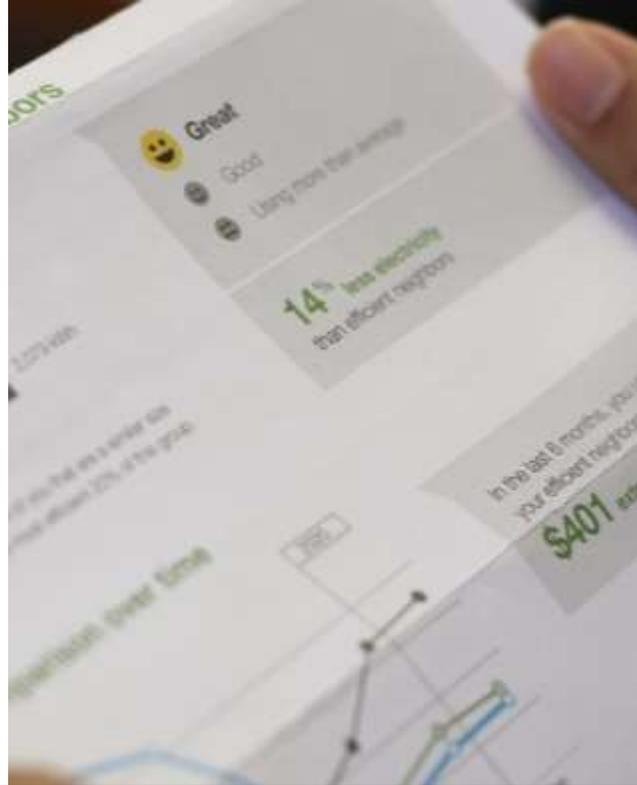


# Inside Job for Clean Energy

Bruce Cenicerros, President  
Aluminum Coating Technologies  
Sacramento, CA





# My background

- CEC 15 yrs - EE program manager, market research, Peak Demand Reduction bidding program
- SMUD 12 yrs - EE, whole house performance, zero energy homes, behavioral science, DER strategic planning.



# My background

- Early adopter – Net Zero Home with whole house performance retrofit, PV, battery storage, smart panel, HPWH, 2 EVs

