ISO 50001/SEP

Superior Energy Performance at Schneider Electric

Energy Operation

Schneider Electric

Design the Strategy | Deliver Efficiency | Sustain Results

Schneider Electric – the global specialist in energy management

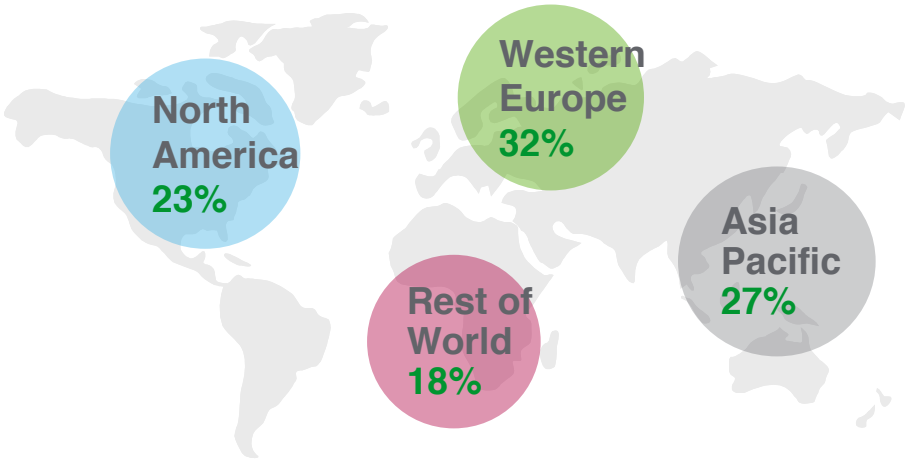
22.4
billion € sales
(last twelve months)

39%
of sales in new economies
(last twelve months)

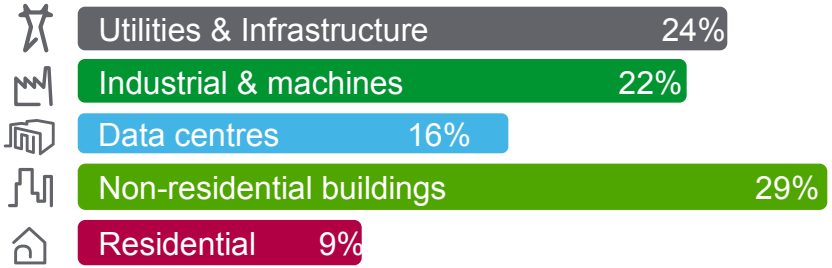
130 000+
people in 100+ countries

4–5%
of sales devoted to R&D

Balanced geographies – FY 2011sales



Diversified end markets – FY 2011 sales



Enterprise-wide Facility Management

Demographics

- 72 buildings
- 55 locations
- 12 M ft^2
- 105 people
- 7 Regional managers
- 26 facility managers
- 79 techs
- Across North America
- Across all Businesses

Why Implement SEP / ISO 50001?

Efficient Framework for Energy Management Program

Corporate Self-Defined Energy Management Program

SEP / ANSI/MSE 50021

ISO50001

ISO 50001 Structure

Plan

1. ~~~~~~
2. ~~~~~~

Do

2. ~~~~~~
3. ~~~~~~

Check

1. ~~~~~~
3. ~~~~~~
4. ~~~~~~

Act

1. ~~~~~~
2. ~~~~~~
3. ~~~~~~

Why Implement SEP?

Efficient Framework for Energy Management Program

Corporate Self-Defined Energy Management Program

- Assessment
- Lighting Upgrades
- Variable Speed Drives
- HVAC Adjustments
- Metrics
- Policies
- Reporting
- Communication

