

Tackling the energy challenges through **Energy Efficiency solutions**

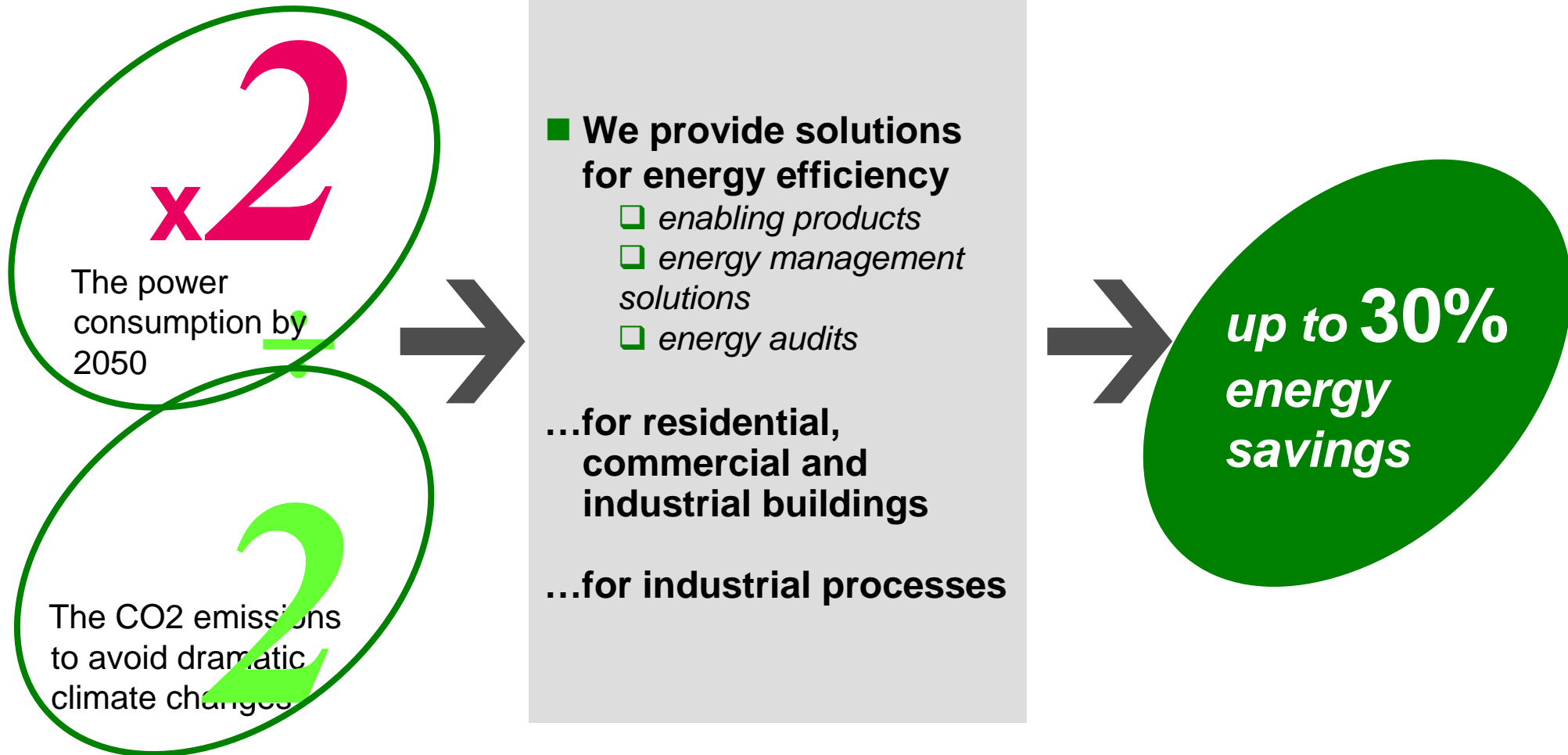


October 2007

Schneider
 **Electric**
Building a New Electric World

Committed to the energy dilemma challenge

We are “*energy optimists*”



