



ACEEE Summer Study 2015 Industrial RCx – Stories from the Field

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Defining RetroCommissioning (RCx)

- *“Retrocommissioning is a process that seeks to improve how building equipment and systems function together.” – LBNL*
- *“Retrocommissioning, or “existing building commissioning,” is a systematic process for identifying and implementing operational and maintenance improvements in a building to ensure continued good performance over time.” – ACEEE*
- *“Retrocommissioning (RCx) is a systematic process for identifying less-than-optimal performance in your facility’s equipment, lighting and control systems and making the necessary adjustments.” – PG&E*

Advantages of RCx

Traditional Capital Measures	RCx
Typically has 2-10 year payback	Paybacks often measured in months, not years
Requires capital and associated budget approval	Funding often comes out of maintenance budget and avoids the budget approval process
Once major equipment has been replaced, traditional capital opportunities can diminish	Opens up a new resource potential not captured by traditional capital incentives
	Marketing Value – The quick wins that RCx provides can help engage tough sites, leading to many future projects

Energy Trust of Oregon's Industrial RCx Offering

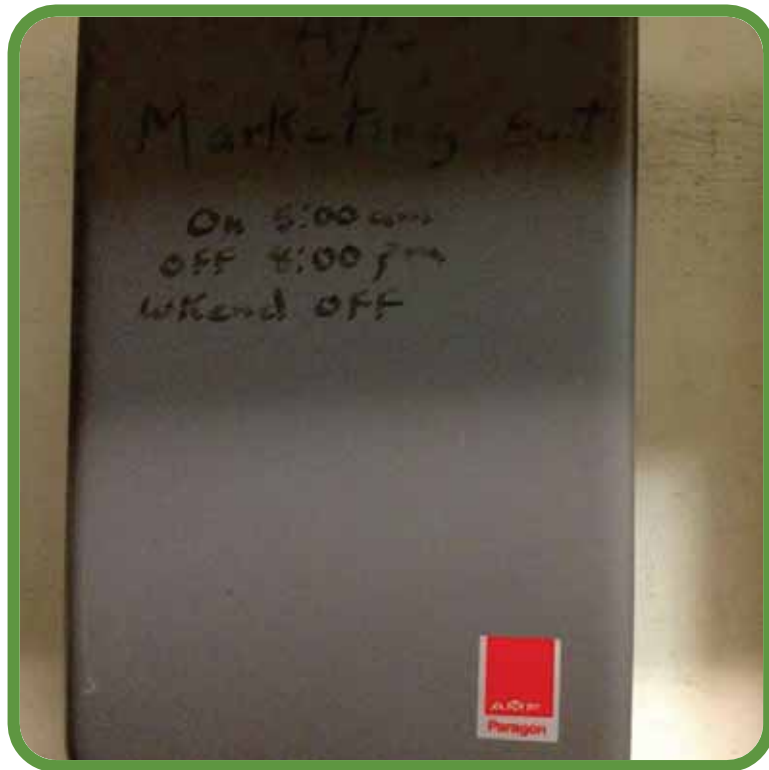


- Energy Trust recruits participants
- Energy Trust conducts retrocommissioning study
- Study is reviewed with customer to debrief and try to gain buy-in from facility staff
- Energy Trust provides technical support to help customer through implementation
 - Work with contractors
 - Conduct QC & functional testing
- Energy Trust provides funding at up to 90% of cost (if implemented within 90 days)

RCx Stories from the Field



What is it and What's Wrong?



