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a service division of
NEPTUNE
Plumbing & Heating Co.

oswald
THE BUILDING EDUCATION SERIES 2018:
THE OSWALD BUILDING, 1100 SUPERIOR
7:30 AM COFFEE AND REGISTRATION
8:00 – 10:00 AM PRESENTATION

JANUARY 18:  EFFICIENCY PROJECT RESOURCES
FEBRUARY 15: FACILITY MANAGERS ROUNDTABLE
MARCH 22:  CASE STUDIES OF EXEMPLARY EFFICIENCY PROJECTS
MAY 17:  NEW CONSTRUCTION CASE STUDIES
JULY 19:  BUILDING AUTOMATION SYSTEMS AND NEW TECHNOLOGY
SEPTEMBER 20:  ENERGY AUDITS – WHY THEY’RE IMPORTANT
NOVEMBER 15:  THE IMPORTANCE OF PREVENTATIVE MAINTENANCE
THE BUILDING EDUCATION SERIES 2019:
THE OSWALD BUILDING, 1100 SUPERIOR
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JANUARY 17: INNOVATIONS IN CLEVELAND
FEBRUARY 21: FACILITY MANAGERS ROUNDTABLE
MARCH 21: SOLAR AND WIND TECHNOLOGY
MAY 16: WATER: THE HEALTH OF LAKE ERIE AND THE BURNING RIVER ANNIVERSARY
JULY 25: CLIMATE CHANGE: A CANDID DISCUSSION
SEPTEMBER 19: DEMYSTIFYING BUILDING CERTIFICATIONS
NOVEMBER 21: ENVIRONMENTAL HEALTH AND IMPACTS ON HUMAN HEALTH
THE IMPORTANCE OF PREVENTATIVE MAINTENANCE

TODAY’S SPEAKERS:

JOHN CAPUTO, Director of Customer Innovation, Akron Energy Services

MICHAEL WALLENSTEIN, President, Neptune Plumbing & Heating Co.
ADAM WALLENSTEIN, President, Neptune Plumbing & Heating Co.

RICHARD TRELA, Principal, The Fowler Company
ROB KUBIAK, Sales Manager, The Fowler Company

RYAN PICONE, Account Manager Services, Trane Commercial Systems and Services
NATHAN DAVIES, Business Advisor Trane Commercial Systems and Services
John Caputo is the Director of Customer Innovations for Akron Energy Services. Prior to this position, Mr. Caputo was Director of Building Services for United Way of Greater Cleveland, overseeing properties in Cleveland, Geauga and Medina. John has 20 years of experience managing building operations including private water and wastewater facilities. He implemented a multi-phase energy reduction plan at United Way, with minimal initial capital cost. This strategy resulted in the building winning the C2030D/USGBC 2015, 2016 and 2017 Green Building Challenge. John consults for buildings throughout Northeast Ohio to improve building efficiencies and operations. He is a member of the City of Hudson Architectural and Historic Board of Review.
Building Preventative Maintenance
Steam, hot water and chilled water system owned by the City of Akron

Akron Energy Systems LLC is a private company hired by the City of Akron to manage the system
Know What is in the Building
## Equipment List

