BAFF-seminaari

Mitä huomenna?

26.5.2011
Teemu Hausen

Schneider Electric

The Buildings Business of Schneider Electric

Schneider Electric
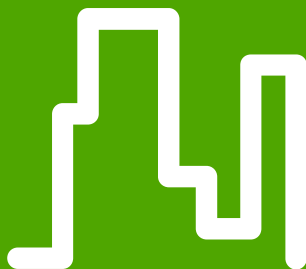
Schneider Electric in figures

18.3
billion sales in 2008 (in €)

€

32
% of sales in new economies

114 000
people in 100+ countries

330
Rank in *Fortune 500* ranking #

[800]
Million € devoted to R&D

Sales by business

Electrical distribution	57%
Automation	29%
Critical power	14%

Sales by geography

Europe	44%
North America	27%
Asia-Pacific	19%
RoW	10%

Sales by end market

Energy & Infrastructure	16%
Industry	26%
Data centres & Networks	17%
Buildings	31%
Residential	10%

People by geography

Europe	42%
North America	25%
Asia-Pacific	25%
RoW	8%

Listed on the Paris stock exchange

World class strategic growth

- Revenue of $1.8 billion (USD) in 2008
- More than 8,000 employees and over 1,000,000 installations worldwide
- Organic growth, significantly higher than industry average

- Strategic acquired competence:
  - 2000: CSI Control Systems International
  - 2003: TAC
  - 2004: Andover Controls
  - 2005: Invensys Europe (Satchwell)
  - 2006: Invensys Americas (Siebe)
  - 2007: Pelco

2
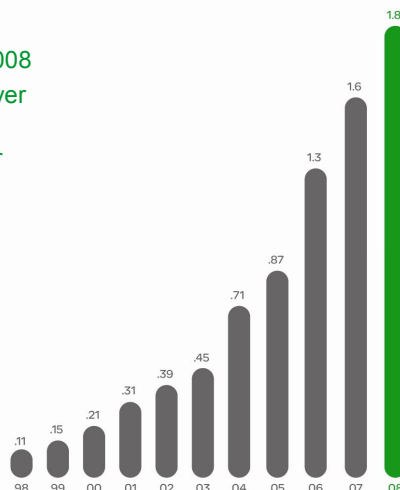
Schneider Electric sees six trends in our world

Energy as the key challenge for our planet

Emergence of new economies
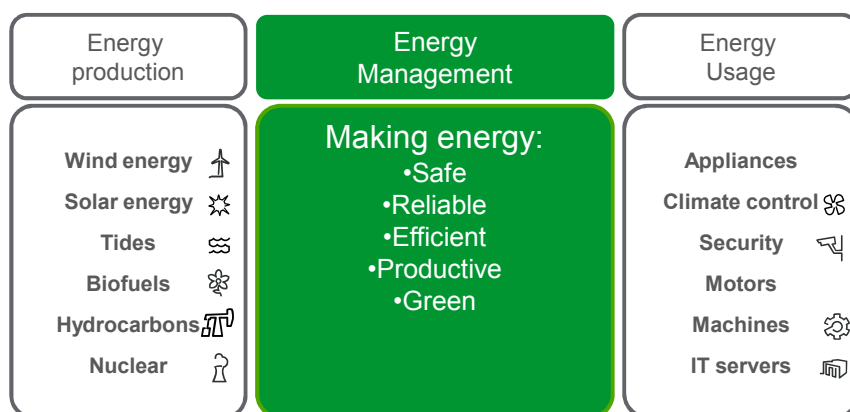as a major opportunity for our generation

Connectivity for everything, everywhere at any time

Globalization allowing anybody to get the best of the world

Simpler solutions for the increasing complexity of our life and work

Security as a growing and global concern

A unique positioning…

Energy production	Energy Management	Energy Usage
Wind energy **Solar energy** **Tides** **Biofuels** **Hydrocarbons** **Nuclear**	Making energy: •Safe •Reliable •Efficient •Productive •Green	**Appliances** **Climate control** **Security** **Motors** **Machines** **IT servers**

Introducing Ecostruxure

Welcome to the next generation!