ISO 50001 Structure

1. ~~~~~~
2. ~~~~~~

Do

2. ~~~~~~
3. ~~~~~~

Check

1. ~~~~~~
3. ~~~~~~
4. ~~~~~~

Act

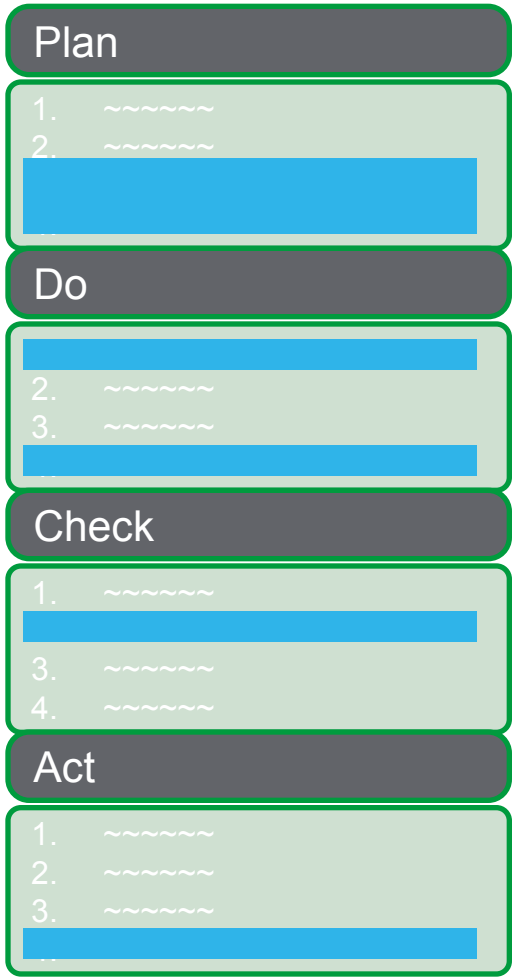
1. ~~~~~~
2. ~~~~~~
3. ~~~~~~

Why Implement SEP?

Efficient Framework for Energy Management Program

- Energy Management Program Objectives:
- Certification
- Best Practice
- Standardization
- Measured and Verified Results

ISO 50001 Structure



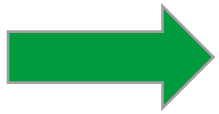
SEP / ISO 50001 @ Schneider Electric

- Target 11 sites to be complete by the end of 2014
- Target sites with ISO140001 certification (Clovis)
- Exposure to Management system
- Seat at table
- Verified results by 3rd party
- Benchmarking for Enterprise
- Documented Results

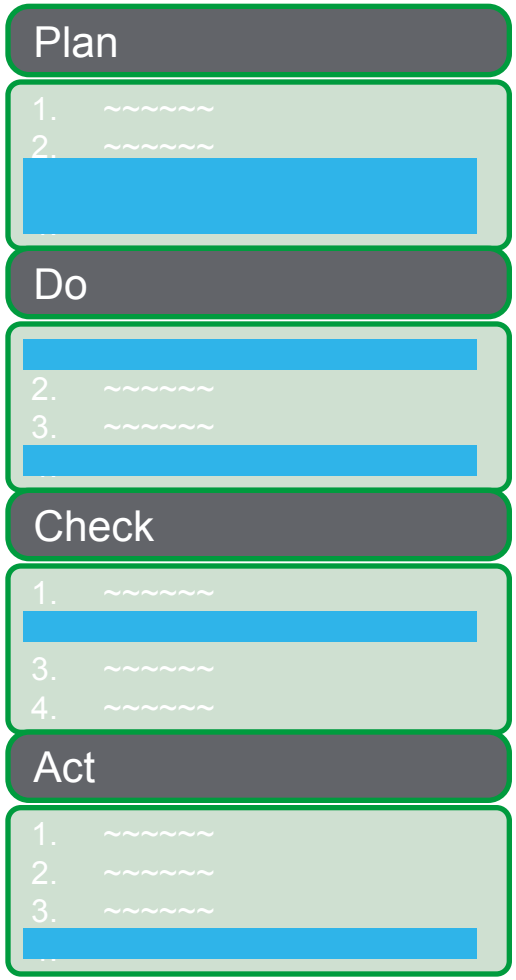
Why Implement SEP?

Efficient Framework for Energy Management Program

When do Savings Start:



SEP Structure



SEP Results at Schneider Electric?