**AND NOW FOR  
SOMETHING  
COMPLETELY  
DIFFERENT**



# About ACT

- Metal plating—anodizing, chem film, passivation, electropolishing, sanding



# About ACT

- Metal plating—anodizing, chem film, passivation, electropolishing, sanding



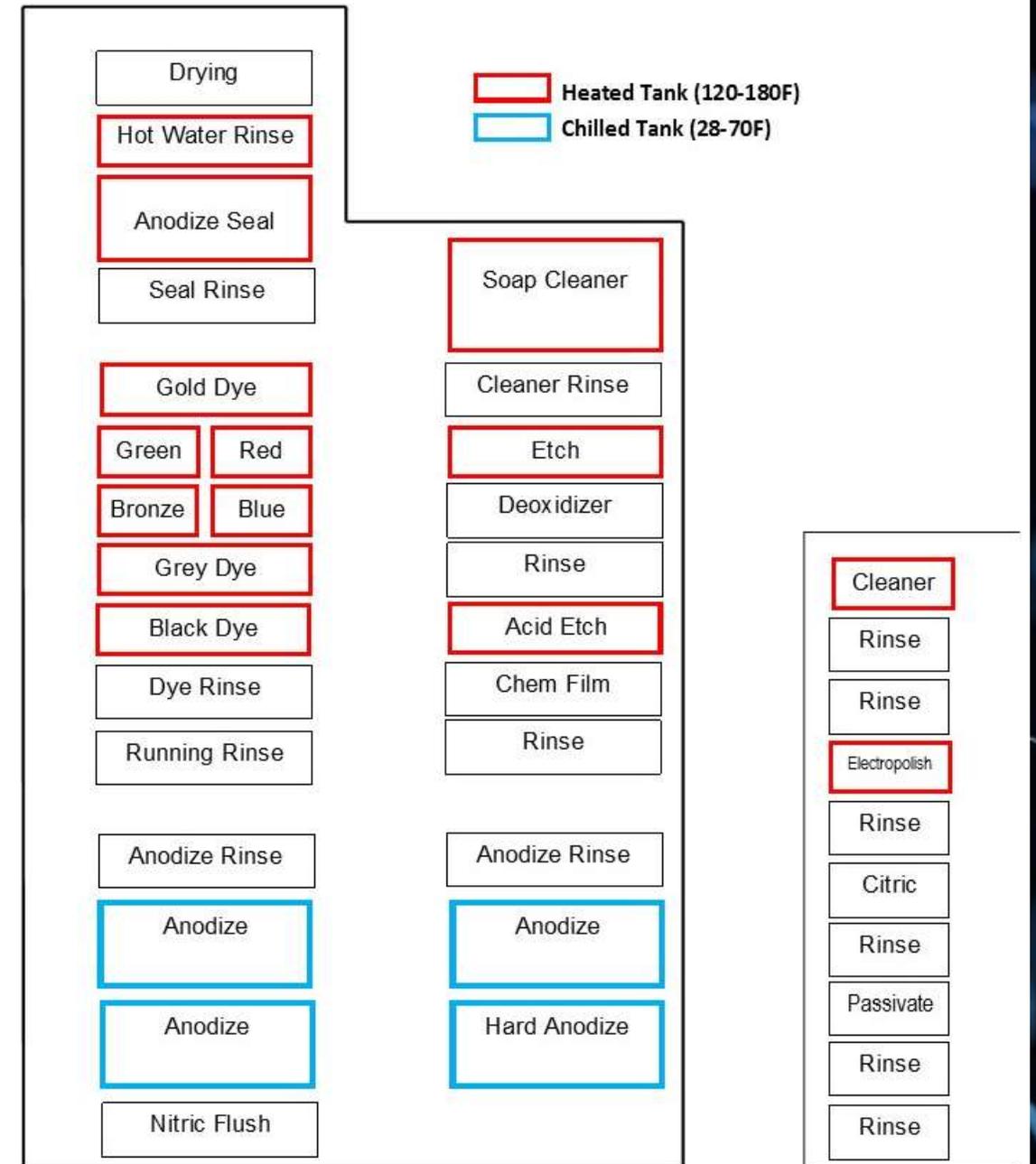
# About ACT

- Metal plating—anodizing, chem film, passivation, electropolishing, sanding
- B2B
- 20k ft<sup>2</sup> warehouse space
- 35 Employees



# The Production Line

- 40 tanks from 250-1100 gallons
- Originally 120 kW ER heaters (now 150kW)
- Anodize tanks cooled with four 8-ton chillers



# The Production Line

- Takes 2-3 hours per load
- Process 50-60 loads/day



# The Plan

- Optimize Compressed Air System
- LED lighting
- Replace aeration with Mechanical Mixing
- Electrify fleet
- Improve process cooling
- High-efficiency electrified process heating



How Did it Go?

# LED Lighting

# 100%



# Fleet **2%** Electrification

- 4 Delivery trucks
- No medium-haul E-trucks available with req. range
- Added fairings (-150gal/yr)
- Replaced propane lift truck with electric model!



# Process Cooling

## Old:

- 4 inefficient 8-ton chillers
- Continuous glycol circulation

## New:

- 2 stage scroll compressors
- On-demand glycol supply
- Efficient heat exchangers
- VFD, mechanical mixing
- Heat recovery

