbon reduction goals

Let's Get Electrified!

Collaborate with Evergy

- Subject Matter Expert
  - EV Infrastructure
- Site Assessments
  - Evaluate processes for improved efficiencies, safety, and
  - Help customer to reach corporate climate goals
- Tools to compare technologies and perform payback calculations
- Strategic research partners and technology vendors
- Complimentary consulting services offered to our commercial and industrial customers.

Local Opportunities Identified:

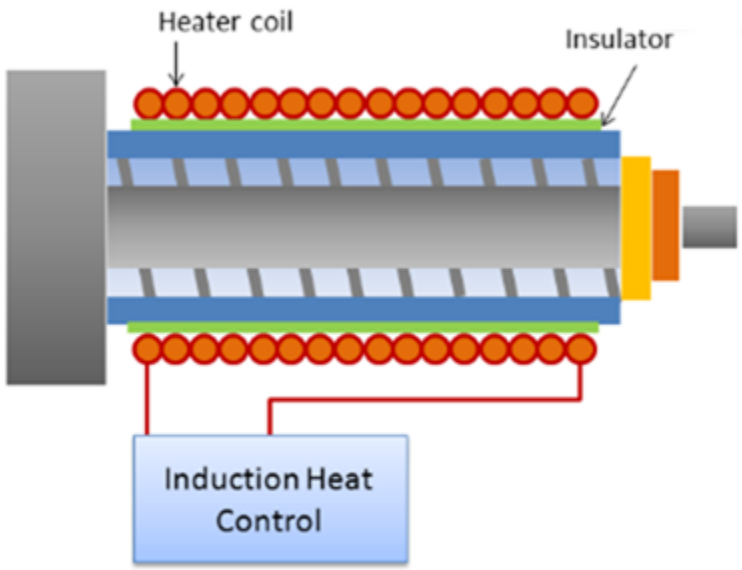
- Infrared (IR) heating of plastic prior to forming
- IR cleaning of food process racks
- IR oil heating
- Induction heating in lieu of electric band heaters
- Waste product de-watering
- Electric forklifts
- eTRUs for reefer trucks in queue

Infrared Technology

Did you know:

- Faster curing and drying
- Reduces energy consumption
- Increases productivity
- Requires little maintenance
- Enhanced worker safety
- Payback can be achieved in less than a year, for most applications.

Induction Heating

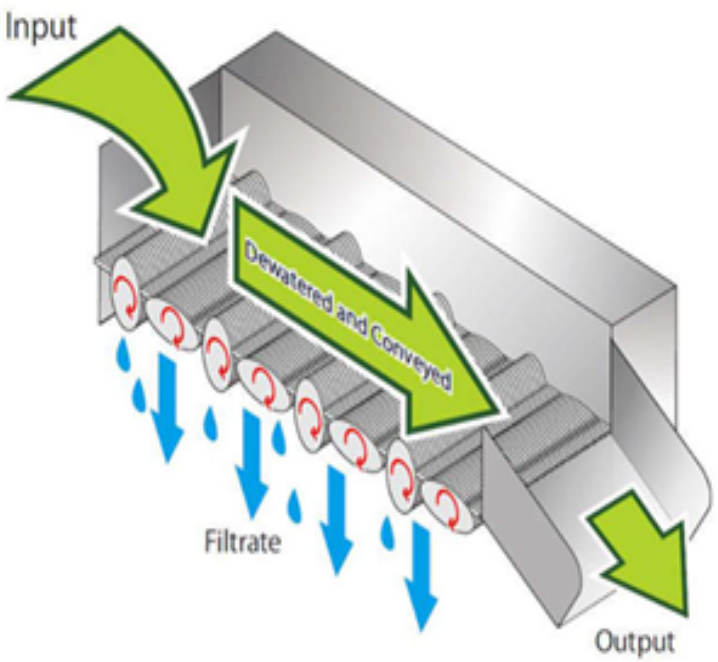


Induction Heater:

Benefits:

- Improved process efficiency
- Localized, constant and precise heating
- Temperature control
- Energy saving
- Best quality and yield/performance
- Pollution free, fast and secure technology
- Improved working environment.

Waste Product De-Watering



How does it work?

An electric motor articulates the oblong rollers.

Water is squeezed out of the waste.

Reduces overall disposal costs

- Reduces weight of the sludge
- More sludge can be transported at one time.

Electric Forklift

- Cleaner – No tailpipe emissions
- Quieter – Allows for better communication
- Greener – Not consuming a fossil fuel
- Less Maintenance – Electric forklifts require less maintenance than their IC counterpart
- Lower total cost of ownership –
  - Higher upfront cost but less expensive to maintain
  - Cost savings with reduced need to ventilate
  - Payback less than 2 years on average
  - Most economical if used more than 1,000 hours/yr

eTRUs

- Existing TRUs typically diesel powered
- Cities are moving towards diesel idling limits; eTRU alleviates this problem
- eTRU operation typically good ROI if outlets are used at least 1,000 hours/year
- Ideal for refeer container in queue
- Manufacturers adding electric connection to unit as standard option

Compare Measures

Evergy accessible database of measures and payback calculator

Measure	Aircraft Ground Power Unit - Airports, Electric		Aircraft Ground Power Unit - Airports, Diesel	
Measure Example	Electric Aircraft Ground Power Unit	Electric Aircraft Preconditioned Air Unit	Diesel Aircraft Ground Power Unit	Diesel Aircraft Preconditioned Air Unit
		ASSUMPTIONS		
Sectors	Commercial	Commercial	Commercial	Commercial
Location	U.S.	U.S.	U.S.	U.S.
NAICS Codes	4881	4881	4881	4881
End Uses	Commercial - Non-Road Transportation	Commercial - Non-Road Transportation	Commercial - Non-Road Transportation	Commercial - Non-Road Transportation
Average Life	20 years	13 years	20 years	13 years
		ENERGY CONSUMPTION		
Energy Source	Electricity (Primary)	Electricity (Primary)	Diesel (Primary)	Diesel (Primary)
Energy Consumption	129,600 kWh	327,240 kWh	1,780.46 MMBtu	2,819 MMBtu
		COSTS		
Capital Cost (USD)	$9,625	$73,425	$31,000	$120,300
Install Cost (USD)	$9,625	$15,000	$0	$0
Maintenance Cost (USD)	$2,000	$2,000	$2,000	$2,000

Questions?

For additional information about Electrification and partnering with Evergy, please contact your account manager or

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