Part 1

The energy dilemma

The energy and CO2 emission stakes

World consumption **up 45%** since 1980,
70% higher by 2030

**CO2 up 33% since industrial revolution,
rising faster than ever**

**Resource competition & political instability
keep prices high**

Coal use (cheap & plentiful)
continues to grow
in emerging markets

**Emerging markets > 75% of
new demand, Mature markets
continue growth.**

➔ These trends are here to last unless we do something

Energy challenges and opportunities are everywhere

Supply Side

More efficient and cleaner Supply

- Electricity generation, transmission and distribution
- Fuels supplied for combustion

- Cleaner supplies will take time to implement
- 30% cleaner global generation in 2020 will not meet Kyoto targets

Mid term ➡

We must develop technologies and business models to increase renewable energies penetration

Demand Side

More efficient use conservation and management

- Infrastructure & Data Centers
 - Industry
 - Buildings
 - Residential

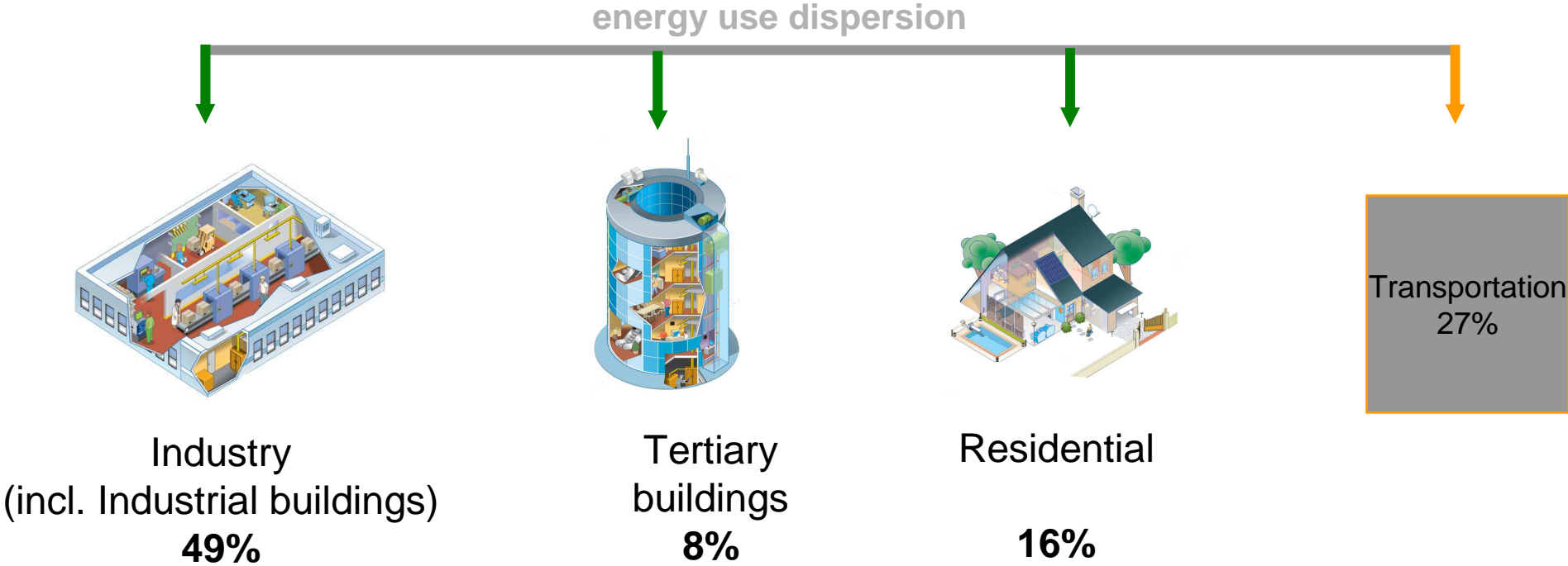
- Current technologies allow us to target 30% saving
- 30% saving is needed to meet Kyoto targets

Short term ➡

We must focus on Energy Efficiency to solve our energy dilemma

Demand Supply Management plus Metering & Analysis

Schneider Electric is involved in 3/4 of end user energy consumption!



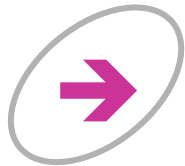
- Electricity and fuel main sources of energy in buildings and industry
- Main use: heating, motors, lighting, electronics, appliances

Energy Efficiency is a **Must**, Better than new capacity because it is...