80%



# Compressed Air

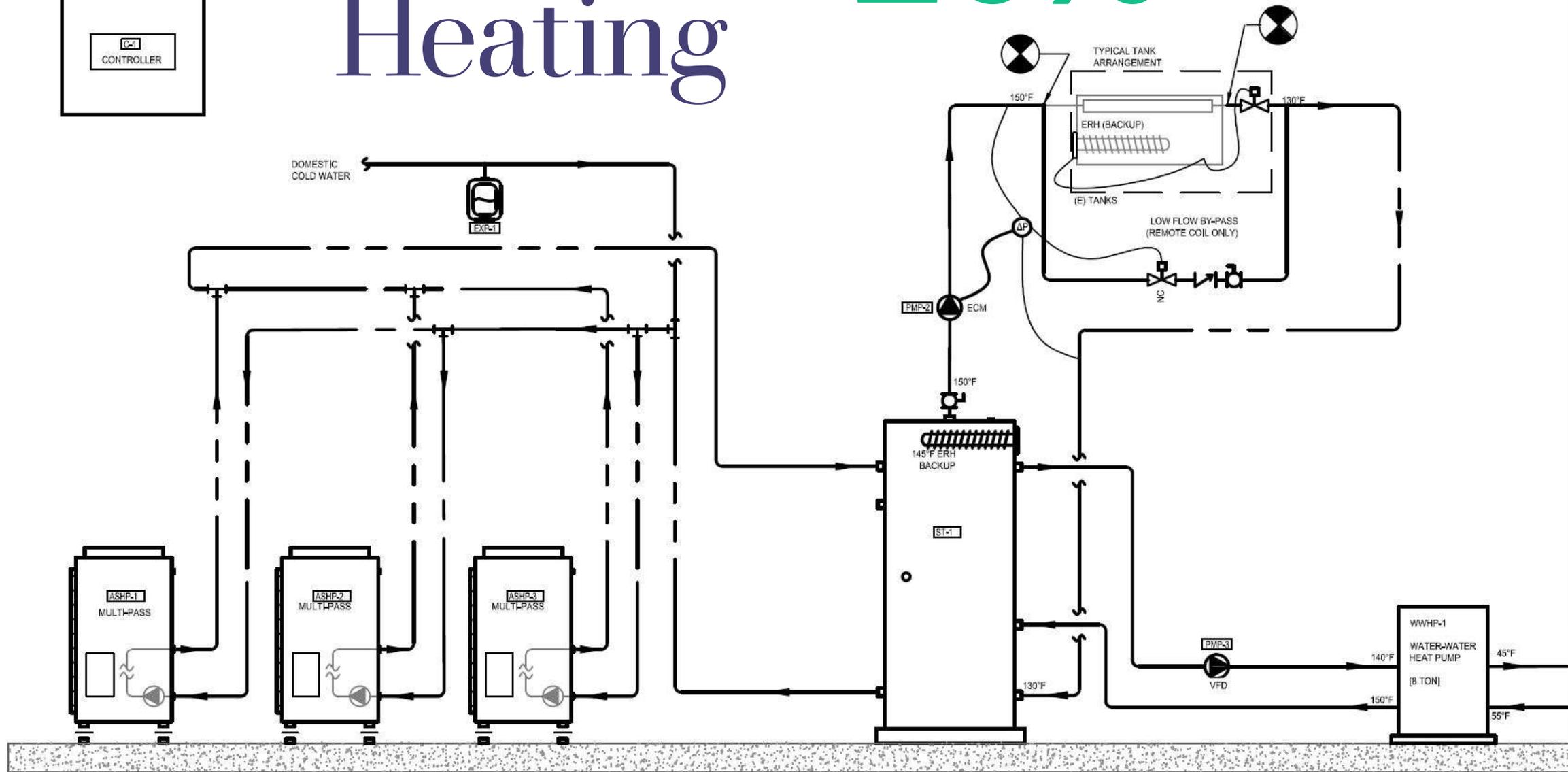
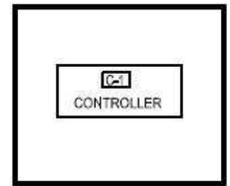
- Compressed air audit
- Fixed leaks, new manifold
- Plumbed air loops
- Installed low-pressure part drying
- New 40 hp scroll compressor
- Staged for load-following