Efficient Framework for Energy Management Program

Implementation Process

- **Planning Session:** determine the Energy Management Team

- **Implementation: 5 Phases-**
  - #1 Gap Analysis
  - #2 Facility Energy Review
  - #3 EnMS Construction
  - #4 Readiness Review and Internal Audit
  - #5 ISO Certification Audit

- **6 – 18 month** Process

Energy Management Team

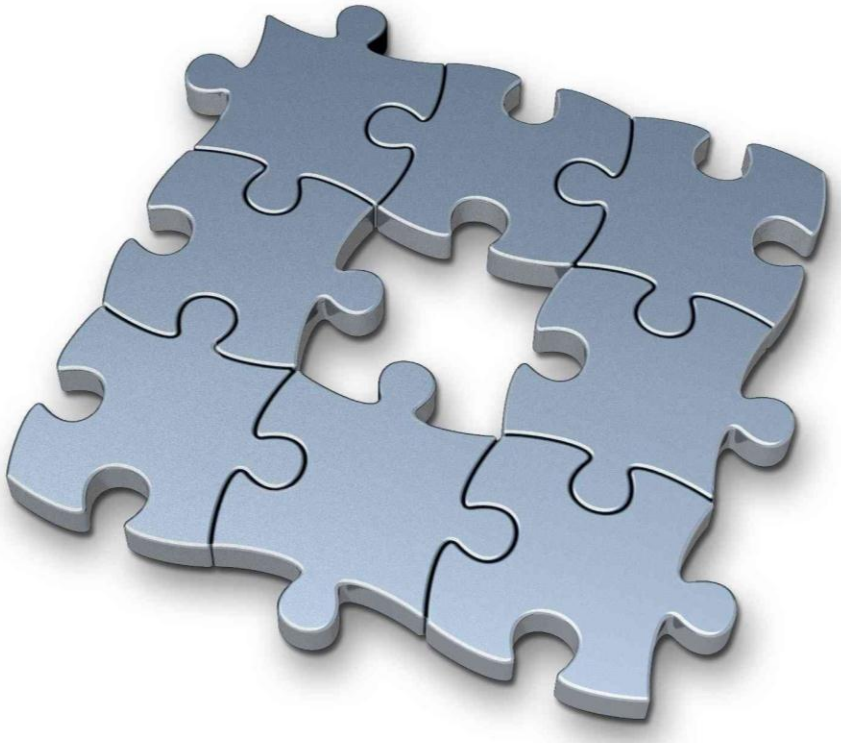
- First Step towards ISO 50001
- Should include:
  - Someone with experience with other ISO standards
  - Someone who is charged with improving energy KPI
  - A third party who can provide direction

Preferred Team Members

- Facility Manager/Energy Manager
- Plant Manager
- Quality Manager (ISO 9001 Rep)
- Environmental Manager (ISO 14001 Rep)
- Procurement Manager
- Maintenance Manager
- Manager(s) of Significant Energy Use(s)

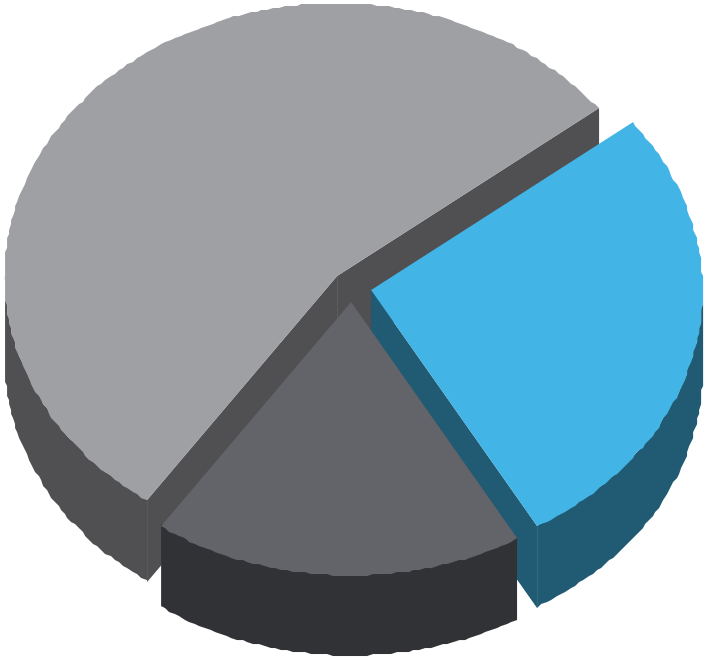
Phase 1 – Gap Analysis

- Determine which current practices can be adopted to meet the standard
- Develop an implementation plan
- Determine Phase 3 required effort