Schneider Electric

Our customers' top challenges

The energy dilemma
energy demand versus the environment

Total building life cycle costs
initial capital, ongoing operations and energy

Connectivity
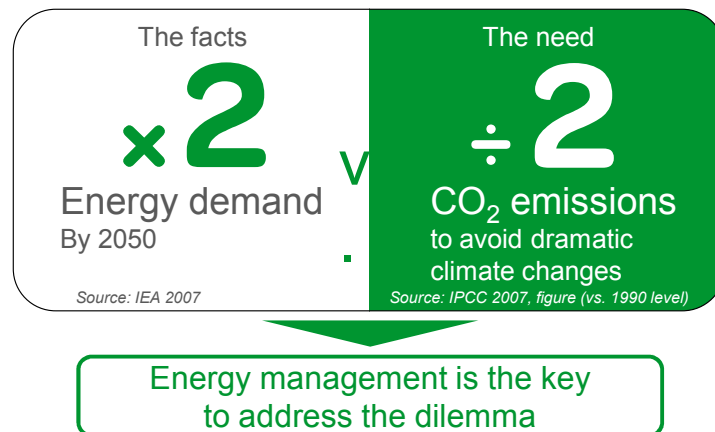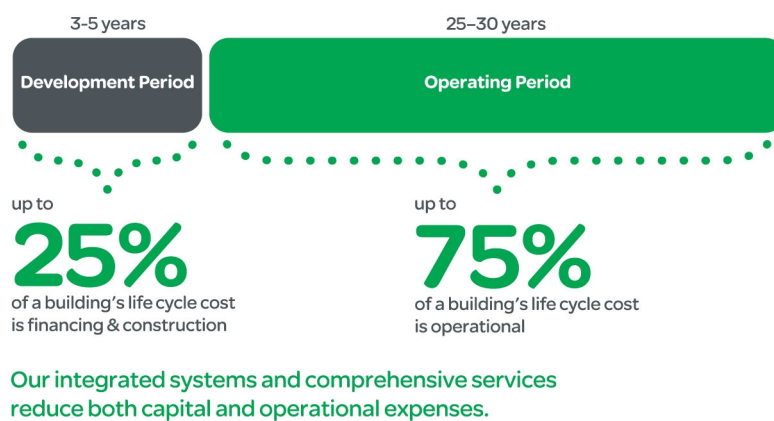too many disparate systems in the building

Security
as a growing concern

The energy dilemma is here to stay

The facts	The need
×2	÷2
Energy demand	CO_2 emissions
By 2050	to avoid dramatic climate changes
Source: IEA 2007	*Source: IPCC 2007, figure (vs. 1990 level)*

Energy management is the key to address the dilemma

The life cycle cost of a building

3-5 years	25–30 years
Development Period	**Operating Period**

up to
25%
of a building's life cycle cost is financing & construction

up to
75%
of a building's life cycle cost is operational

Our integrated systems and comprehensive services reduce both capital and operational expenses.

The building ecosystem

| Extended Services								
				Convergence area				Systems Integration Partners & Branches
Systems and Services	Power Monitoring Control Systems						White Space Management IT Applications	Network Management Systems	Product Divisions
Equipment & Infrastructure	Emergency Power Supply Systems / Utilities	Chillers Boilers Air Handlers	Lighting	Locks Doors Gates Man-traps	Cameras Housings	Fire & Smoke Detectors, Sprinklers	Servers Computers Wiring Closet	Routers Switches Phones
	Power	**HVAC**	**Lighting**	**Access**	**Video Security**	**Life Safety**	**IT**	**IP Technology**

Multiple silo systems in the building

- Multiple networks from multiple vendors
- Too many systems to learn
- Complex troubleshooting

Silo systems add:

√ **CapEx**

√ **OpEx**

√ **Obstacles to achieving energy efficiency**

FIRE
IP TECHNOLOGIES
VIDEO SECURITY
ACCESS
ENERGY
24/7 MONITORING
LIGHTING
LIFTS
HVAC
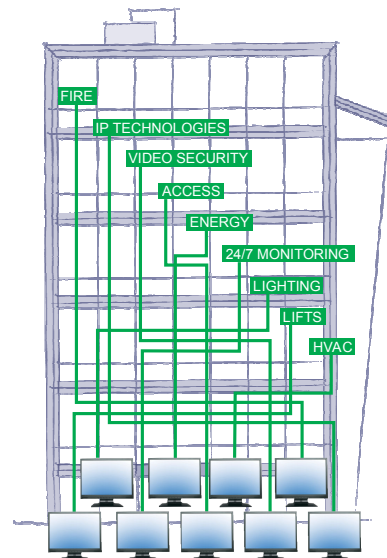
The integration difference

- Integrated building infrastructure systems enable:
  - Shared Operating Data between Systems via a common Interface
  - More Productive and Responsive Staff
  - Centralized Services that Reduce Costs
  - Lower Cost of Network Ownership
  - What gets Measured gets Managed
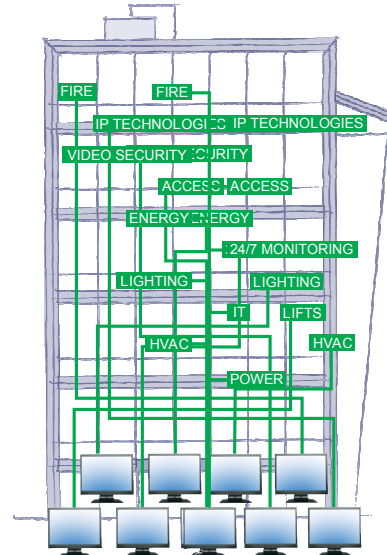
Security as a growing concern

Terrorist threats in high risk facilities

Internal or external **physical threats** in the workplace, schools, hospitals and more

Stricter and rapidly changing **regulatory environment** for security practices and reporting

The need to **restrict access** within facilities to authorized personnel only

Our Mission:

develop a **next generation** building management platform

Buildings are multi-lingual…
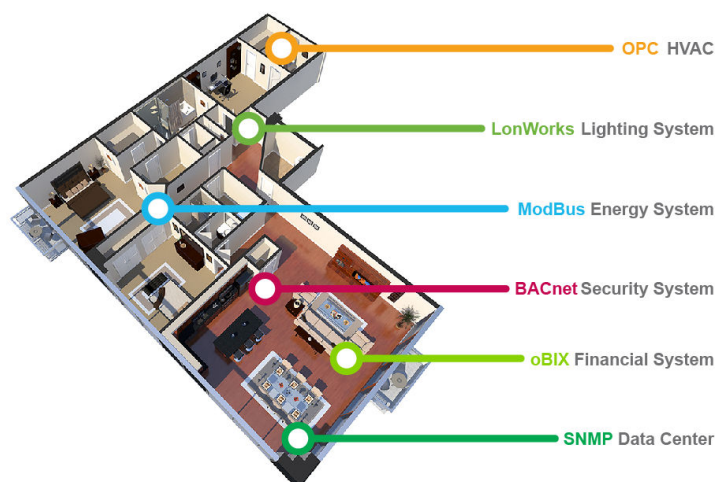
OPC HVAC

LonWorks Lighting System

ModBus Energy System

BACnet Security System

oBIX Financial System

SNMP Data Center

…is your BMS?

Making energy safe, reliable, efficient, productive, and green

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The digital revolution and energy

- Humans created 161 Exabyte's of data in 2006, approximately **three million times** the information in all the books ever written.*
- In 2005, the average IT network user consumed 3Mb bandwidth per month. In 2008, this became **3Mb per day**
- Microsoft and Google announce new datacenter plans based on location of **cheapest** electricity
- $12 trillion will be spent for energy in the next 20 years, equaling the spending of the **past 100 years**
- Between 2002 & 2007 the cost of electricity **grew by a factor of 3**
- Last year human beings produced **more transistors than rice** grains…and at lower cost**

*source: IDC, EMC
**source: IBM

Intelligent Energy:

Enabling the architectural integration of data, power, security, cooling & automation
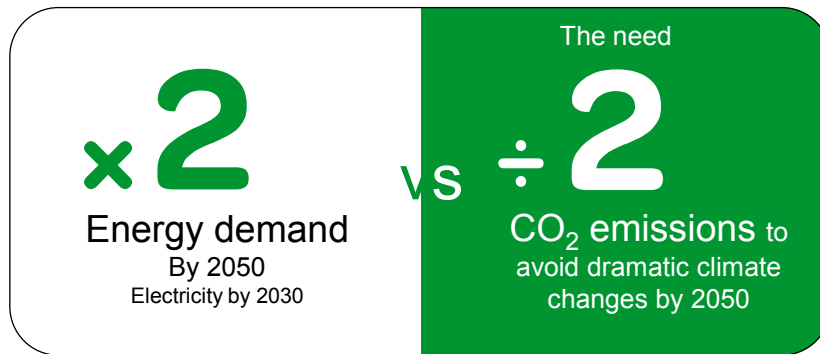
Eco truxure

Active energy management architectures
…from Plant to Plug™

Offering guaranteed compatibility across key applications

Leveraging open standards across both Schneider Electric and third party offers
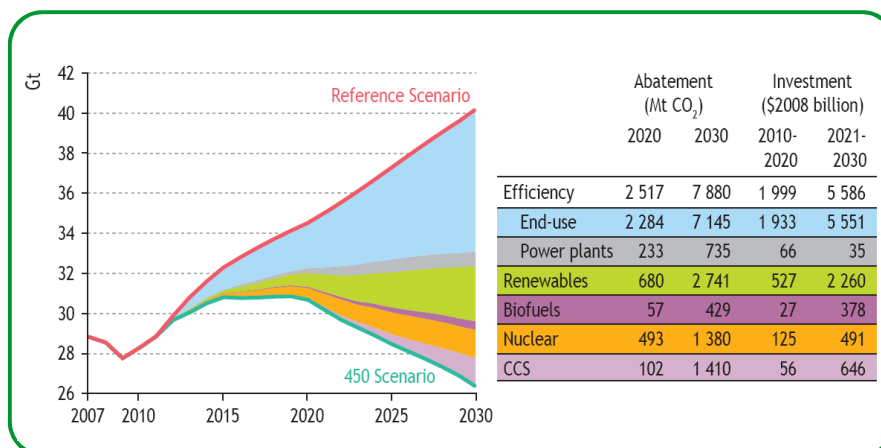
The energy dilemma is here to stay