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Mfg</th>
<th>Model</th>
<th>Serial</th>
<th>Size</th>
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<tr>
<td>ROOFTOP EXHAUST</td>
<td>PENN BARRY</td>
<td>FX12BH</td>
<td>D08ASO6476</td>
<td>115V-1/3HP</td>
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<td>ROOFTOP EXHAUST</td>
<td>COOK</td>
<td>120 ACRU 120R4B</td>
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<td>115V-.33HP-830CFM</td>
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<td>Elevator room A/C</td>
<td>PAYNE</td>
<td>PA13NR060-L</td>
<td>2415X65095</td>
<td>208/230 1PH-10.52LBS R22</td>
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<td>Elevator room A/C</td>
<td>American Standard</td>
<td>TWV060P150C1</td>
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<td>3PH-208/240-46.2AMP</td>
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<td>9TH FL VFD</td>
<td>ABB</td>
<td>ACH550-UH-046A-2</td>
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<td>4505U08015</td>
<td>3PH-380/480-59AMP</td>
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<td>BRADFORD WHITE</td>
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<td>CA7257744</td>
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<td>ML36930297</td>
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<td>LC34123006</td>
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<td>3RD FL WATER HEATER</td>
<td>A O SMITH</td>
<td>ENS40-110</td>
<td>1711105411814</td>
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<tr>
<td>2ND FL WATER HEATER</td>
<td>A O SMITH</td>
<td>ENS40-110</td>
<td>1711105411819</td>
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<td>2ND FL AIR HANDLER</td>
<td>MCQUAY</td>
<td>MSL111CV</td>
<td>35E0252-06</td>
<td>45 GPM - 20 PSI - 208V</td>
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<tr>
<td>#1 PRV</td>
<td>SPIRAX/SARCO</td>
<td>2-1/2 25</td>
<td>54894</td>
<td>E16-250W - SET TO 40 PSI OUT</td>
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<td>#2 PRV</td>
<td>SPIRAX/SARCO</td>
<td>3 25</td>
<td>54886</td>
<td>E16-250W - SET TO 15 PSI OUT</td>
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<td>CONDENSATE PUMP</td>
<td>BELL &amp; GOSSETT</td>
<td>452CC</td>
<td>QE4280-5A0661337-001 1</td>
<td>45 GPM - 20 PSI - 208V</td>
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<tr>
<td>DOMESTIC WATER</td>
<td>SYNCPROFLO</td>
<td>55DA53</td>
<td>260033</td>
<td></td>
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</table>
Show Valve Locations on a Floor Plan
Mark Covers
# Weekly Task Sheet

<table>
<thead>
<tr>
<th>Roof</th>
<th>Date</th>
<th>Solar Panels</th>
<th>Clear</th>
<th>Exhaust Fans</th>
<th>On</th>
<th>Roof Drains</th>
<th>Clear</th>
<th>Condenser Coil</th>
<th>Clean</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Generator</th>
<th>Log Complete</th>
<th>Hour Meter</th>
<th>Start</th>
<th>Hour Meter</th>
<th>Stop</th>
<th>Load Transfer?</th>
<th>Yes</th>
<th>No</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Exterior</th>
<th>Windows</th>
<th>Clean/OK</th>
<th>Signs in Place</th>
<th>Holes Sealed</th>
<th>Yes</th>
<th>No</th>
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</table>
# Monthly Logs

<table>
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<tr>
<th>Date Completed</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Fire Exting. Log</td>
<td></td>
</tr>
<tr>
<td>Exit Light Log</td>
<td></td>
</tr>
<tr>
<td>Egress Light Log</td>
<td></td>
</tr>
<tr>
<td>Drain Log</td>
<td></td>
</tr>
<tr>
<td><strong>Generator</strong></td>
<td></td>
</tr>
<tr>
<td>Total Hours</td>
<td></td>
</tr>
<tr>
<td>Date of Transfer Test</td>
<td></td>
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</tbody>
</table>
Michael Wallenstein is Co-President of Neptune Plumbing & Heating Company. He received his MS in Real Estate and Construction Management from the University of Denver. Mr. Wallenstein serves on the USGBC Ohio NE Regional Leadership Team.

Adam Wallenstein is Co-President of Neptune Plumbing & Heating Company. He received his MBA from the University of Denver. Mr. Wallenstein is a Board member of the Mechanical Service Contractors of America.
THE IMPORTANCE OF PLUMBING PREVENTATIVE MAINTENANCE
PLUMBING PREVENTATIVE MAINTENANCE

- DRAIN CLEANING SERVICES
- CAMERA INSPECTIONS
- CATCH BASIN CLEANING
- GREASE TRAP CLEANING/MAINTENANCE
- WATER HEATER MAINTENANCE (TANK-TYPE OR TANKLESS)
- BACKFLOW PREVENTION DEVICES
DRAIN CLEANING SERVICES
CAMERA INSPECTIONS
CATCH BASIN CLEANING
GREASE TRAP CLEANING/MAINTENANCE
WATER HEATER MAINTENANCE
BACKFLOW PREVENTION DEVICES

The Plumber Protects the Health of the Nation
THANK YOU!

