2015 November 13th
Jean-Jacques MARCHAIS - Schneider Electric
IEA workshop influencing business behavior and
decision-making towards increased energy efficiency
Energy is the base of life.

Life Is On
when energy is on……

We ensure energy is on by making it

• Safe
• Reliable
• Efficient
• Connected
• Sustainable
Schneider Electric, the global specialist in energy management and automation

€25 billion
FY 2014 revenues

~5%
of revenues devoted to R&D

~170,000
people in 100+ countries

Diversified end markets – FY 2014 revenues¹

<table>
<thead>
<tr>
<th>Non-residential &amp; Residential Buildings</th>
<th>Data Centers &amp; Networks</th>
<th>Industrial &amp; Machines</th>
<th>Utilities &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>33%</td>
<td>14%</td>
<td>27%</td>
<td>26%</td>
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</tbody>
</table>

Balanced geographies – FY 2014 revenues¹

- 25% North America
- 28% Western Europe
- 28% Asia Pacific
- 19% Rest of World
Technology, Energy Performance & Behaviors

• Measuring, metering is the initial step of energy management and can change behaviors
• Then comes Control - Automation & Management
• With Increasing level of system deliverables
• In a more and more holistic performance coverage
• Within the New World of Energy: Distributed & Connected
Metering is the initial step of energy management and can change behaviors by:

- Energy consumption & cost allocation
- Energy sub-billing
- Energy usage analysis
- Building energy performance benchmarking
- Electrical distribution asset management
- Energy consumption alarming
- Bill auditing (shadow metering) and energy procurement
- Regulatory or certification compliance
Then Control - Automation & Management -

Key Challenges

- Integration
- Convergence
- Openness
With Increasing level of system deliverables

Visualization
- Aggregates data
- Tracks performance via dashboards
- Standard reporting
- Ad hoc reporting
- Kiosk

Analytics
- Retrospective
- Detects & diagnoses equipment faults
- Assess energy, comfort, & maintenance impact
- Reports and to-do lists
- ROI to prioritize lists
- Improves efficiency of local staff via tasking

Optimization
- Dynamic
- Adaptive, self-learning
- Optimized operation
- Grid-aware; an extension of the SmartGrid
- Maximize ROI of the asset & future EE investments
- Improves efficiency of local staff by automating actions

Automated, optimized energy management

Building Management System

Degree of Intelligence

Competitive Uniqueness

Aggregates energy data & displays

Identifies issues & outliers to fix
In a more and more holistic performance coverage

<table>
<thead>
<tr>
<th>High-performance building</th>
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<tbody>
<tr>
<td>Optimization of rented m²</td>
<td>Low consumption / Positive energy</td>
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<tr>
<td>Maximizing the value of property assets</td>
<td>Water and waste</td>
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<tr>
<td>Load savings</td>
<td>Health</td>
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<tr>
<td>Optimization of construction costs</td>
<td>Green mobility/CO₂</td>
</tr>
<tr>
<td>Economics</td>
<td>Eco-responsibility</td>
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<tr>
<td>Comfort</td>
<td>Upgradability / flexibility</td>
</tr>
<tr>
<td>Serving the occupant</td>
<td>Operations management</td>
</tr>
<tr>
<td>IT</td>
<td>Safety/Security</td>
</tr>
<tr>
<td>Single smart card</td>
<td>Certification</td>
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</table>

Economics  |  | Eco-responsibility  |  | Productivity  |  | Operational efficiency  |  |
Within the New World of Energy: Distributed & Connected

Capacity to fit into demand response scenarios

Integration of renewable energies and local storage capacities

Integration of the electric vehicle through Electrical Management System interaction

balancing out the charge for each operator in the district

Etc…..
However to fully deliver, technology need be deployed in a behavior and cultural change, including in policies and regulations.
THANK YOU.