×2
Energy demand
By 2050
Electricity by 2030

vs

The need
÷2
CO_2 **emissions** to avoid dramatic climate changes by 2050

Energy efficiency is our first priority

Over **50%** of CO2 reduction will come from energy efficiency

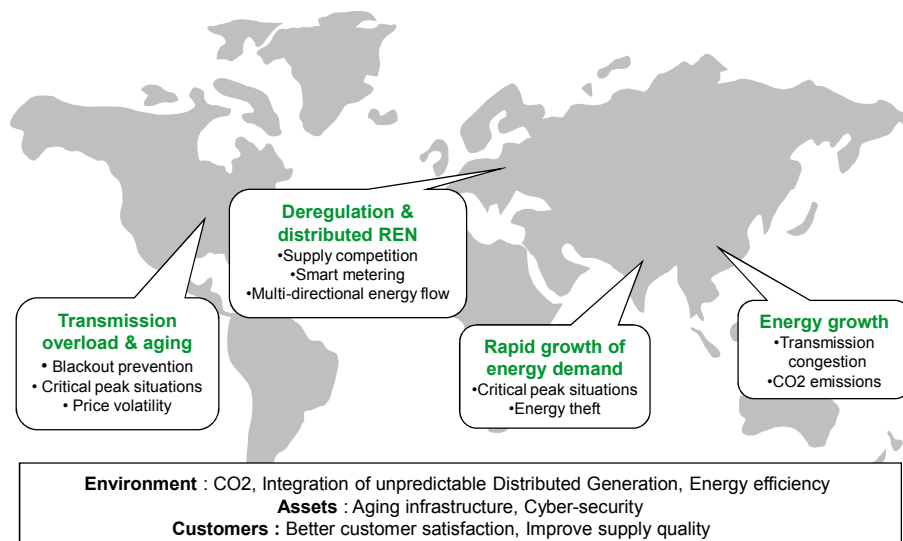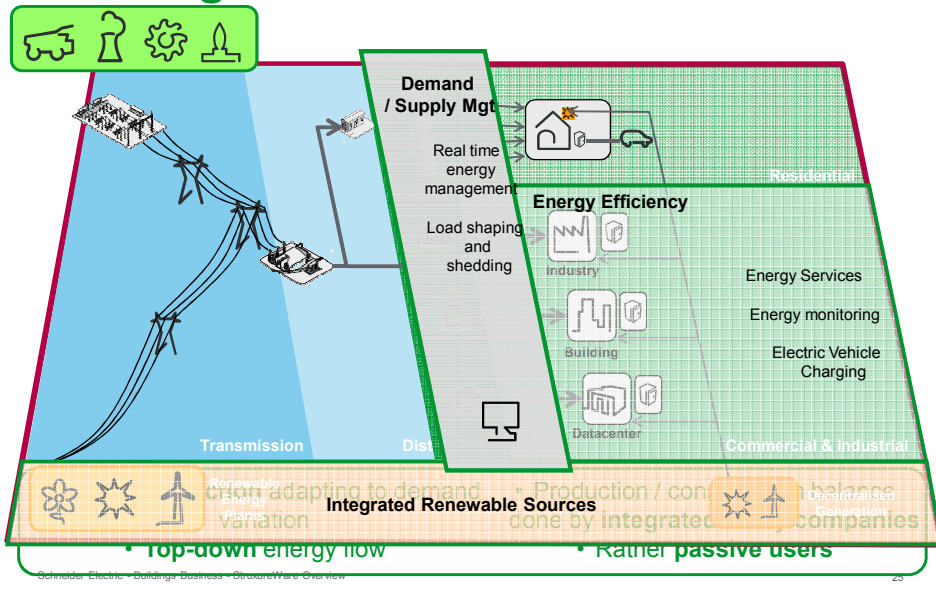|	Abatement (Mt CO_2)		Investment ($2008 billion)	
	2020	2030	2010-2020	2021-2030
Efficiency	2 517	7 880	1 999	5 586
End-use	2 284	7 145	1 933	5 551
Power plants	233	735	66	35
Renewables	680	2 741	527	2 260
Biofuels	57	429	27	378
Nuclear	493	1 380	125	491
CCS	102	1 410	56	646

What is smart grid?

- Creates two-way communication between the grid and load (building)

- Allows two-way energy flow between the grid and load (building)

- Distributes energy intelligently across a region to manage the load better
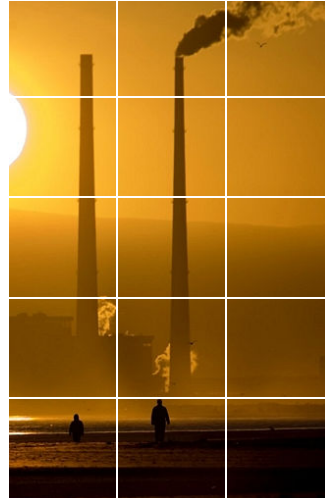
Smart grids are evolving for different reasons

Deregulation & distributed REN
•Supply competition
•Smart metering
•Multi-directional energy flow

Transmission overload & aging
• Blackout prevention
• Critical peak situations
• Price volatility

Rapid growth of energy demand
•Critical peak situations
•Energy theft

Energy growth
•Transmission congestion
•CO2 emissions

Environment : CO2, Integration of unpredictable Distributed Generation, Energy efficiency
Assets : Aging infrastructure, Cyber-security
Customers : Better customer satisfaction, Improve supply quality

What is a Smart Grid and how do Buildings contribute?

Demand / Supply Mgt

Real time energy management

Load shaping and shedding

Energy Efficiency

Industry

Building

Datacenter

Residential

Energy Services

Energy monitoring

Electric Vehicle Charging

Commercial & Industrial

Transmission

Integrated Renewable Sources

- **Top-down** energy flow
- Rather **passive users**

Production / consumption balance done by integrated energy companies

Energy efficiency enables smart grid

There is no smart grid without smart buildings.

Energy monitoring
Motor control

Renewable Energy Plants

Decentralised Generation