

Schneider Electric

A Pragmatic Guide to Energy Efficiency for Buildings

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Vice President Buildings Business Units

Country Manager of Pelco Integration Security Solutions

Schneider Electric: the global specialist in energy management

20

billion € sales in 2010

37

% of sales in new economies

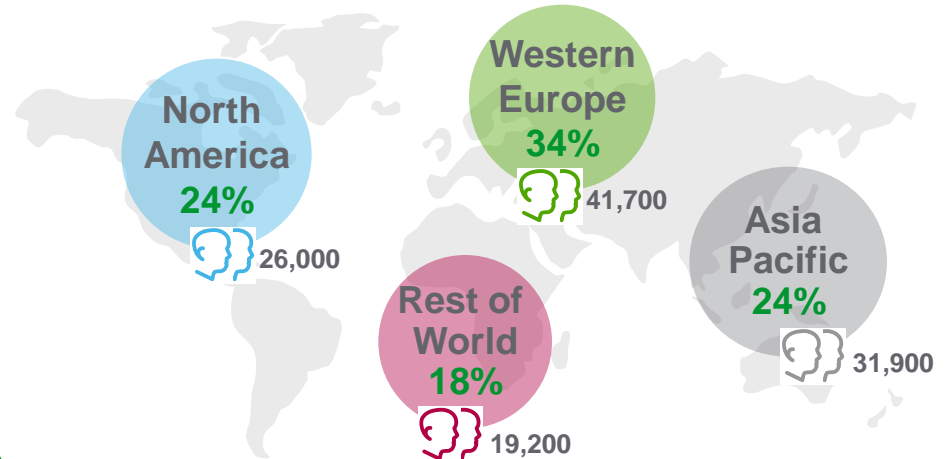
110 000+

people in 100+ countries

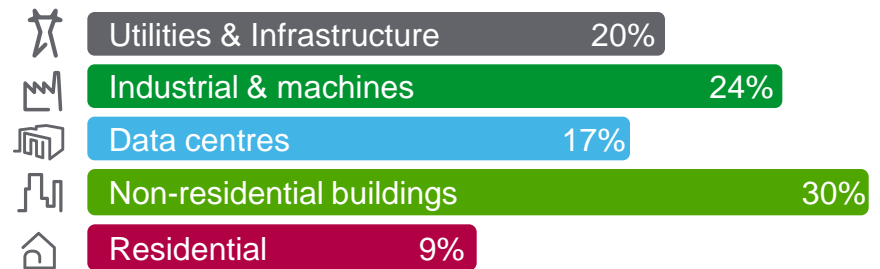
4-5%

of sales devoted to R&D

Balanced geographies – FY 2010 sales Year-end 2010 employees



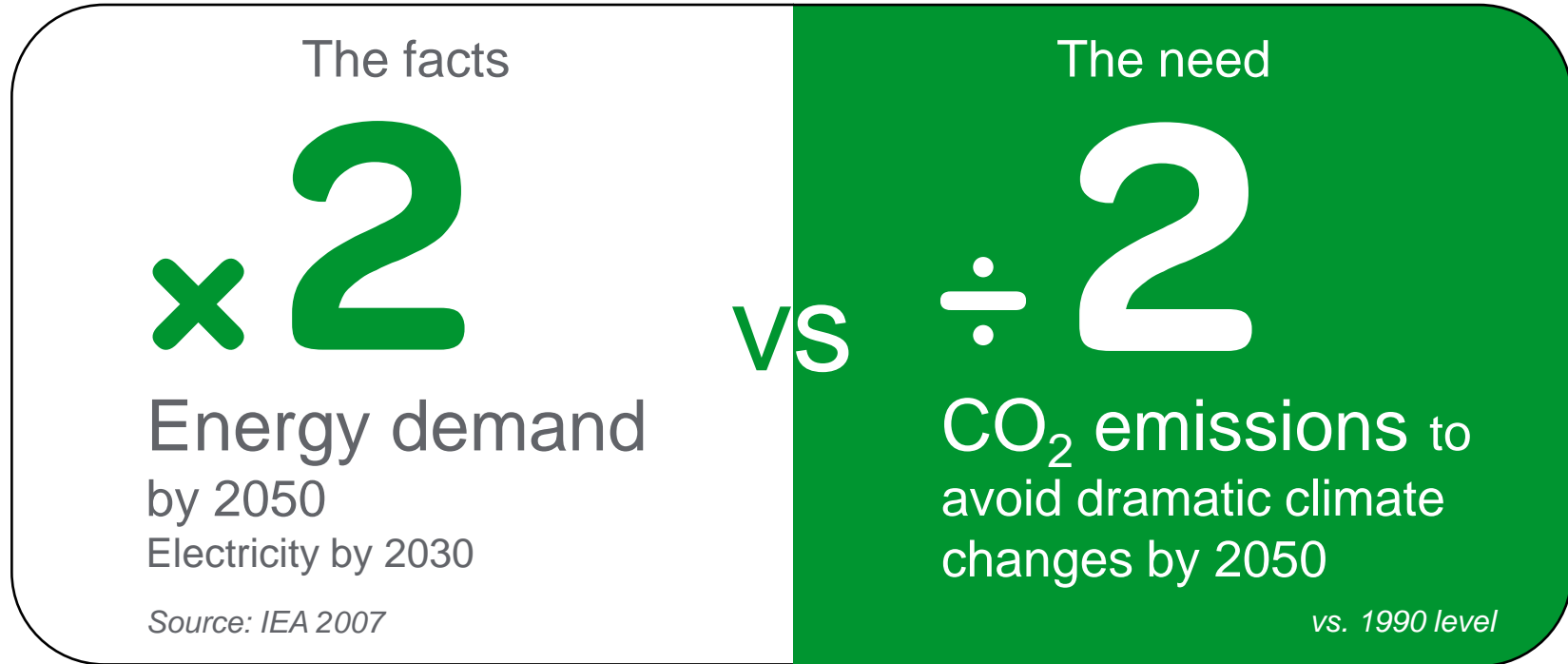
Diversified end markets – FY 2010 sales¹



