Making the Smart Grid happen

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**22.4 billion € sales**
(last twelve months)

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

**137 000+ people**
in 100+ countries

**4–5%**
of sales devoted to R&D

**Balanced geographies – FY 2011 sales**

North America 23%
Western Europe 32%
Asia Pacific 27%
Rest of World 18%

**Diversified end markets – FY 2011 sales**

Utilities & Infrastructure 24%
Industrial & machines 22%
Data centres
Non-residential buildings
Residential 9%
…with the Energy challenge as cornerstone of our business strategy

The facts

Energy demand
By 2050
Electricity by 2030

Source: IEA 2007

The need

CO₂ emissions to avoid dramatic climate changes by 2050

vs. 1990 level

we want to help address this challenge
Introducing the Smart Grid
The new Grid equation:

3 drivers + 3 accelerators

Growing electricity demand
Need to reduce CO₂ emissions
Constraints on existing networks

Technology availability
Active government & regulators
Active end-users

making the smart grid happen
The equation parameters vary across the world.

Transmission overload & aging infrastructure
- Blackouts
- Critical peak situations
- Price volatility
- Cyber-security issues

Deregulation & Distributed Generation
- Competition for supply
- Integration of Renewable Energy sources
- Increasingly constrained networks

Growing energy demand... and losses
- Critical peak situations
- Energy theft

Growing energy demand
- Growing consumption
- Transmission congestion
- \( \text{CO}_2 \) emissions

Distribution infrastructure modernization
- Growing consumption
- Energy theft & losses
- Generation & Transmission modernization
From one-way energy-only grid to two-way energy+data Smart Grid
Making the **Smart Grid** happen
Our 5 Smart Grid domains optimize Supply and Demand
Flexible Distribution: combining Schneider Electric and Telvent solutions

A complete medium and low voltage portfolio and a full set of management software for a more reliable, efficient, and secure grid.
Smart Generation: integrating Renewables safely and efficiently into the Grid

- PV power plants
  - Array boxes
  - Grid connection substation
  - Power Conversion substation
  - Switchgear and Circuit Protection
  - Tracking systems
  - Inverters

- Wind power plants
  - Inverters & Charge
  - Multi source management

- Off-grid & back-up
  - Similar offer to PV Power plants
  - OEM Wind inverters

- Buildings
  - Similar offer to PV Power plants

- Residential
  - Inverters
  - Distribution Panels

Supervision and monitoring (incl. metering)
Engineering & consulting
Maintenance and operation
Efficient Homes: involving end-users

Connection to the Smart Grid

Schneider Electric’s Efficient Home Portal

Monitoring
- Main Meter Interface
- Clamp On CT
- CT Concentrator

Load management
- Smart outlet
- Hot Sanitary Water Actuator

Temperature mgt
- Temp. sensor
- Temp. actuator

Efficient home box
- Eco Button

Users’ interface
- Mobile interface
- Web interface
- In home display
Efficient Enterprise: complete integrated architecture

Targeted segments
- Education
- Hospitals
- Hotels
- Offices
- Retail

Simple Integration
- Interoperability and openness to third party systems

Reliability
- Continuity of service of Electrical Power

Efficiency
- >30% energy saving
- Optimised Capex & Opex

Productivity
- Productive work places

Green
- Connection to renewable energies
Demand response network management and Renewables integration

Centralised Generation

Renewables

Transmission

Distribution

Residential

Efficient Home

1st experience with
- Electro-Intensive industries and buildings
- Direct load control with end-users

Consulting services
NOC services
Software and Hardware

On-going pilot projects on renewable balancing via DR

Aggregation of large industrial load
→ 1GW under control
→ Major supplier of RTE, the French TSO

Schneider Electric
Needed: a collaborative business model
Innovative R&D smart grid projects

- Collaboration with more than 60 partners (utilities, universities, industrials,..)
- More than 15 projects
- More than 200M€ global investment
- More than 10 countries
In conclusion...
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● All over the world, electricity networks are becoming more complex and less stable. To continue to efficiently balance supply & demand, the grid needs to become smarter.

● Schneider Electric is smart grid-ready and we help all our customers in homes, buildings, industrial facilities, and across the electricity network be smart grid-ready too:

  ▪ Utilities will drive smarter Supply, to manage increasing demand, network complexity and environmental concerns
  ▪ Energy-efficient companies and active end-users will drive smarter Demand, to maximize the cost & environmental benefits from Energy Efficiency.
  ▪ and Demand Response will efficiently link Demand and Supply.
Make the most of your energy™