■ Cheaper

- Each kWh saved avoids about 3x the generation production
- Demand response programs cost about 2 to 3 cents/ kWh, about half of typical electricity costs



■ Quicker

- Technology available today with short term investment and short term results



■ Cleaner

- “Negawatt” produces no environmental footprint



■ Security enhancing

- EE is homegrown, it reduces dependence on imports

30% savings are available today, but...



Up to 30% savings are possible through a combination of

■ Efficient devices and installation (10 to 15 %)

- Low consumption devices
- insulated building...

■ Optimized usage of installation and devices (5 to 15%)

- Turn off devices when not needed
- Regulate motors or heating at the optimized level...

■ Permanent monitoring and improvement program (2 to 8%)

- Rigorous maintenance program
- Measure and react in case of deviation



Most of these savings can be lost quickly....

Unplanned, unexpected shutdowns of equipment and processes cause energy intensive startups resulting in more cost and emissions

Without automation *technologies*: **impossible to finely tune the usage of devices** (motor regulation, heating regulation ...)

Counting on people behavior to make the best use of energy proves to be disappointing after a while...

A structured approach for Energy efficiency

1. « Fix the basics »

- Low consumption devices
- Insulation material
- Power quality
- Power reliability

2. « Measure »

- Energy meters
- Power quality meters

3. « Automate »

- Building management systems
- Lighting control systems
- Motor control systems
- Home control systems
- Variable speed drive

4. « Monitor and improve »

- Energy management software
- Remote monitoring systems

Part 2

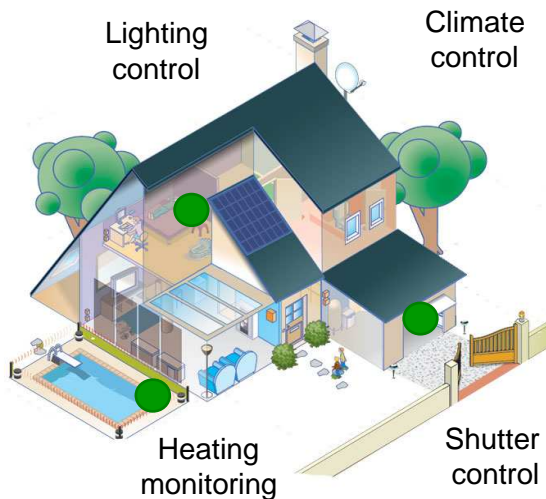
What can Schneider Electric do for you?



Solutions for residential and small commercial markets

Residential

EE products may save
10% to 40% electricity



- ➔ 20% to 25 % of consumed energy (EU & US)
- ➔ Heating is 30% of energy usage.
- ➔ Lighting & appliances are over 40%

■ Enabling products

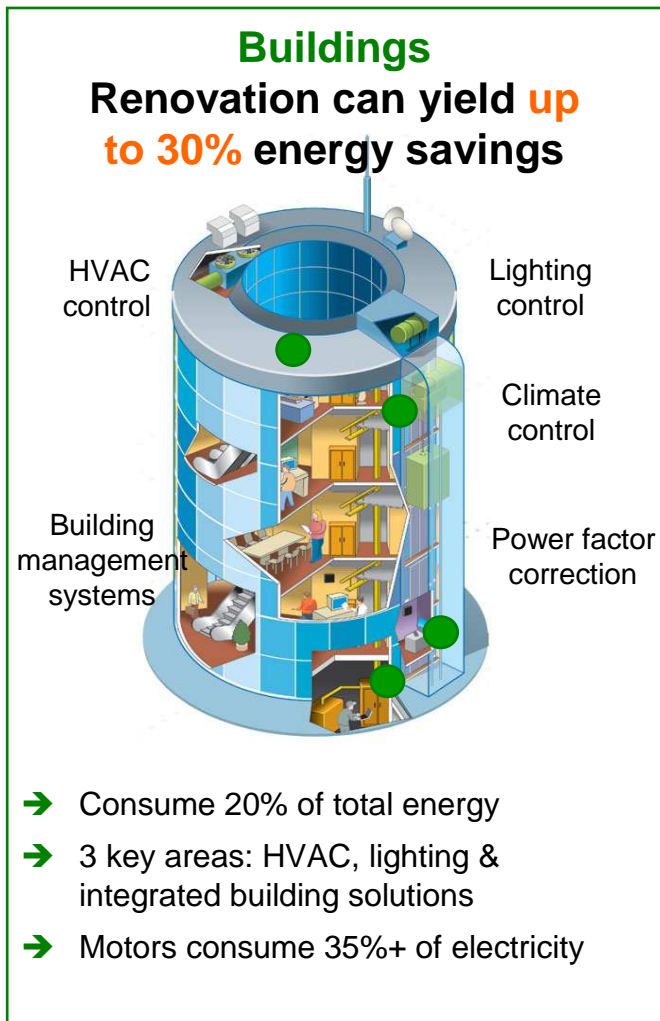
- **Lighting control** : dimmers, timers, movement and presence detectors, specific switches, light sensitive switches
- **Temperature control** : thermostat, floor heating control