90% of group sales as world #1 or 2 player

¹ Proforma with Areva D integrated on 12-month basis

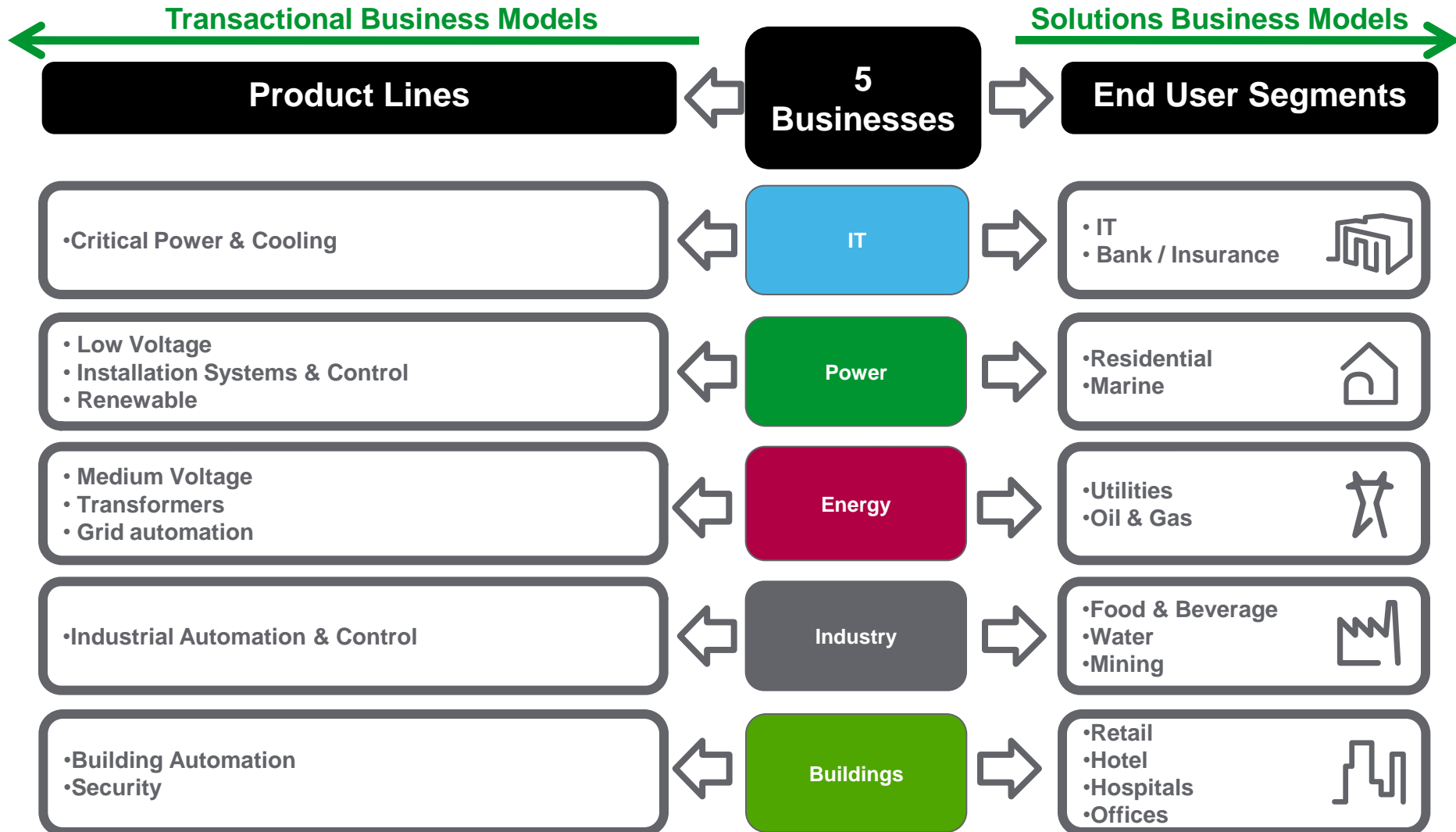
The Energy challenge is the cornerstone of our business strategy



we want to help address this challenge

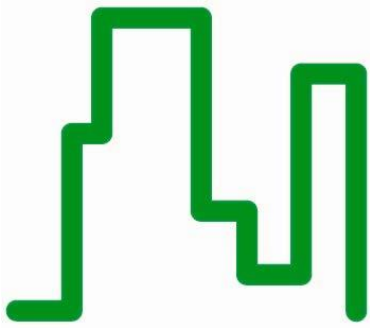
5 key business

developing technology and driving market growth

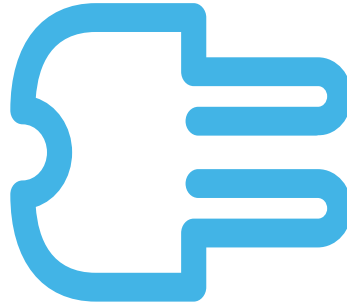


The Buildings Business of Schneider Electric

Our ambition is to become the **leader in helping our customers create the most energy efficient, safe and effectively managed buildings.**



buildings



energy management



security



We bring segment-specific expertise



Offices
Data Centers
Education
Government
Hospitals
Hotels
Industry and Technology
Life Sciences
Residential
Retail
Transportation

Global trends and inefficiencies are directly impacting your success



The energy dilemma

energy demand versus the environment



Building life cycle costs

initial capital, ongoing operations and energy



Connectivity

too many disparate systems in the building



Security

as a growing concern



Sustainability

the need to green operations

Facility & Buildings Management



An innovation eco-system for a simpler and greener future

We start today...

Partnering with 50+
best-in-class public and
private organisations



**Leading global
projects** for Intelligent
buildings, renewables,
nanotechnologies

Homes
Minalogic
Smart
Electricity

**Boosting
standardisation**
Zigbee, IEC, NEMA

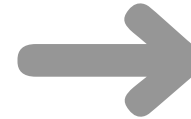


Funding start-ups
Schneider Electric
Venture capital fund

Demand
response,
software
breakthrough

**7,500
R&D
engineers**
**50 centres in
25 countries**

So we can be...



Energy
efficient



Environment
friendly



Open and
connected



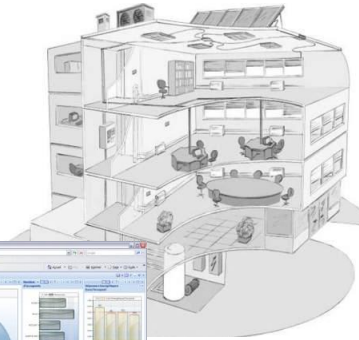
Available 24/7,
on site and remote

The building ecosystem

Adv
Services



Building Management Consulting
24/7 Monitoring
Energy Efficiency/ Performance Contracting



Integrated
System

EcoStruxure™



Supervision
&
Control

Power
Monitoring
Control
Systems

Building
Automation
Systems

Lighting
Control

Active Access
Control

Biometrics

Network

Digital Video
Recorder

Video
Analytics

Life Safety
Systems

White Space
Management
IT Applications

Network
Management
Systems

Lift
Management
Systems

Device

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

Lift
Escalator

Application

Power

HVAC

Lighting

Access

Video Security

Life Safety

IT

IP Technology

Movement



Power
management



Building
management



Security
management



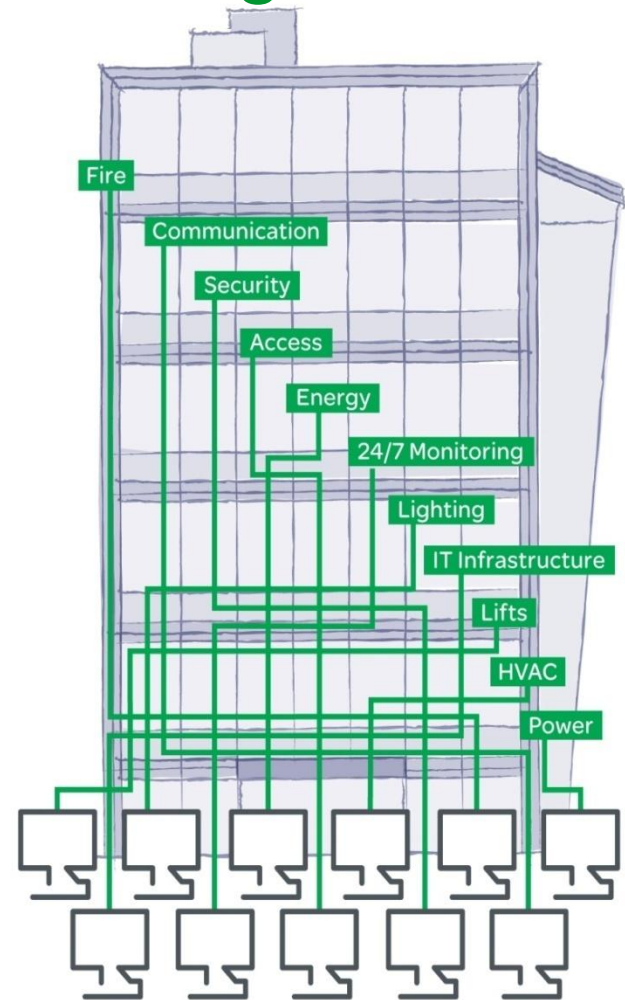
IT / Server
Room
management



Process
& Machines
management

Multiple silo systems in the building

- > **Multiple networks** from multiple vendors
- > **Too many systems** to learn
- > **Complex** troubleshooting
- > Higher capital and operational expenditures
- > **Obstacles** to achieving energy efficiency