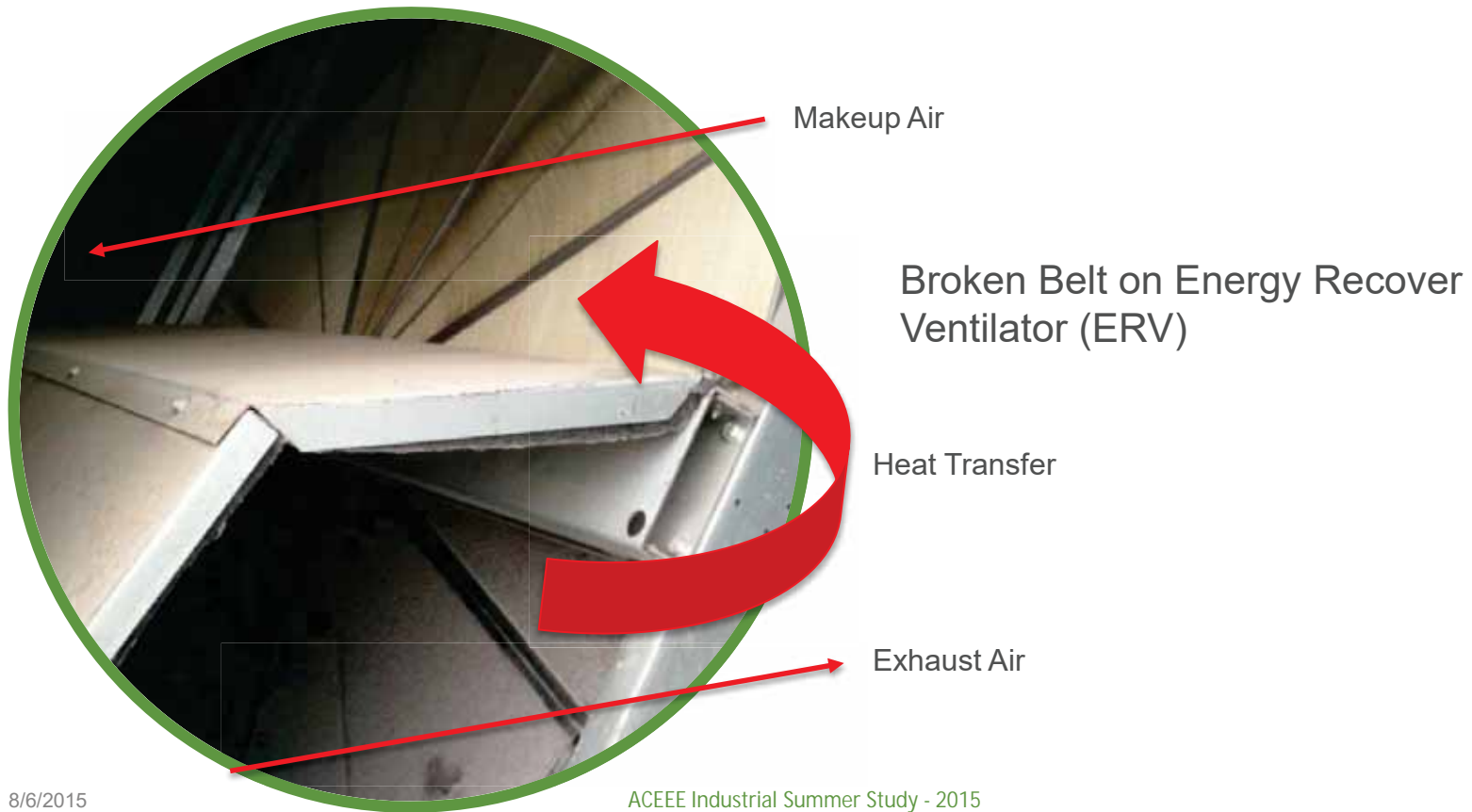
What is it and What's Wrong?



Broken Economizers

- Very common issue in both commercial and industrial facilities.

What is it and What's Wrong?



What is it and What's Wrong?



Refrigerant Condenser Pressure Switch
Never Connected

What is it and What's Wrong?