ADAM WALLENSTEIN: ADAMW@NEPTUNEPLUMBING.NET

MICHAEL WALLENSTEIN: MICHAELW@NEPTUNEPLUMBING.NET
Mr. Trela started working for The Fowler Company in 1982, working summers & holidays for the family business while attending college. In 1986, Mr. Trela started working full time for his father at The Fowler Company after graduating from The Ohio State University. Mr. Trela started in Purchasing, advancing to Estimating, Project Management and Engineering before purchasing the company in 2001. Over the last 15 years, he has expanded the services of The Fowler Company beyond just electrical to include mechanical, HVAC controls systems, plumbing & engineering services to better meet the needs of the company’s industrial and large commercial customers.

Rob Kubiak joined the Fowler Company in the Spring of 2016 as the Sales / Operations Manager. Rob brings over 30 years of sales, marketing, customer service, purchasing and operations experience to The Fowler Company. Since graduating from The Ohio State University in 1986, Rob spent 30 years rising through the ranks as a sales, sales management and operations leader to the level of senior sales and operations management. Rob spent the last 19 years before Fowler with a large privately held chemical and hardware company. Rob spent much of that time managing the company’s Federal Government business.
THE FOWLER COMPANY

Electrical Preventative Maintenance
About The Fowler Company

• Founded in 1963
• Design/Build/Install approach
• Service Excellence
• One-Stop shop
Turn-Key Solution

- Electrical
- Mechanical
- HVAC
- Pipefitting
- Plumbing
- Building Automation Controls
- Industrial Automation and PLC
- Service
Electrical Preventative Maintenance

Your Benefits:
Extend equipment life
Reduce risk of Electrical fire
Reduce risk of Property Damage
Reduce risk of Business Interruptions.
Lower Utility costs.

Preventive Maintenance may include:
Infrared Thermography with Reports
Ultrasonic Testing
Surge Protection Analysis, specification and Installation
Transformer Oil sampling, analysis and filtering

Source: Institute of Electrical and Electronic Engineers
Switchgear/Transformer Preventative Maintenance

We provide full Preventive Maintenance services on Switchgear and Transformers. We provide torqueing, tightening, cleaning, analysis, repairs and component replacement.
Switchgear/Transformer Preventative Maintenance

Services:

- Switchgear breaker relay metering, maintenance, adjustments, calibrations.
- Medium Voltage: (5kw to 35kw systems) metering, maintenance, Installation, repairs, replacements, and design engineering
- Power quality metering and analysis, including: total harmonic distortion, transients, power factor and KVAR, voltage, amperage, and frequency. Reports provided.
- Arc Flash / Arc Fault studies and analysis. Arc Fault labelling.
- Surge Protection analysis, specification and installation.
- Cable Meggering to 25KV step down testing.
- DryMax unit for removal of water in transformers and purification of transformer oil while transformer remains operational.
Infrared Thermography / Thermal Imaging

Electrical system failures, whether they involve a single branch circuit or a major switchgear component, can be very costly.

Infrared Thermography Testing can identify the problems caused by poor electrical connections and defective equipment before they progress into catastrophic failure.
What Can Infrared Thermography Do For You?

- Infrared Thermography has emerged as a powerful, versatile and accurate diagnostic tool used to uncover excessive heat loss in systems or materials. It is a non-contact; non-destructive means of testing that identifies and documents abnormally warm or cool connectors, conductors, or components they may be a potential problem in electrical systems.
- Many dangerous conditions cannot be seen by the human eye, Infrared thermography testing can find potential electrical system trouble spots before they become disastrous.
- Analysis of the collected data will help you detect problems before they become serious and costly issues.
Infrared Thermography / Thermal Imaging

How does it work?
• An infrared imaging system with software will quickly identify potential problems in electrical equipment. From the test report, preventive or corrective repairs can then be scheduled on a priority basis.

Some equipment that can be inspected:
• Transformers, Relay Panels, Fuse Disconnects, Circuit Breakers, Electrical Switchgear
Case Studies
QUESTIONS
Ryan Picone is an Account Manager with Trane. He has been with the company for over a year. Mr. Picone has held a variety of positions in multiple industries. Trane is one of the newest Professional Partners to the Cleveland 2030 District and Mr. Picone is the primary contact for the collaboration. Trane is pleased to partner with the 2030 District.