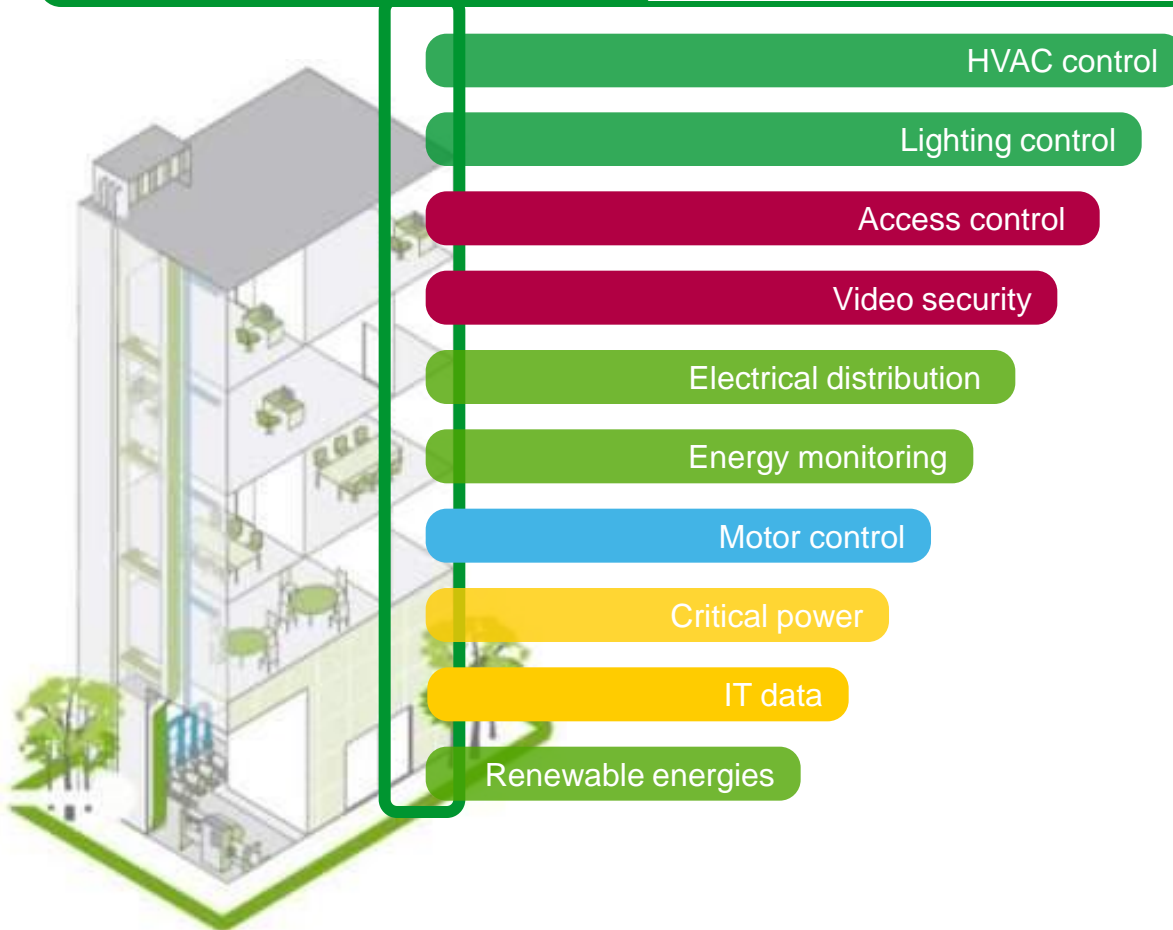


Providing integrated solutions in buildings

Integration

Make energy visible
Make systems work together

EcoStruxure™



HVAC control

Lighting control

Access control

Video security

Electrical distribution

Energy monitoring

Motor control

Critical power

IT data

Renewable energies

Efficient & productive:

- Measure and control energy, automate, provide relevant diagnosis
- Manage processes
- Make all the utilities of any Infrastructure more efficient

Reliable

Prevent from power outage & quality variance

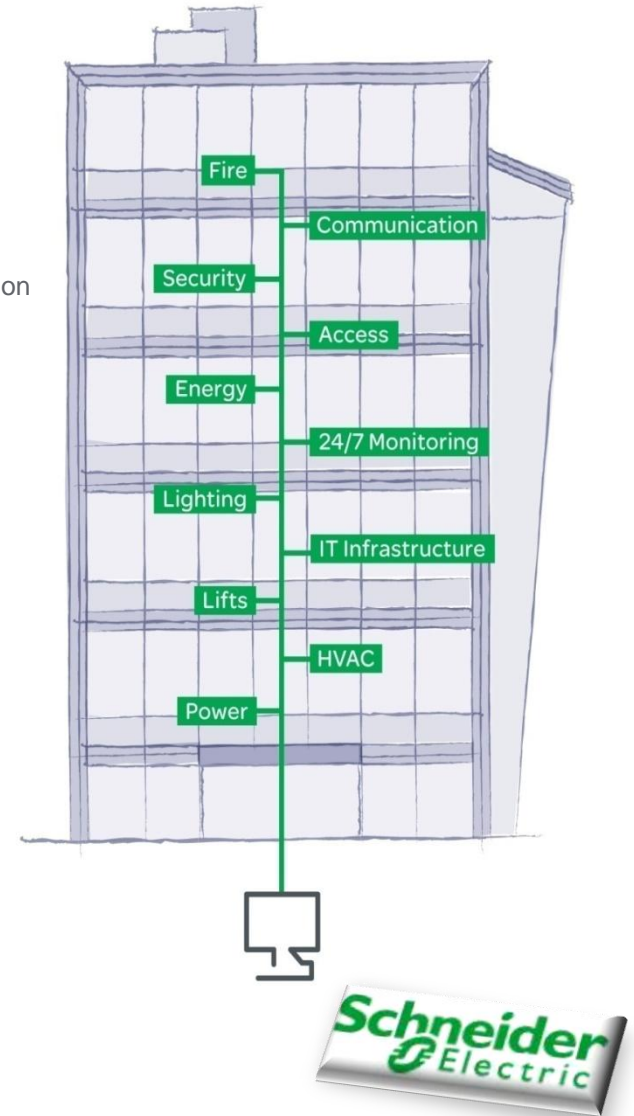
Safe

- Protect people and assets
- Transform and distribute power safely

Green: Make the connection of renewable energy sources easy, reliable and cost-effective

Enhanced value with integrated buildings

- > **Reduce costs** – both initial investment and ongoing facility operational expenditures
- > **employee productivity** Increase Capitalize on
- > **long-term** financial value
- > **revenue opportunities** Create new
- > **value** Enhance building asset
- > **customer experience** Improve the

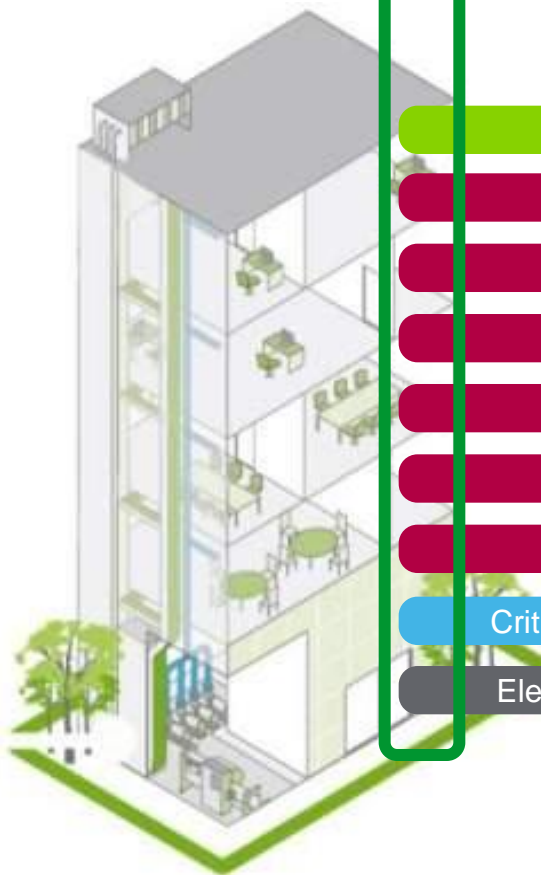


Integrated solutions in a building

Software integration

Interoperability and openness
to third party systems

EcoStruxure™



Renewable energies

HVAC control

Lighting control

Energy monitoring & control

Motor control

Access control

Security

Critical Power & cooling

Electrical distribution

Green: Make the connection of renewable energy sources easy, reliable and cost-effective

Efficient & productive:

- Measure and control energy, automate, provide relevant diagnosis
- Manage processes
- Make all the utilities of any Infrastructure more efficient

Reliable: Prevent power outages & quality variance

Safe: Transform and distribute power safely



Our answer:
Investing in Innovation



StruxureWare for buildings

- Next generation intelligent Building Management System (iBMS)
- Powerful, scalable, and easy to use
- Engineered to ensure your buildings are
 - Energy efficient
 - Safe
 - Effectively managed

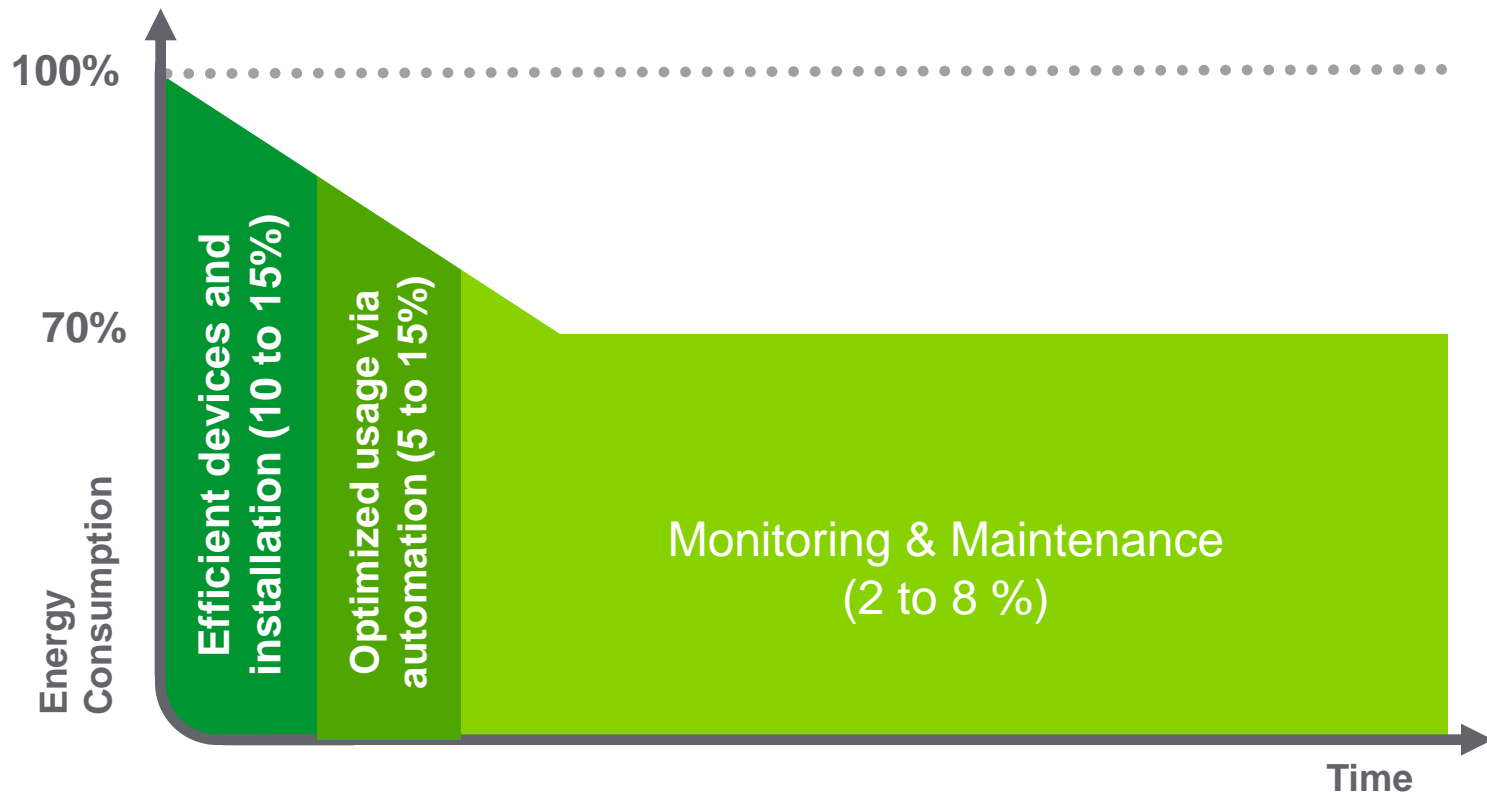


StruxureWare – the best of the best

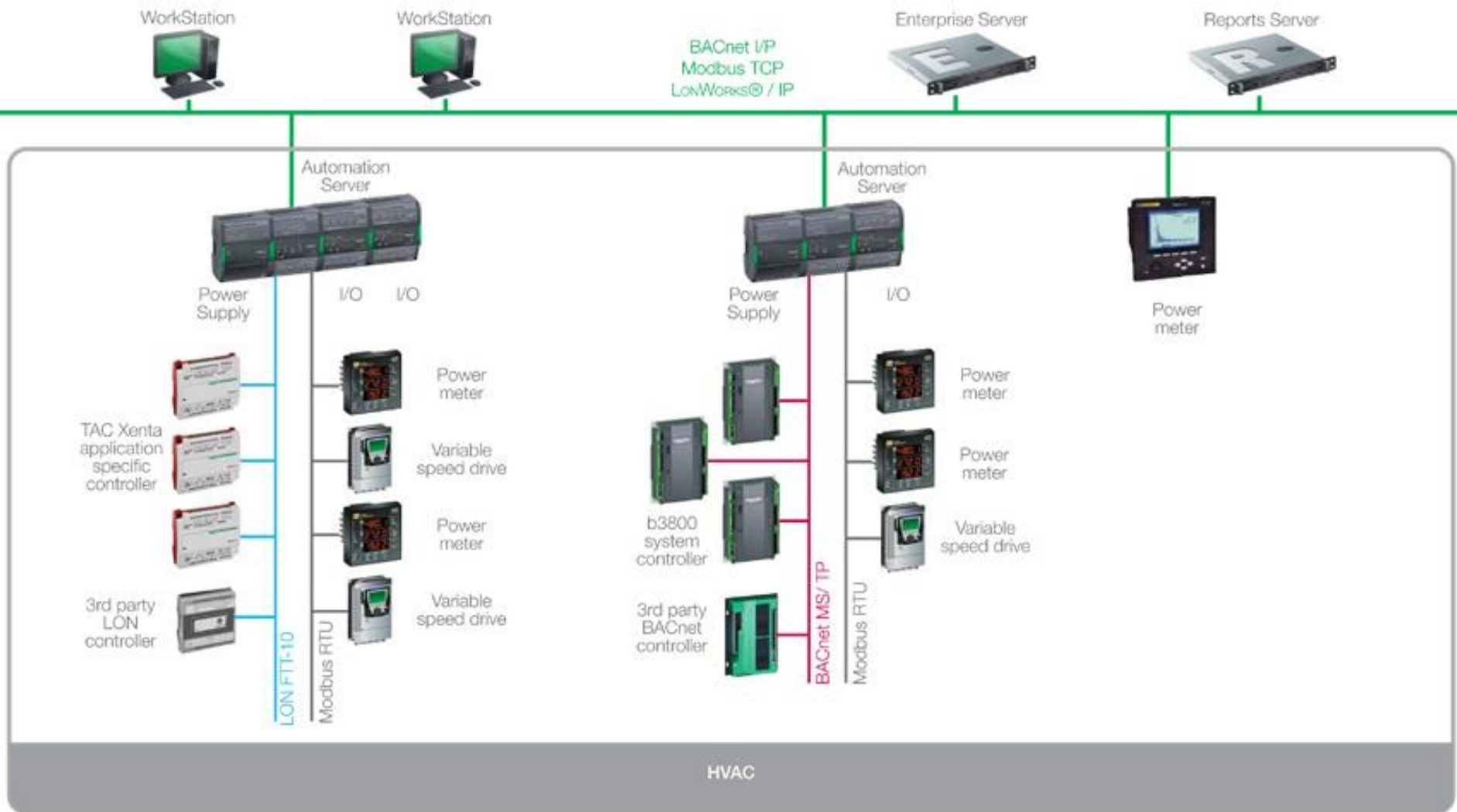
	Satchwell	I/NET	Vista	Continuum	I/A Series	StruxureWare
HVAC	✓	✓	✓	✓	✓	✓
Native BACnet				✓	✓	✓
Native LON			✓		✓	✓
Native Modbus						✓
Security		✓		✓		✓
Thin Client			✓	✓	✓	✓
Integrated Video		✓	✓	✓		✓
Script Programming		✓		✓		✓
Graphical Programming	✓		✓		✓	✓
Vector Graphics			✓			✓
Energy Reporting	✓					✓
Native EcoStruxure						✓

30% savings are available today...