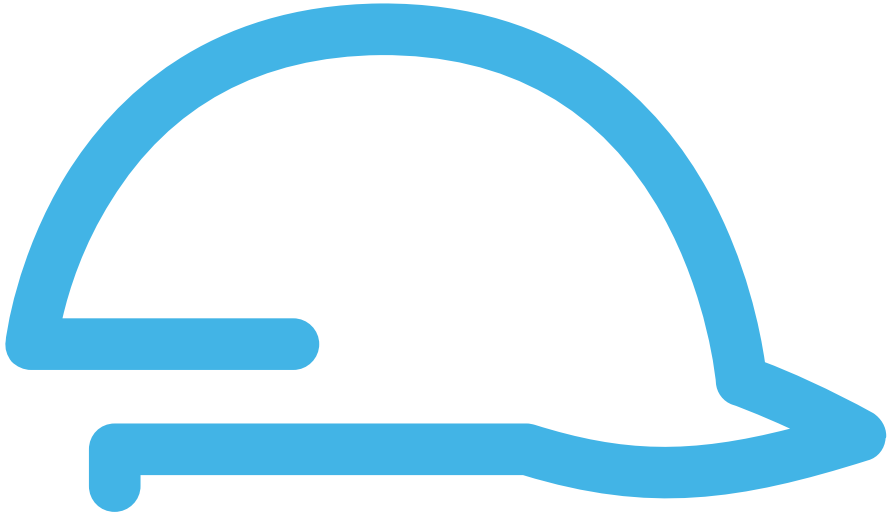
Phase 2 – Energy Review

- Conduct utilities analysis
- Identify Significant Energy Users (SEUs)
- For each SEU
  - Develop **Energy Conservation Measures**
  - Create **metering plan**
  - Identify **operating parameters**



Phase 3 – EnMS Construction

- Build procedures for a fully functional system
- Provide awareness & training
- Ensure energy efficiency targets have a plan for achievement



Phase 4 – Readiness Prep

- Second Gap Analysis to ensure all requirements are met
- Conduct an Internal Audit
- Hold Management Review
  - Review Internal Audit Results
  - Review Energy Performance Indicators (EnPI)

Phase 5 – Certification Audits

- **Stage 1 Audit**
  - Higher level audit to ensure **readiness** for Stage 2
- **Stage 2 Audit**
  - Ensure the **EnMS** meets the intent of the standard
  - Deeper dive into **procedures**
  - Present **corrective actions** for major and minor findings

Phase 1 and 2:
Gap Analysis and Energy Review

- **Identified the Paint Line as the Significant Energy User (SEU)**
  - ❑ **Wash Process**
  - ❑ **Powder Coat**
  - ❑ **Curing**
- **Identified WAGES metering needs**

Phase 3:
EnMS Construction

Bridged the gap between process and energy
Implemented Energy Conservation Measures (ECMs)

- ❑ VFDs on wash pumps
- ❑ Turned off IR oven (10% of gas use)
- ❑ Hook burn-off temperature set to 1,500 degrees when 1,200 degrees would suffice

Phase 4: Readiness

- Used internal auditors from ISO 9001 and 14001 teams
  - ❑Gave an energy fundamentals course