100%



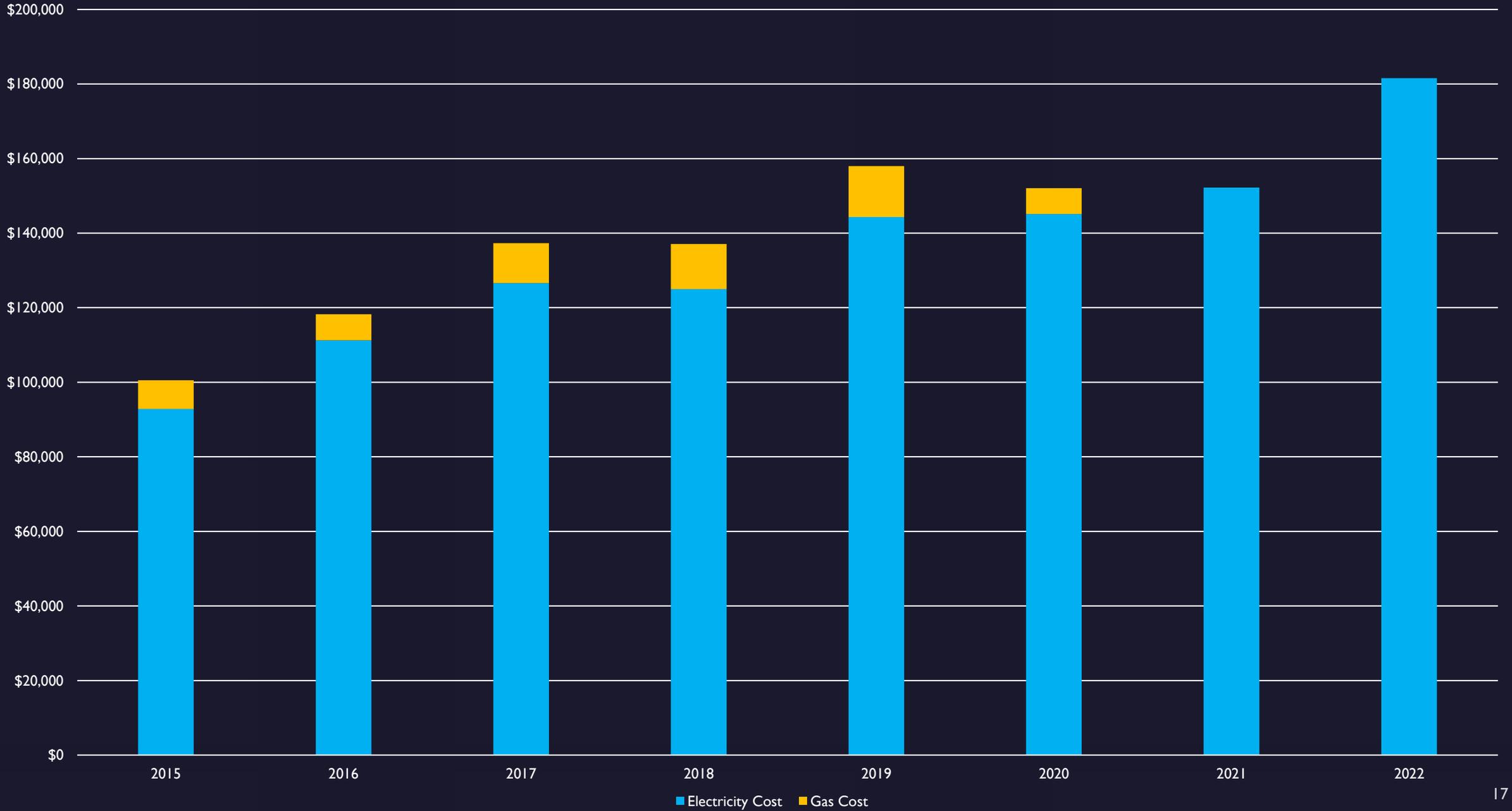
# Process Heating

# 20%

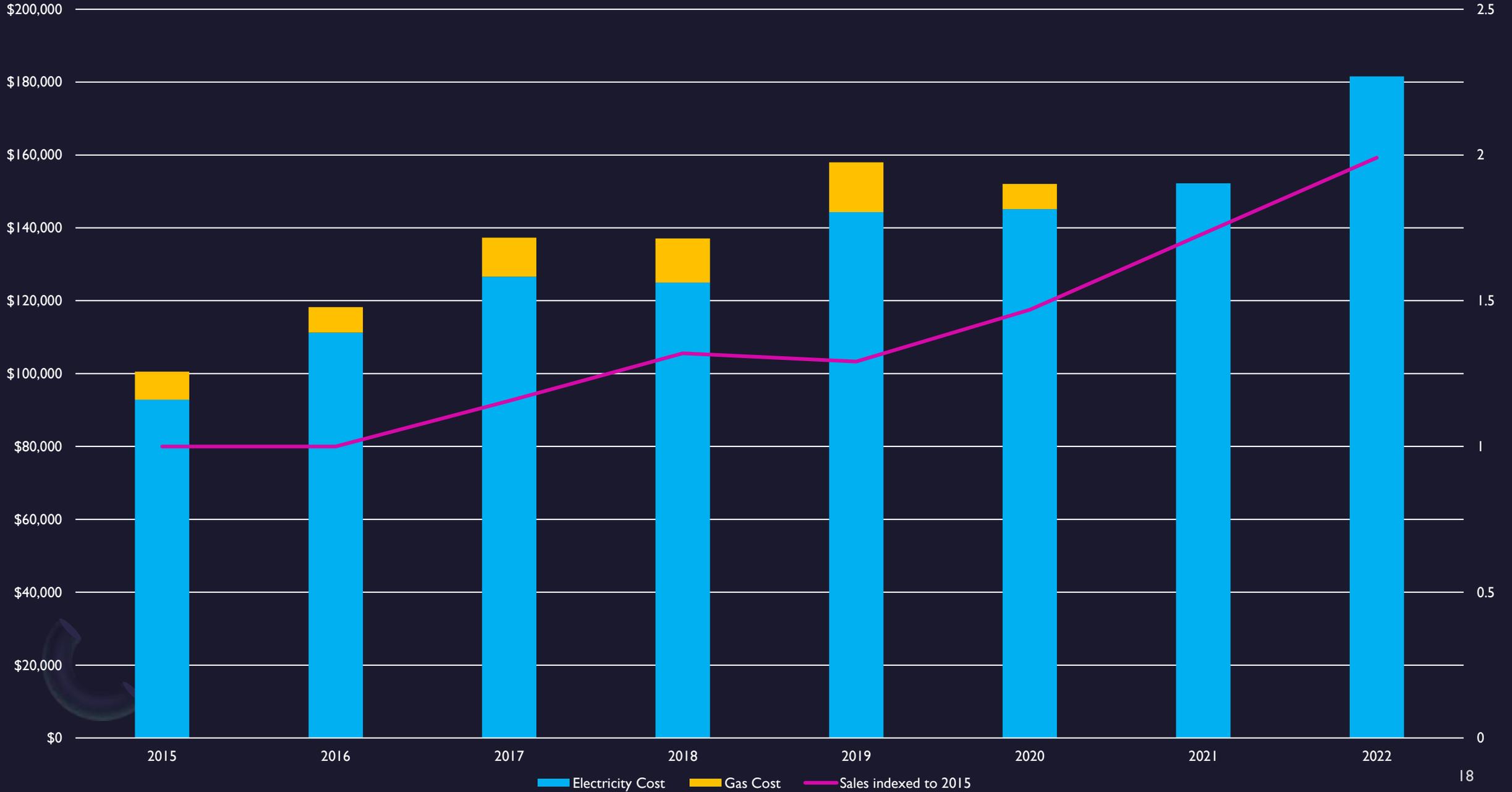


PROPOSED EQUIPMENT SCHEMATIC

# Annual Energy Cost



# Annual Energy Cost



# What Got in the Way?

- **Shop was major “fixer-upper”**
- Build new management team
- Improve Safety
- Environmental compliance
- Improve wages and benefits
- Modernize equipment
- Implement Lean Manufacturing
- Redesign and expand production line
- Expand fleet and routes
- Eliminate toxic chemicals
- Modernize HR
- Align pricing to costs
- Upgrade ERP software
- Construct clean room for masking
- Growing pains!
- Space constraints!

# What Will it Take?

- Right timing
- Engineering and design
- Project management bandwidth
- Incentives



# How to improve results with small to med. C&I?

- Characterize the customer
- Assess potential
- Look for:
  - Indicators of path to success
  - Red flags



# Characterize

- Old school mom & pop or sophisticated?
- One-person show or deep bench?
- Financially strong or hand-to-mouth?
- Cruising at status quo, or in midst of major change?
- Recent change in management?
- Drivers and priorities?



# Assess:

- Potential
- Motivation
- Ability
- Business needs
- Alignment of available resources



# How would ACT stack up by those measures?

- Potential: **Plenty!**
- Motivation: **Plenty!**
- Ability: **Not *yet***
- Business needs: **Easy to assess**
- Alignment of available resources: **Good**





Thank You!