... thanks to a combination of



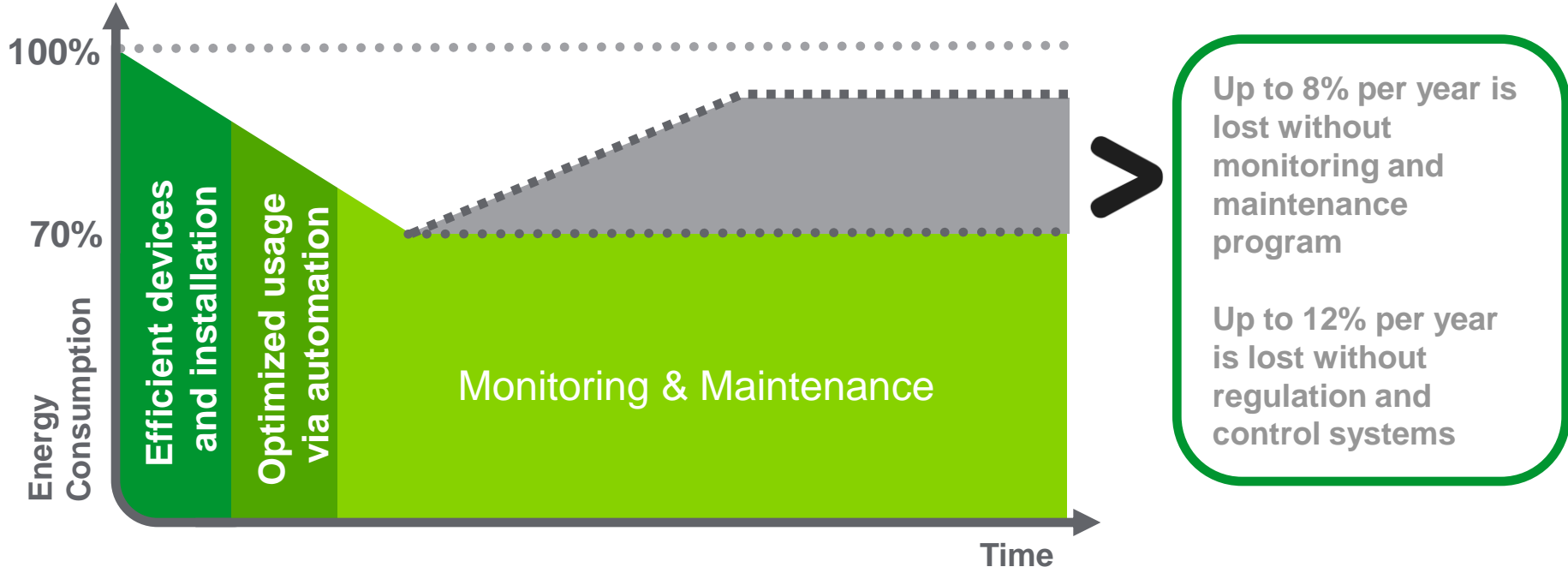
StruxureWare 1.0 architecture



StruxureWare's unified software architecture allows all data from multiple devices throughout a building to be collected, analyzed, and managed – turning system data at the automation level into valuable business information at the management level.

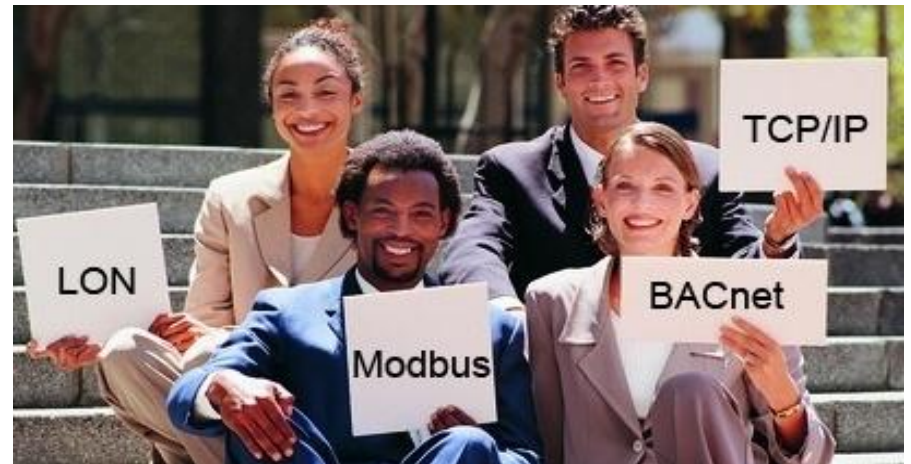
... but savings can be lost quickly...

- Unplanned, unmanaged shutdowns of equipment and processes
- Lack of automation and regulation (motors, heating)
- No continuity of behaviour



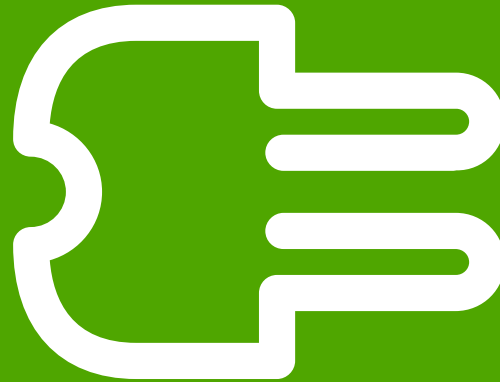
Key features of StruxureWare

- Amazing graphics capability
- Individual customizable workspaces
- Simple alarms, events, and schedule configuration
- Powerful reporting engine
- Native support for LON, BACnet and Modbus at the field bus level and the IP network level
- On-line intelligent help community



Buildings are multilingual ...
is your BMS system?

Our answer:
Our Valued Customers



Who/What is Masdar (...Ara. n. Source)

Background information

- New city to be located in Abu Dhabi – capital city of U.A.E
- \$70 Billion investment
- 50,000 residents
- 6.5 sq. km area
- First Carbon-neutral city
- First Zero Waste city
- First Car-free city
- Will employ ground breaking patented global technologies
- 10MW; 1 sq. km Solar PV Farm
- ***Potential business with Schneider: €150M - €200M over 6 years***