8/6/2015

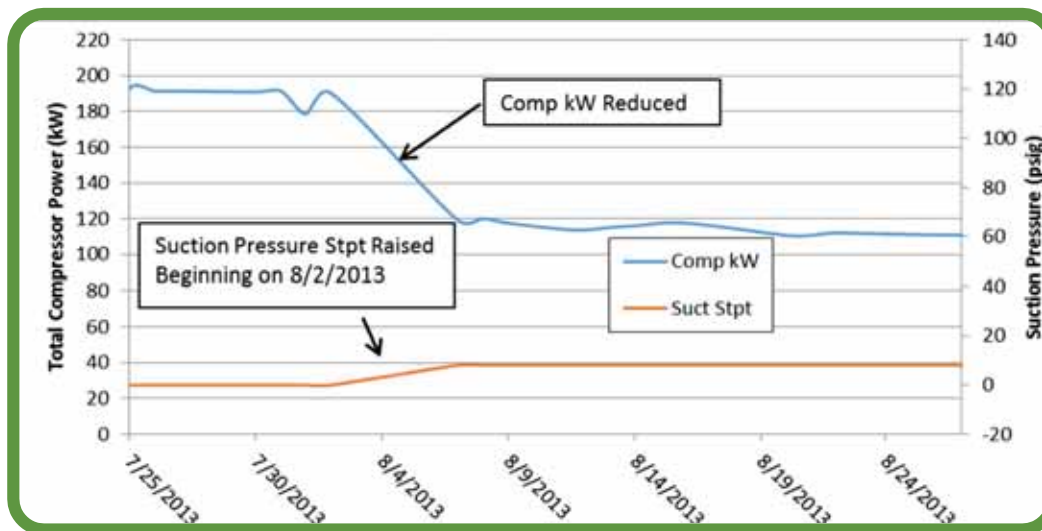


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What is it and What's Wrong?