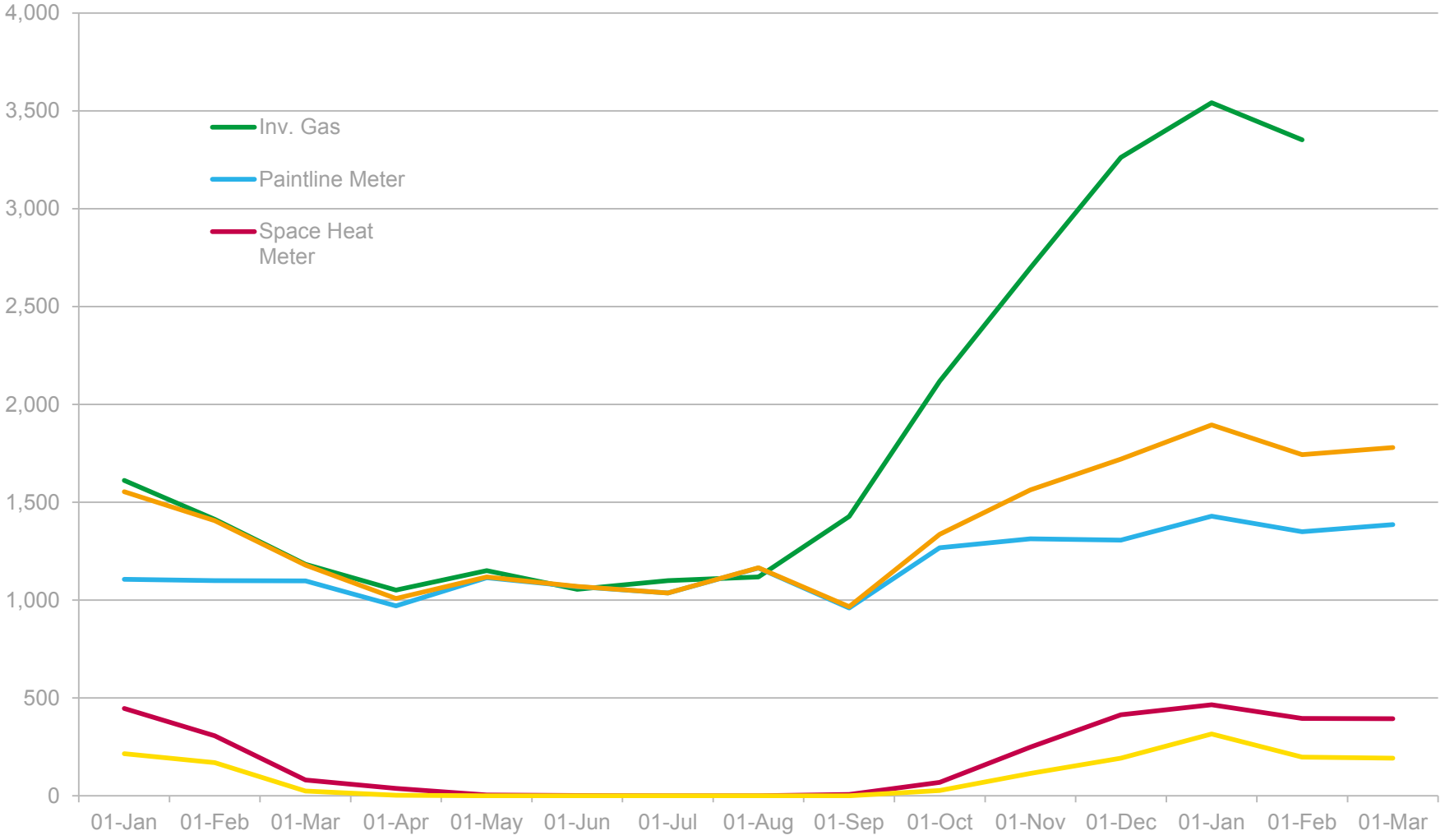
- Corrective Actions Identified
  - ❑Operating temperatures for ovens were not in procedures
  - ❑Calibration issues for gauges
  - ❑Auto-date feature on some documents
  - ❑Purchasing had not adopted new procedures
  - ❑Issues with energy awareness

- Well prepared for certification audits
  - ❑Only minor findings in Phase 5: Certification”

Outcomes

- [x] Created foundation for continuous improvement
- [x] Competitive advantage through reduced costs
- [x] Qualified for Platinum SEP with 15.5% reduction
- [x] Identified utility meter malfunction