Next Steps

MIST

- Phase 1B
- Phases 2, 3, 4

(2009 – 2011)
– 5M Euros
– 12M Euros

Headquarter Building

- HQ

(2009 – 2010)
– 10M Euros

Metro Tunnel Solution

Total network of over 45km

- Phase 1

(2009 – ongoing)
– 2M Euros

District Cooling Plants

Around 10 – 20 in number

- Phase 1

(2009 – ongoing)
– 1M Euros

Data Centres

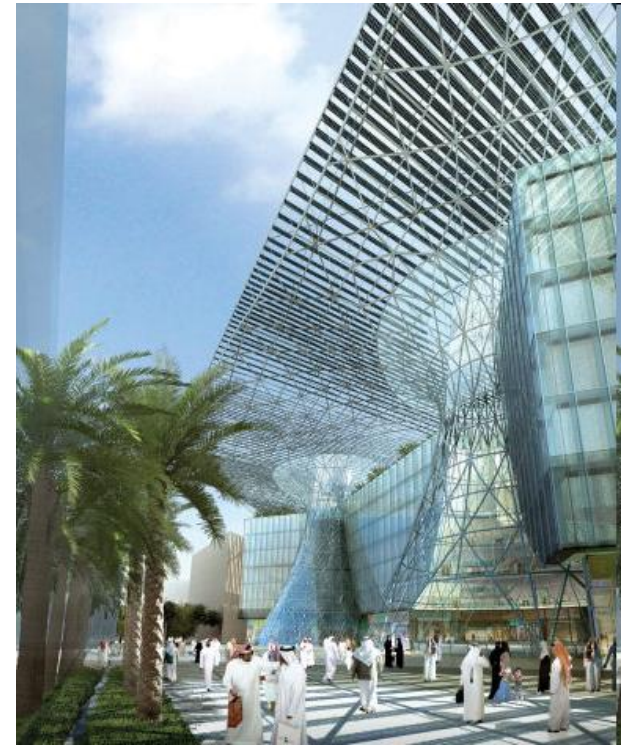
- 2no.s

(2009 – ongoing)
– 8M Euros

- Solar Renewables

- 500MWp

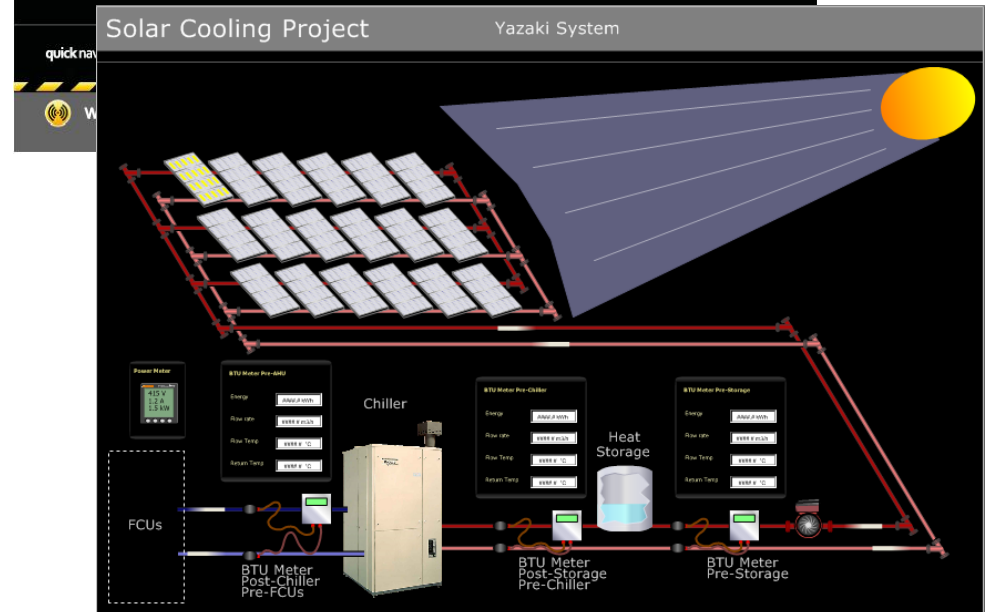
(2009 – ongoing)
– 100M Euros



Masdar – Schneider Electric Strategic Partnership

Solar Cooling Project

- Objective to harness solar energy to produce chilled water for cooling
- Utilises Schneider Electric's building automation and metering expertise to measure effectiveness of initiative
- Energy dashboard
- Automated Energy Log data reports



Schneider Electric

The Pragmatic steps ahead

The Overall Project Process

The 24 month cycle, the total investment will include the Implementation, audits, Hardware, Software and SLA, +

Select the Buildings

Connect to Remote Energy Monitoring

Collect, Measure and Validate Baseline Energy Consumption

Audit Every Building

Electricity

Cooling

Heating

Steam

Water

Gas

Power Factor

HVAC

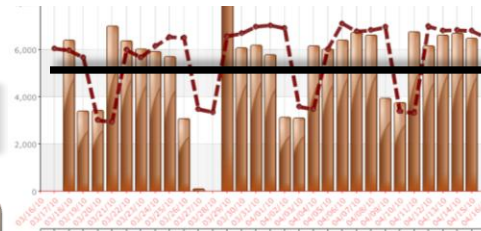
LIGHTING

BMS

UPS

ALARMS

Sustainable Energy Consumption end Results



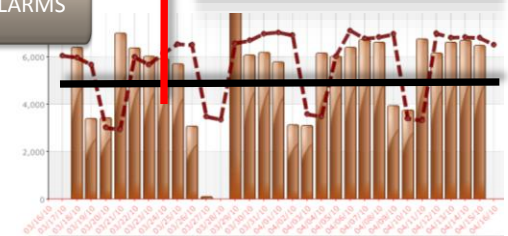
Statistical reduction
In energy Consumption

