Ethicon Team – Carbon Reduction Challenge

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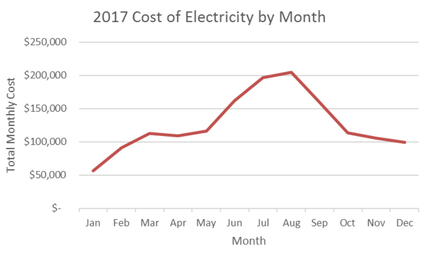
BACKGROUND

- Ethicon is a Johnson & Johnson Medical Device company that manufactures biomaterial components and surgical devices.
- The Ethicon Cornelia location is a semi-finished goods manufacturing facility. The site is approximately 200,000 sq. ft. and produces 80% of the world's suture supply.
- Johnson & Johnson employees live by Our Credo, in which "protecting the environment and natural resources" is an important part of our company's values.
- Currently, Ethicon has a goal to reduce carbon emission by at least 2% every year by 2020. The CRC will help contribute to the plant's sustainable goal.

THE PROBLEM

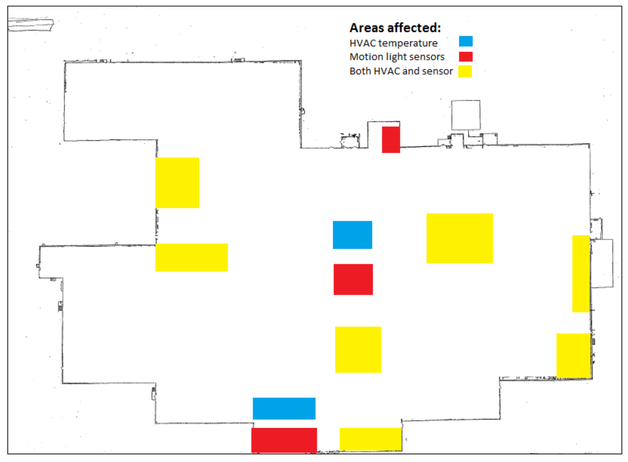
- Ethicon Cornelia spends approximately 3,000,000 KWh on HVAC in the offices and other non-production areas. That's about 3,800,000 lbs of CO_2 emitted on average per year.
- Office areas are too cold for employees even in the summer.
- Energy costs rise in the summer due to over-cooling.

When the air conditioning could do with a tweak



METHODS

- Preliminary stages of implementation:
  - HVAC thermostats change approved by facilities. Will implement the change starting in May.
  - Researching costs vs savings for ceiling light motion sensors. Send data to facilities to pitch the idea to management.
- Only office and non-production areas will be affected. Production areas have more stringent requirements.
- Calculate the savings using CRC and online resources.



THE SOLUTIONS

- 1) Change the thermostat
  - The thermostats will be changed 2°F (~1°C) closer to the outdoor temperature
  - Implement during hotter months from May to September
  - 2°F change can save about 6% energy consumption (according to OneDegree)
  - Cost: $ 0

- 2) Install ceiling light motion sensor
  - Automatic turn off the light after ~15 minutes of inactivity
  - Approximately 13 hours off per weekday
  - Additional savings on the weekends
  - Cost: TBD

SAVINGS ESTIMATION

2018 Projected Savings

Resource	Temp Change	Motion Sensor	Total
Cost	$4,800	$11,573	$16,373
KWH	79,997	189,735	269,732
Lbs CO_2	100,317	237,927	338,244

- Data based on utility data from 2016 and 2017
- Office HVAC Units consume about 3,000,000 kWh per year, costing over $1.5 million per year
- Cost of May – Sept:
  - Σ [(Average kWh Used) * (Average cost/kWh)] = **$80,100**
- Assuming 6% savings for raising the thermostat setting 2°F:
  - Save approximately **$4,800** every summer
- Conversion Factors used:
  - Average cost/KWh from monthly utilities: $0.061/KWh
  - 1.254 lbs CO_2 /KWh
- The cost estimation for the motion sensors comes from
  - Assuming lights would be off for approximately 13 hours per day
  - Non-production area lighting accounts for 1.12% of the total electricity usage

Long-term Projected Project Savings

Resource	5 years	10 years	15 years
Cost	$81,865	$163,730	$245,595
KWh	1,348,660	2,697,320	4,045,980
Lbs CO_2	1,691,220	3,382,440	5,073,660

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