MAY 17-19 2022

Better Buildings, Better Plants
SUMMIT

Learn more: betterbuildingssolutioncenter.energy.gov/summit
Leveraging Energy Data Management to Optimize Operations

Wednesday, May 18th, 2022
11:00am – 12:00pm
Alanna Colvin, MBA, C.E.M.
Pennsylvania Technical Assistance Program, PennTAP
Agenda

1. Welcome and Introductions

2. Company Overviews
   - Gränges America, Inc.
   - Loews Hotels & Co.
   - JLG Industries, Inc.

3. Moderator Question & Answer

4. Audience Question & Answer

5. Closing
Today’s Presenters

- Manuel Medina, Engineering Project Manager
  - Gränges America, Inc.

- Lonnie Miller, Assistant Area Director of Engineering Operations
  - Loews Hotels

- Jason Grentus, MBA, Senior Environmental Manager
  - JLG Industries, Inc.
Manuel Medina
Gränges America, Inc.
• Focused on rolled aluminum products for HVAC, foil, auto heat exchangers and niche applications
• Headquartered in Stockholm
• Production sites in US, Sweden, Poland and China
• Completed acquisition of Aluminum Konin (Poland) Q4 2020
• Gränges is represented all over the world

• 2,600 employees (~800 US)
• Listed on Nasdaq Stockholm
• Net sales of USD 1.8 billion
• Production capacity of 1.2B lbs (500M+ lbs US)

North America presence – Largest supplier of foil products

- $324M Norandal Acquisition Aug 2016
- $130M 40kt Huntingdon Plant Expansion Oct 2019
- $30M 20kt Newport Light Gauge Investment Jan 2020
- $33M 25kt Huntingdon Casting Investment 2022
Gränges Americas Inc.

- Reduced total carbon emissions\(^1\) by -24% vs baseline 2017, equal to -6% annually
- 39% sourced recycled aluminium
- 35% of products have third-party verified sustainability information available
- 100% of significant suppliers committed to Gränges’ Supplier Code of Conduct
- Granges received Platinum rating from Ecovadis as a top 1% Sustainable Company Globally
Emissions Factors (kgCO2/mt) - **Sow (Prime): 9.0; Recycled: <1.0**

90% CO2 reduction by using Recycled Aluminum

- 90% of CO2 footprint comes from Raw Material (Scope 3)
- ~90% reduction in energy consumption by using recycled RM
- Internal Granges operations are powered by Nat Gas and Electricity
Salisbury facility was built in 1964 by Norandal and acquired in 2016 by Granges. How can I achieve ISO50001?
- Work with your utilities. Ask about online resources, free assessments
- Join a Cohort. What do others do?
- Evaluate your plant. Baseline Air, Electricity, Gas, set goals.
- Do not try to be perfect. As a 1964 facility, we have a lot of room to grow; ISO50001 is about continuous improvement.

Data Acquisition and Management
- Build networks.
- Establish partnerships with your vendors.
- Set small and achievable goals for your personnel.

Once you have all your baseline data, now what?
- Get assessments through the Cohort.

What is next?
- Granges Americas will be the Industry Leader in CO2 footprint reduction and recycled content % in the aluminum foil market.
Lonnie Miller
Loews Hotels & Co.
Building Automation System

• One of the greatest assets in energy management

• Ability to control systems across diverse property types

• Typically are not used to their full capability to provide the most efficient operations and control

• Integration with your utility monitoring system allows you to control consumption and shed load to control demand

• Data generated is critical to understanding trends and opportunities to become more efficient and lower energy consumption
What other tools were available to identify and gather data?

Partnered with the DOE and Berkley Labs to identify properties to participate in a 50001 Ready cohort.

Worked with the properties to successfully achieve the 50001 Ready designation.

Used the data from the 50001 Ready Program to develop and strengthen the commitment from the key partners to drive energy savings.

Developed a blueprint that provides the property the ability to maintain focus through any transition.
Data Reporting

• Collecting data is only the first step to having a successful energy management program
• Your data is your greatest tool
• Data has to be relevant, accurate and timely
• How you use the data will determine the energy efficiency your facility can achieve
• Format your data to tell the real story on your performance, good or bad
• Leverage your data to foster the support of ownership and management to drive changes in operations and upgrades in equipment and technologies
Capital and Operational Improvements

- Gathering data and not using it to drive improvements renders the data useless.
- The data is your greatest tool to present your case to change your operations, upgrade your facility, and enhance your technology.
- Develop a plan that shows the projects and opportunities.
- Provide as much information as possible that will show the true value of the project.
- After implementation, monitor these changes in your BAS.
- Collect and update your data so that you can focus on your next opportunities.