Buildings owners reduce
their Opex

Funding Managers
Receives the Carbon credits

Schneider electric
Delivers a Full Pragmatic
Solution

Building Owners has a
Corporate Platform
With live updates



Remote Energy Management Solution

Multi-utilities

Electricity

Cooling

Heating

Steam

Water

Gas

Multi-sites

Industrial Sites

Office and R&D

Data center

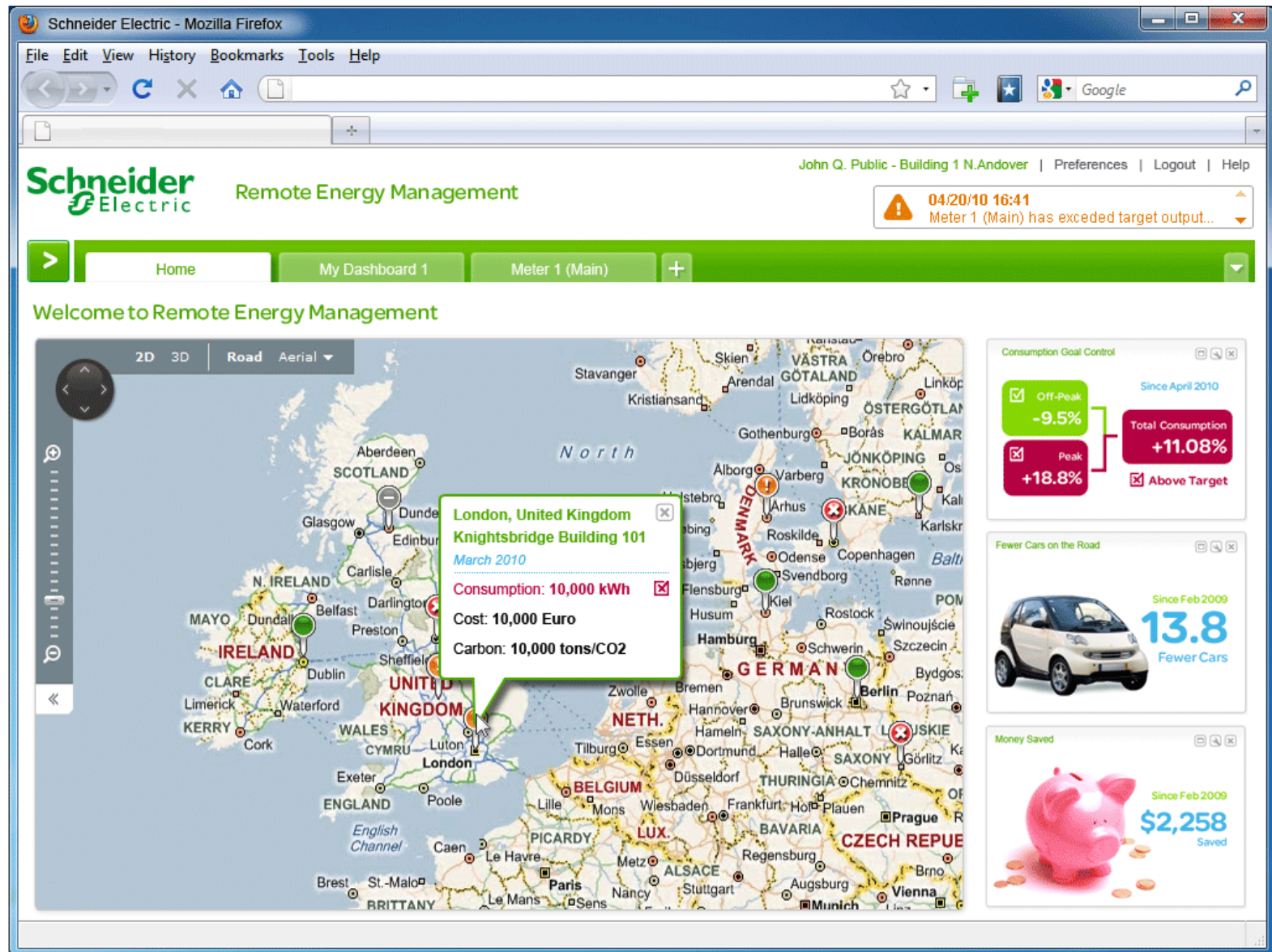
Multi-stakeholder

Corporate Dashboard

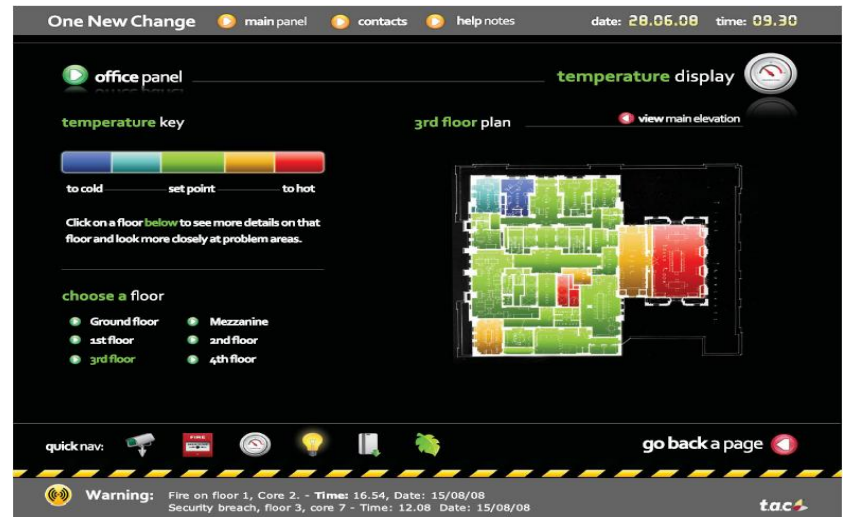
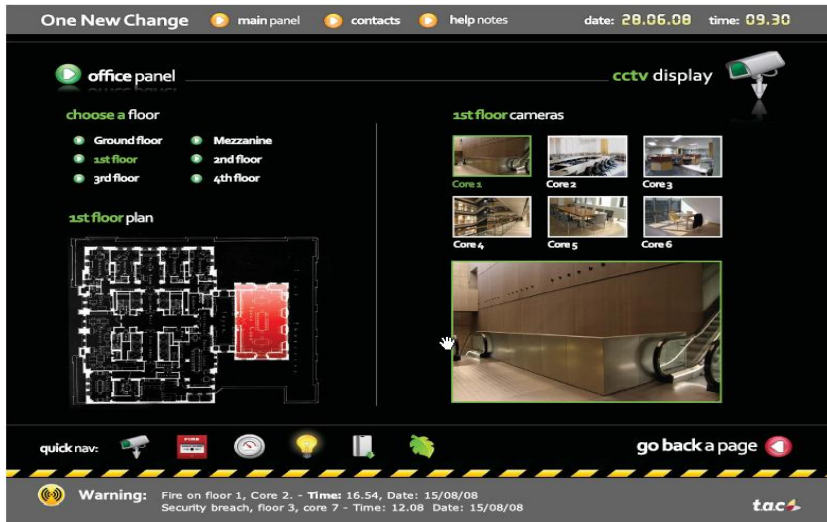
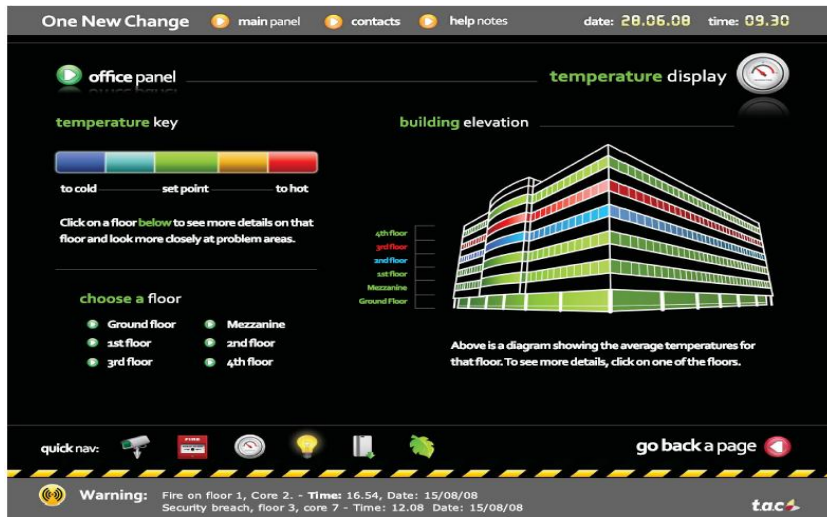
Site Dashboard