Nathan Davies is a Trane business advisor. He has been with the company for more than a year. Mr. Davies has been in the HVAC industry for seven years. He holds a Mechanical Engineering degree from The Ohio State University.
Preventative Maintenance & Energy Impacts
Preventative Maintenance

Presenters:

• Ryan Picone – Trane Business Advisor

• Nathan Davies – Trane Business Advisor
Overview

- Desired Energy Results and Obstacles
- CRE Budget Discussion and PM Influence
- PM Negligence and Energy Impacts
- Real Life Examples
- Recap and Q&A
Buildings = **Energy Results**

**Cleveland 2030 Energy Results**

- 50% Energy/Water Reduction from National Average by 2030
- Carbon Neutral for New Builds/Major Renovations by 2030
- **Water** Use 50% Below National Average for New Builds/Major Reno.

**Why Now?**

- Rising Cost of Energy
- Moral Obligation for Environmental Protection
- Increase ROI and Competitiveness for Building Owners
- Proud of Northeast Ohio

Delay – Cut – Settle
Preventative Maintenance

“The Squeeze” on Budgets

- Capital Budget
- Repair Budget
- Energy Budget
- Maintenance Budget
Maintenance Budget Cut Examples

• Standard savings consistently seen ~ 5-20%
• Long time customer with no PM plan (fix on fail); After PM contract implemented with timely service and proactive repairs made, along with some controls work performed, customer is now seeing savings on the order of 30% on the bottom line YOY!
Preventative Maintenance

Research has shown that regular maintenance can:

- Cut unexpected breakdowns by 70-75%*
- Reduce energy consumption by 25-30%*
- Reduce downtime by 35-40%*
- Lower equipment repairs and maintenance costs by 5-20%*

(Federal Energy Management Program) *
Preventative Maintenance

• Typical Failures when PMs are not performed
  - Dirty Filters
  - Loose/Broken Belts
  - Frozen Coils
  - Lack of Standard Attention

Critical Parts Corroding

Frozen Evaporator Coil
Clean/Dirty Filters
Preventative Maintenance

Think of preventive HVAC maintenance in the same way as the preventive maintenance for your car: If you don’t change your engine oil and replace belts and filters, the engine will lock up and the vehicle won’t operate. The same holds true, in a sense, for HVAC systems. “If you spend $30 on an oil change in your car, you will save $3,000 on a new engine.”
Preventative Maintenance

• **Predictive Maintenance - Chillers**
  
  - **Eddy Current Test** - means of checking the condition of tubes in the condenser and evaporator sections of a chiller. An electronic probe is inserted in each tube at the end of a tube bundle and pushed through the entire length of the tube.
  
  - **Vibration Analysis** — used to detect early precursors to machine failure, bad bearing, allowing equipment to be repaired or replaced before an expensive failure occurs.
  
  - **Oil Analysis** - Annual analysis to verify system integrity.

*Helps plan for the future-budgeting*

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**Calculating the true cost of undetected inefficiency**

Minor inefficiencies can result in steep energy cost penalties. Working with a large health care facility in the heart of the United States, Trane calculated that running a chiller with minor .0020 tube fouling—that’s buildup as thin as a manila folder—would drive up energy costs by $4,366 per year.¹

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¹ Calculation scenario: Trace™ 700 modeling for a 500 nominal ton centrifugal chiller operating in a health care facility located in St. Louis, MO; tube fouling at .0020 and $0.12/kW energy cost. Annual cost to run the chiller with clean tubes: $149,460.
Preventative Maintenance

How Does This Impact Me?

- Energy/Water Savings
- Facilities That Attract Business – More Profitable
- Conditions That Drive Productivity (people and process)
- Facilities with High Market Value
- Tenant Comfort and Occupancy
- Predictability on Capital and Operating Budgets
Closing Review

• Clearly Established Energy Goals and Business Hurdles
• PM & Budget Influence
• PM Negligence and Energy Impacts
• Real Life Examples
• Q&A
Thank you!