

Integrating renewable electrical energy in Industry

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Schneider Electric

IEA workshop Renewable Energy for Industry



We are the Global Specialist in Energy Management™

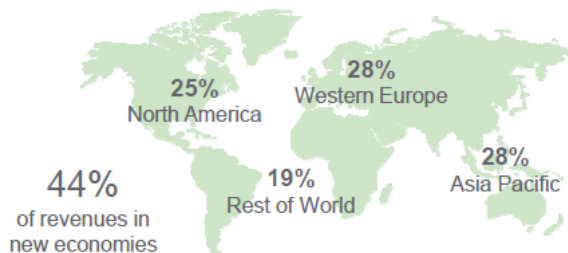
25 billion € revenue (FY 2014)

~5% of sales dedicated to R&D

43% of revenue in solutions (FY 2014)

~170 000 employees in 100+ countries

BALANCED GEOGRAPHIES – FY 2014 revenues



A large company, with a balanced geographical footprint and a commitment to sustainability

The future energy world will be

MORE ELECTRIC

- > Demand for electricity driven by sustainability, intelligent devices, and evolution of key energy consumers (motion and cooling)



MORE DISTRIBUTED

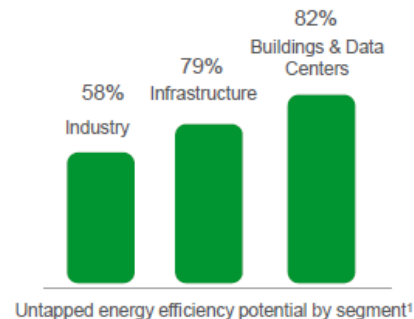
- > Provide local energy to facilities, around positive energy and micro grids, to empower users
- > Island and reconnect
- > Restore power quickly
- > local generation & consumption optimization
- > prosumer



- > Solar, wind power with storage
- > Controls for stability

MORE EFFICIENT

- > 2/3 of energy efficiency potential remains untapped¹
- > Governments globally focus on energy efficiency and sustainability



**Balance
supply and demand**

**Manage
Generation Variability**

**Enable
Positive economic case**

In Industry

- One third of total energy
- In the last decade
 - flat consumption in OECD
 - X2 in non OECD
- Electricity share 30% growing

*More renewable means more
industrial processes electrification*
And possibly local generation



Switching to electricity : a lot of solutions in all sectors

- Gas compressors to electricity compressors in Oil & Gas and chemicals
- Electrification of mineral transportation in Mining & Minerals
- Drying using micro waves in Minerals
- Industrial heat pumps in Food and beverage and Pharmaceuticals



Economic Enablers-Barriers

- Price of electricity versus fossil (subsidies)
- Price for flexibility - TOU tariffs
- Price of CO2 and other externalities
- Energy Efficiency
- LCC versus up front investment

Technology Enablers - Barriers

- Process technology evolution (exp. heating)
- Load and peak management
- Storage (electricity & heat)
- Cogeneration

We believe it's time to manage :

Save , shave, shift, produce locally and
share capacity across the smart grid
to reduce CO₂ footprint and
provide higher ROI on Capex and Opex
by improving site performance.



Reduce energy
consumed



Reduce cost
per kWh



Reduce CO₂
footprints



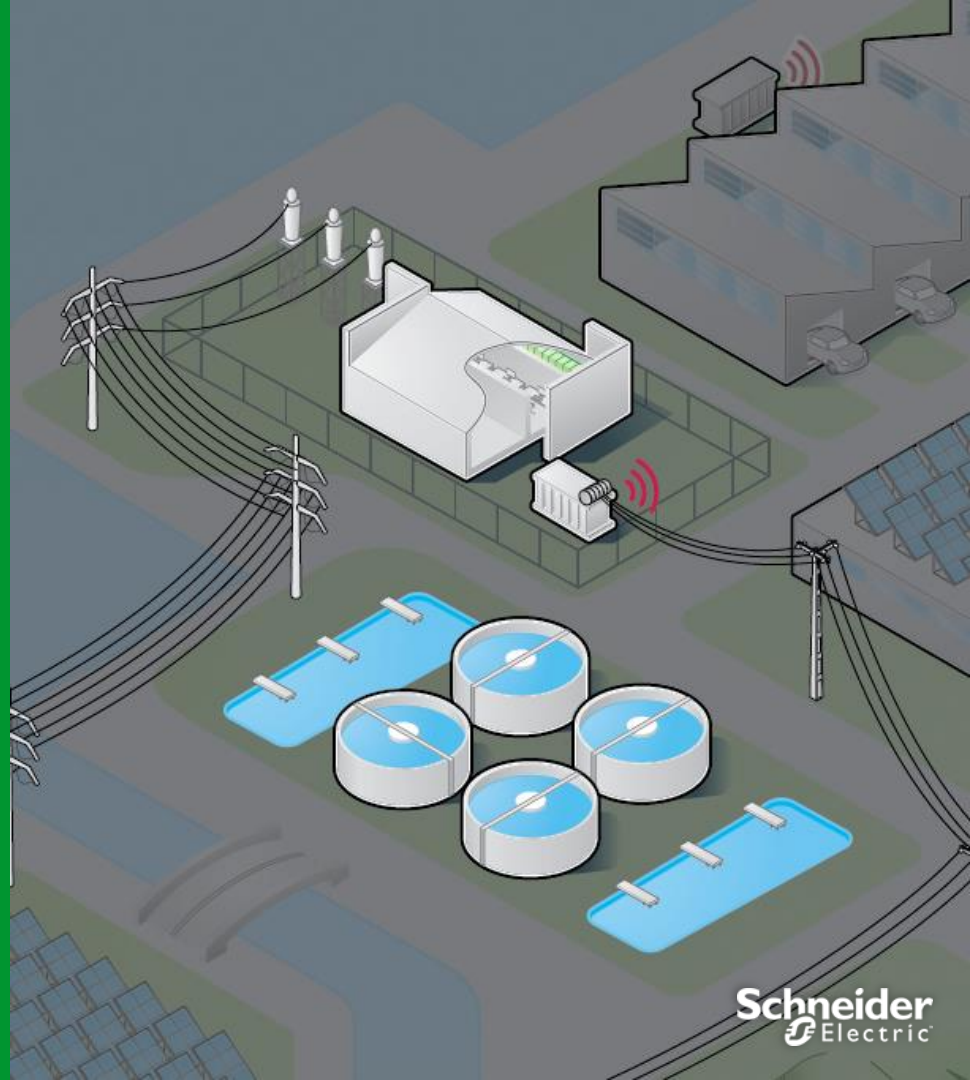
Reduce operating
expenditures



Realise measurable
efficiency



Produce energy
locally across
the grid



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HELP PEOPLE MAKE THE MOST OF THEIR ENERGY