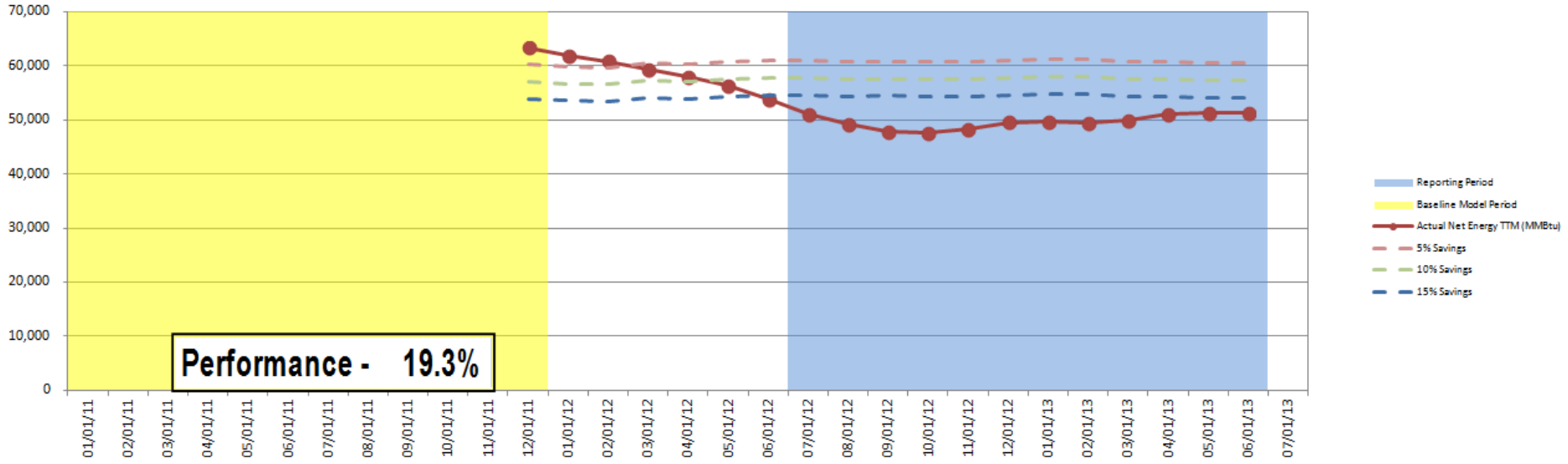
Invoice Analysis – Meter Data vs Invoice Data



Continued Results SEU

- [ ] Add VFD's to paint line ovens
- [ ] Change wash chemicals and reduce water usage and water temperature
- [ ] Investigating changing specification of paint to different process to change
- [ ] Reuse waste heat on paint line to pre-heat combustion air and heat the manufacturing space

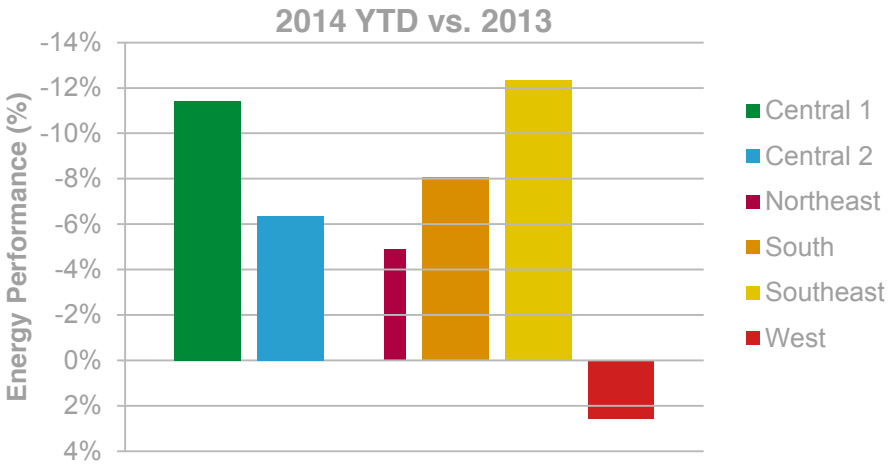
Performance after Certification



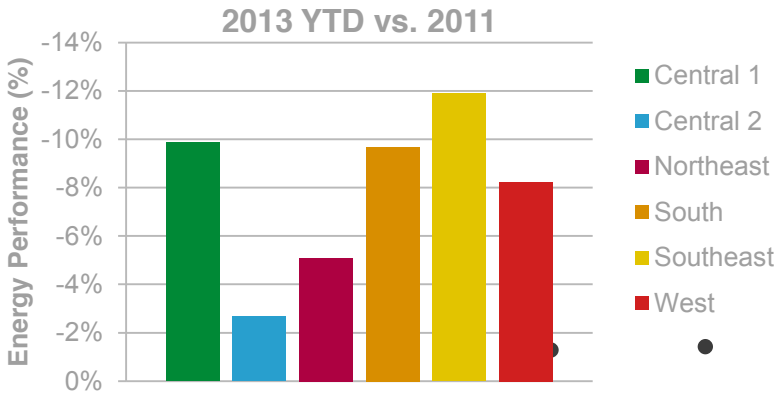
Schneider Electric North America
Results

Enterprise wide energy management information system that **aggregates** energy and resource data from **multiple systems** for **reporting , analysis** and **communication**

NAM Regional Energy Performance



NAM Regional Energy Performance [2013 vs. 2011]



Schneider Electric North America

Results

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Questions
Comments