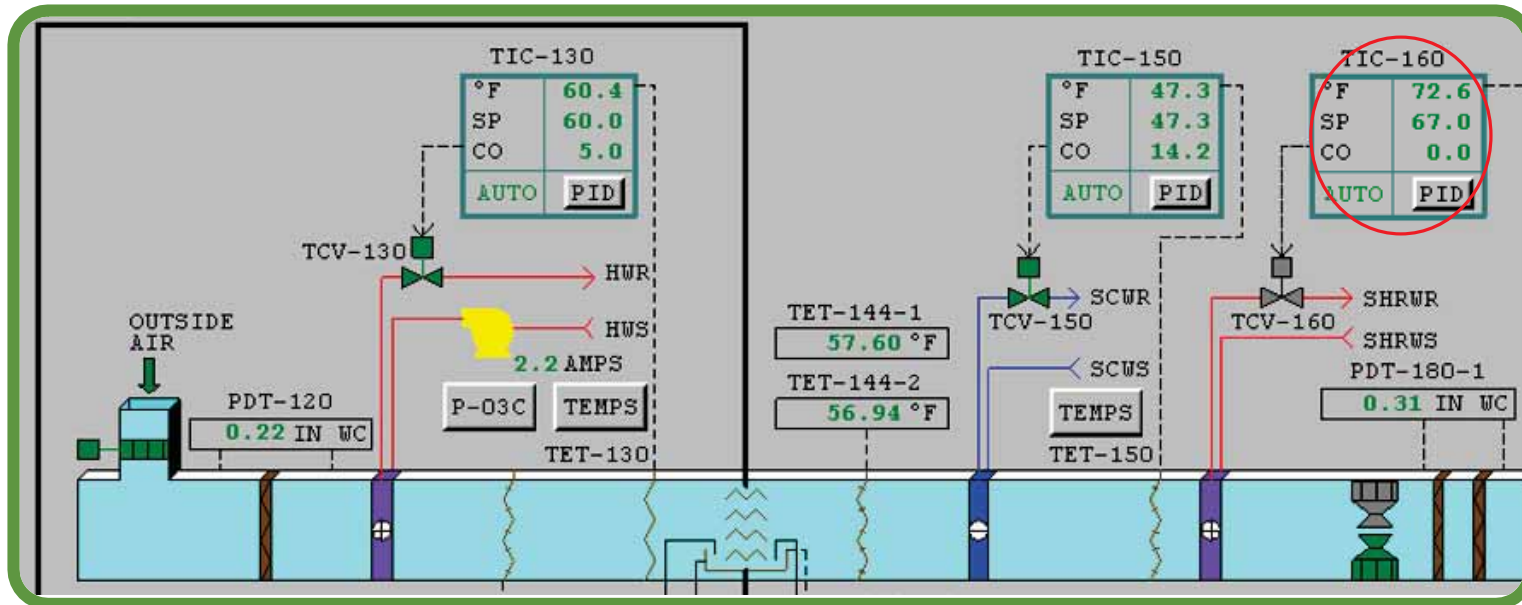




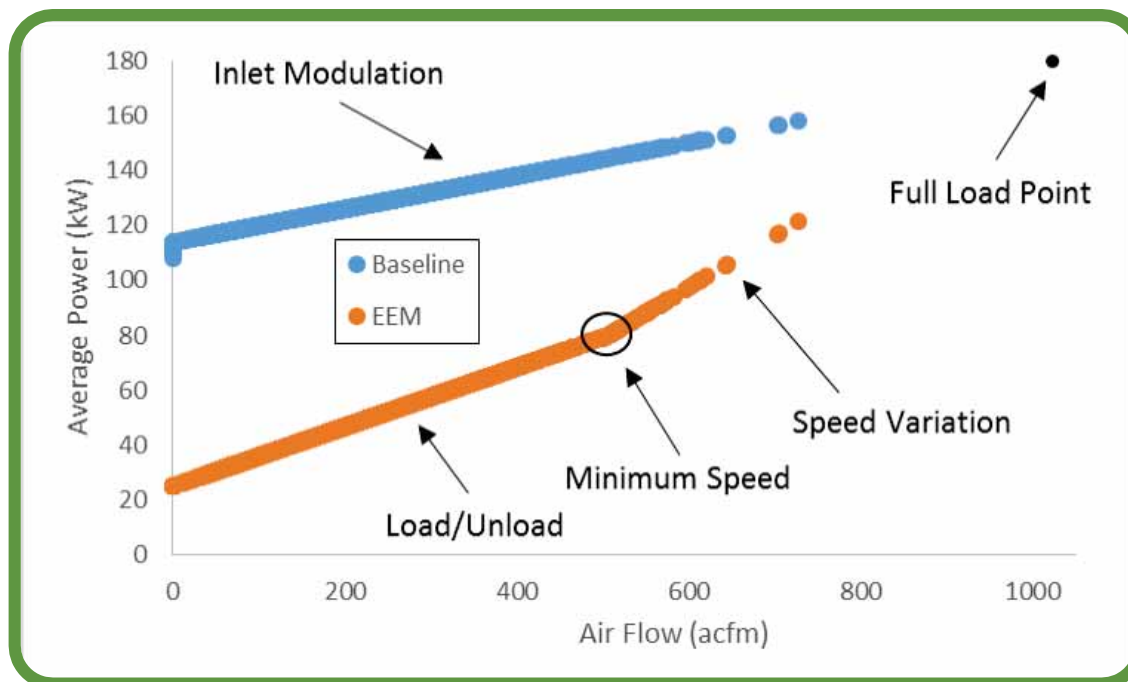
Industrial Refrigeration

- TXV Calibration
- Incrementally Raise Suction Pressure Setpoint
- Compressor Sequencing
- Together, these eliminated the need for a compressor

High Tech Sector Holds Large Opportunity!



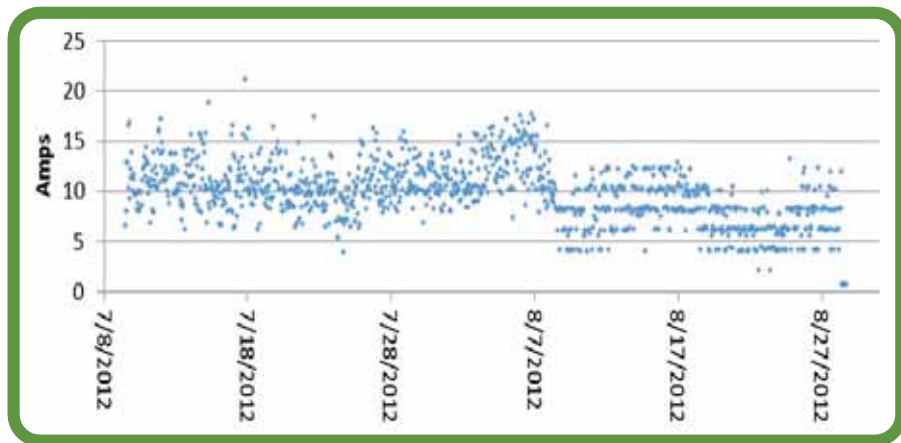
- Recalibration of leaking valves
- Adjusting humidification & dehumidification strategies
- We've saved several sites over \$100,000 annually through no cost/low cost EEMs
- Gaining operator trust is key to success!



Compressed Air

VFD compressor running in inlet modulation mode

HVAC Compressor Head Pressure Reduction



Pump Sequencing (250 hp pumps)



Man Made Geyser



Lessons Learned

- While most customers are open to RCx, it's too complex for them to undertake themselves.
- If you hand a customer an RCx study and end your engagement there, implementation rates will be low.
- Successful RCx requires a high level of assistance by Program Administrators.
- Implementation assistance is required to bridge the gap between study and implementation.
- RCx needs to be Commissioned! – Contractors rarely get it right the first time! The details matter! QC is critical to achieving savings!

Closing Thought – Assume Nothing – Question Everything!





Questions?

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