■ Management systems

- **Shutter control systems**
- **Lighting Control systems**
- **Home control systems**

Solutions for medium and large commercial markets



■ Enabling products

- ❑ Dimmers, timers, movement and presence detectors, switches
- ❑ Thermostat, floor heating control
- ❑ Variable speed drives for HVAC, pumps, fans, motors
- ❑ Power compensation and filtering products

■ Management systems

- ❑ Building management systems
- ❑ Power monitoring and analysis

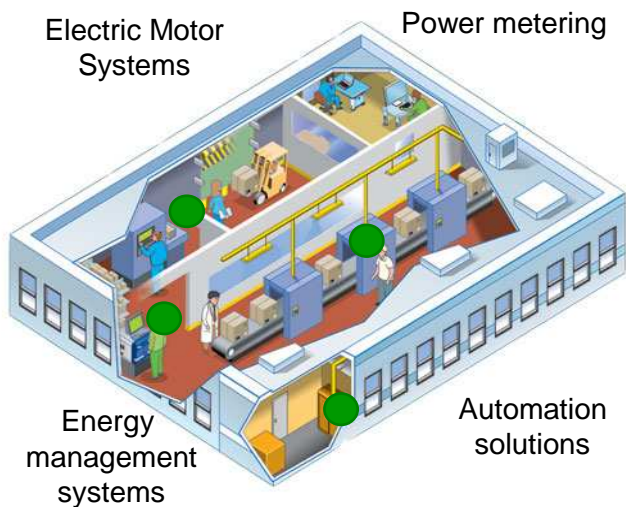
■ Added value services

- ❑ Site audits
- ❑ Data Collection and Analysis
- ❑ Financial Analysis & ROI Validation,
- ❑ Planning of Improvement plan
- ❑ Remote monitoring and optimization

Solutions for industry and infrastructure markets

Industry & infrastructure

Average facility can **reduce consumption by 10 to 20%**



- A 25% savings would save 7% of world's electricity
- The largest consumer, motors account for over 60% of electricity usage

■ Enabling products

- Variable speed drives for motors
- PLC for production throughput optimization and machine “mute” mode management
- Power compensation and filtering products

■ Management systems

- Power monitoring and analysis
- Process supervisory systems

■ Added value services

- Site audits
- Data Collection and Analysis
- Financial Analysis & ROI Validation,
- Planning of Improvement plan
- Remote monitoring and optimization

Customer references



■ Carwash: **33%** energy savings thanks to motion, drive and electrical distribution solution



■ Cutting electricity consumption of entire cities up to **40%** thanks to *Lubio* lighting control system



■ *Technopolis* eco-building aiming **30%** of energy savings thanks to T.A.C Vista® building management solution

Schneider Electric is your energy specialist for significant and sustainable savings

Your **energy manager**

Improving business via metering, monitoring, control solutions and cost optimization services

Your **energy expert**

Improving business via consultative services, technical and behavioral energy action plans and implementation services

Your **“Green” partner**

Improving business via environmentally friendly and energy reducing products

up to

30%

energy savings



*Building
a New Electric World*



Schneider
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