Loews Hotels & CO 2022 Energy Reduction Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Status</th>
<th>Completion Date</th>
<th>Comments</th>
<th>Budget (K)</th>
<th>ROI</th>
<th>Rebate Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Coil Replacement - Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Lot Lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elevators - phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irrigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Millenium Hall Lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen Equipment - Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chillers - Replace - Phase 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic hot water heater, natural gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe Insulation - Misc. Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermostats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walk-in Cooler Temp Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORCA Food Disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Hander II - Coils and Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guestroom Fan coil units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VFD's</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiler 2 Replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condensate Tank Replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air handling unit, single zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan Coil Replacement Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chill Water Piping - Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parking Lot Lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof Replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ice Maker - Guest Floor (2ea) Phase 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHU and Valves - Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAV’s - Public Area - Phase 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Jason S. Grentus, MBA
JLG Industries, Inc.
WHO WE ARE

OSHKOSH CORPORATION

Headquarters – Oshkosh, WI

- Oshkosh Defense – Defense Segment
  - Oshkosh, WI

- McNeilus – Commercial Segment
  - Dodge Center, MN

- Pierce – Fire & Emergency Segment
  - Appleton, WI

- JLG/Jerr-Dan – Access Segment
  - Hagerstown, MD

- Pratt Miller – Engineering & Product Development
  - New Hudson, MI
ACCOMPLISHMENTS / GOALS

ENERGY REDUCTION GOALS (OSHKOSH CORPORATION):

- Energy Reduction goal: 25% reduction in energy
  - Year End FY21 Result: 30.2% reduction
- GHG Reduction goal: 25% reduction in energy
  - Year End FY21 Result: 37.2% reduction
- DOE Better Plants Energy Reduction goal: 25% reduction
  - Year End FY21 Result: 29.8% reduction

50001 READY

- Shippensburg, PA
  - Achieved in March 2021 & March 2022
- McConnellsburg, PA (1 JLG Drive)
  - Expected achievement in May 2022
  - Assistance through PennTAP (Penn State University)
    - Free support from PennTAP advisor, monthly meetings with assistance on DOE Navigator.
    - Set a plan to accomplish the 25 steps
    - Also assisted with facility Energy Study and welder replacement project
    - A great way to maximize your expertise and allows extra project focus to understand how your facility utilizes energy.
    - Provided professional reports that helped develop the energy project list as we started 50001 Ready.
STRATEGY / ISSUES

VALUE OF STRATEGY

• Internal / Communication
  – Improved awareness within JLG
    • Newsletter, Environmental Board
  – Improved customer / investor awareness
    • JLG.com, Annual Sustainability Report, JLG Leadership Involvement

• Team Member Engagement
  – Facility Environmental Team, Training

• Process Improvement
  – Project Planning (energy use evaluation)
  – Data Management
    • kWh/MMBTU collection
    • SharePoint
    • Key Performance Indicators

ISSUES

• Energy Project Funding
  – Competition with Operations
    • Improved by Better Leadership Engagement
    • Improved by Capitol Request Writing

• Time
  – Development, Meetings, Information Gathering
    • Improved by planned milestones and project planning for deliverable
    • Reasonable Timelines
    • Tied to business or personal goals

• Wanting 100% Perfect
  – Including Everything in the Facility
    • Improved by focusing on the biggest items, then refine over time
LESSONS LEARNED

• Build Your Case (Why 50001 Ready)
  – Before you even start with Task #1 in the DOE Navigator, build your business case
    • Research competitors, what customers/team members want
    • Go through the DOE Navigator and complete a Gap Analysis, understand what it will take to complete
    • Be realistic (time and workload)

• Data Management
  – Explore ways to make data management easier
    • Online utility management, Analysis on equipment energy usage (data plate and energy survey), Industrial Assessment Centers (free resources), SharePoint, energy project tracking.

• 50001 Ready is a living/breathing process
  – Constantly changing / improving energy performance
    – Does not need to be 100% perfect
    – Focus on largest energy users first and add as you have time
    – Navigator is a “handrail” – can adjust to fit your business

PATH FORWARD

• For JLG – Begin another one of our sites for 50001 Ready (2022)
• Continued refinement of existing programs (Shippensburg and McConnellsburg)
• Stepping up energy programs for our international sites
• Exploring solar for our Shippensburg facility
• Oshkosh exploring science-based targeting
• Power Purchase Agreement – Caddo Wind Farm, Oklahoma – December 2021
  – 20MW estimated 67% of Oshkosh domestic usage (based on first 3 months).
Thank You!

Provide feedback on this session in the Summit App!

Download the Whova app to your mobile device or use the QR code to access the web version.