Technical Dashboard

Consolidated Views



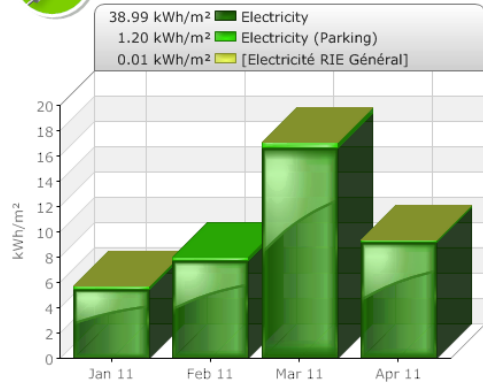
Typical Dashboards



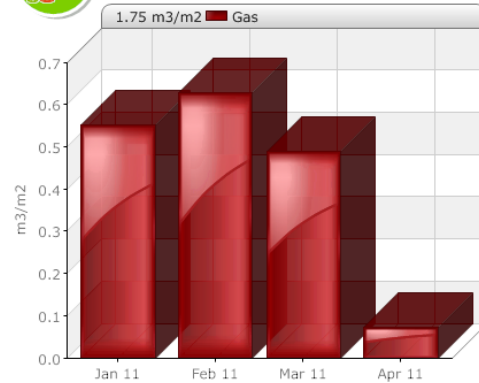
Energy Usage Intensity Metrics



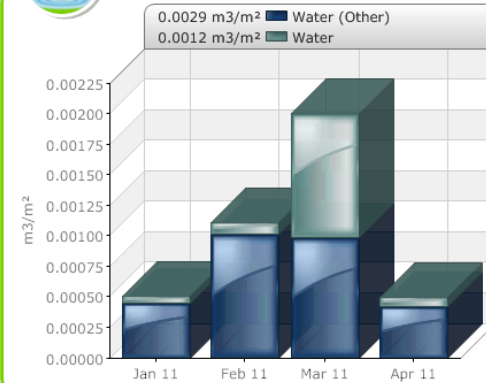
YTD kWh/m²



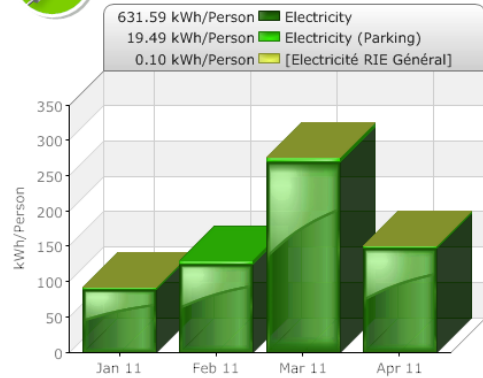
YTD m³ Gas/m²



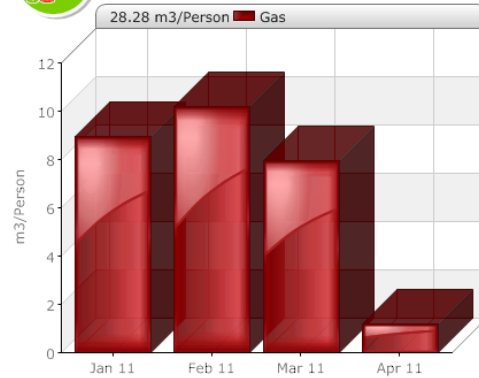
YTD m³ Water/m²



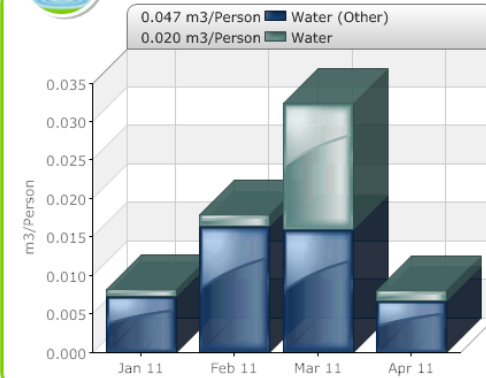
YTD kWh/Person



YTD m³ Gas/Person



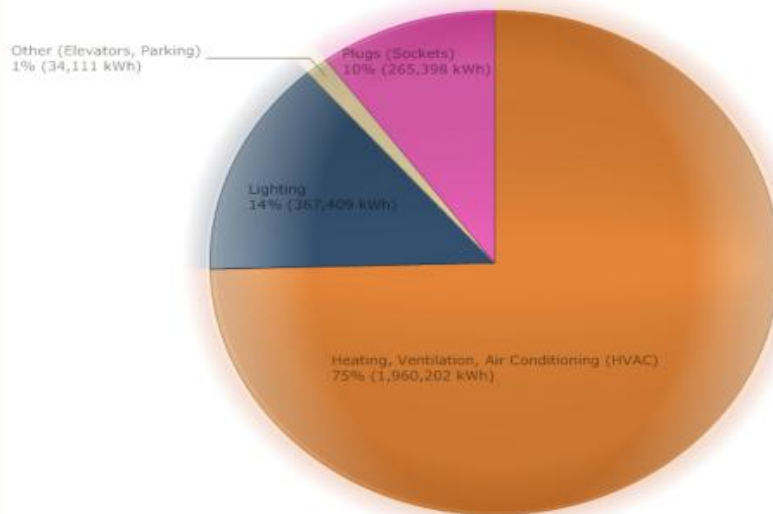
YTD m³ Water/Person



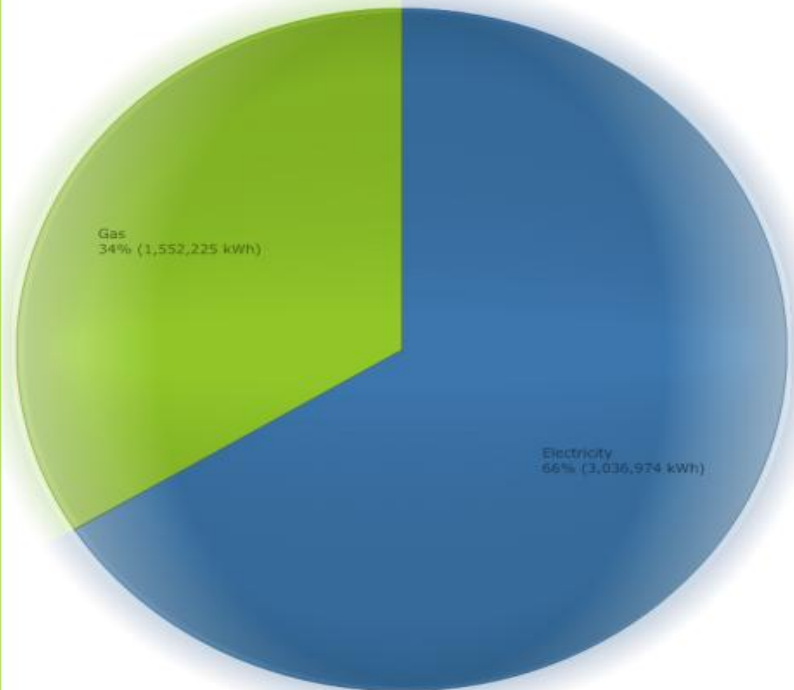
Energy Analysis by Load & Type



Consumption by Load

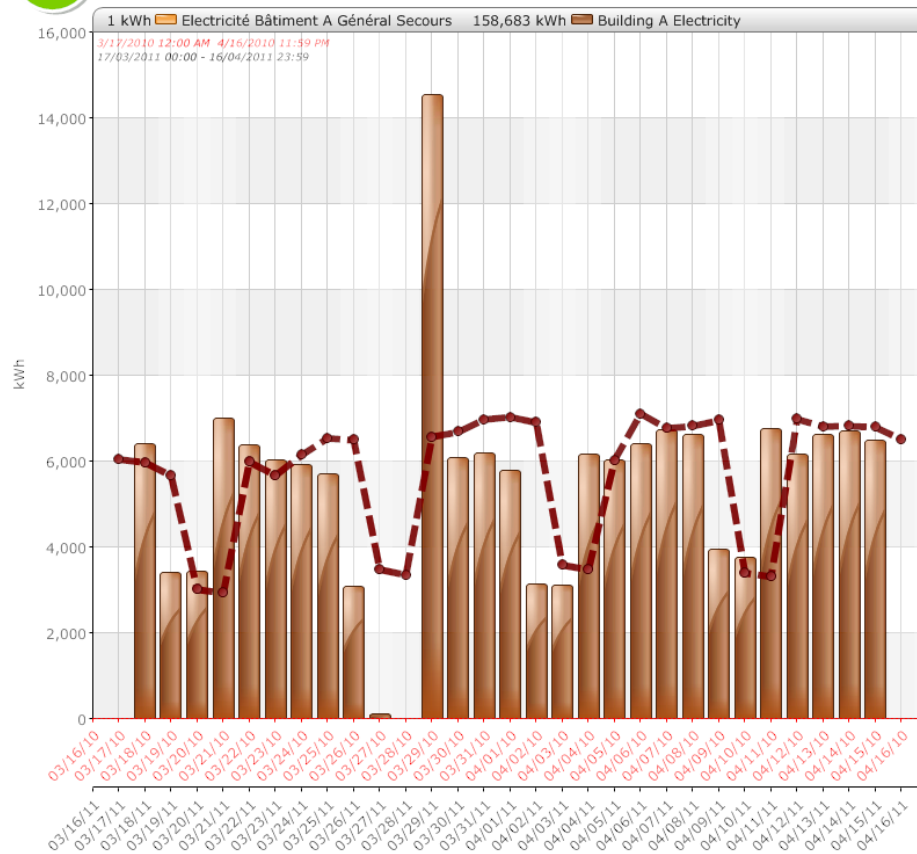


Energy Mix

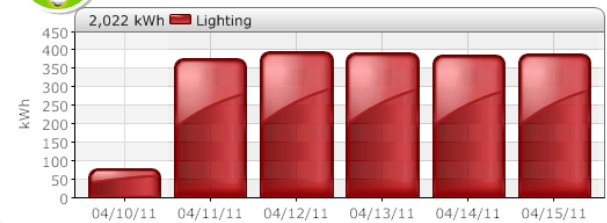


Energy Analysis Views

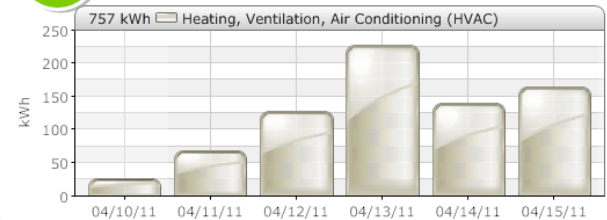
Year Over Year Comparison - Last 30 Days



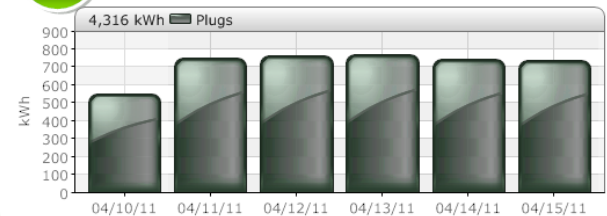
Lighting



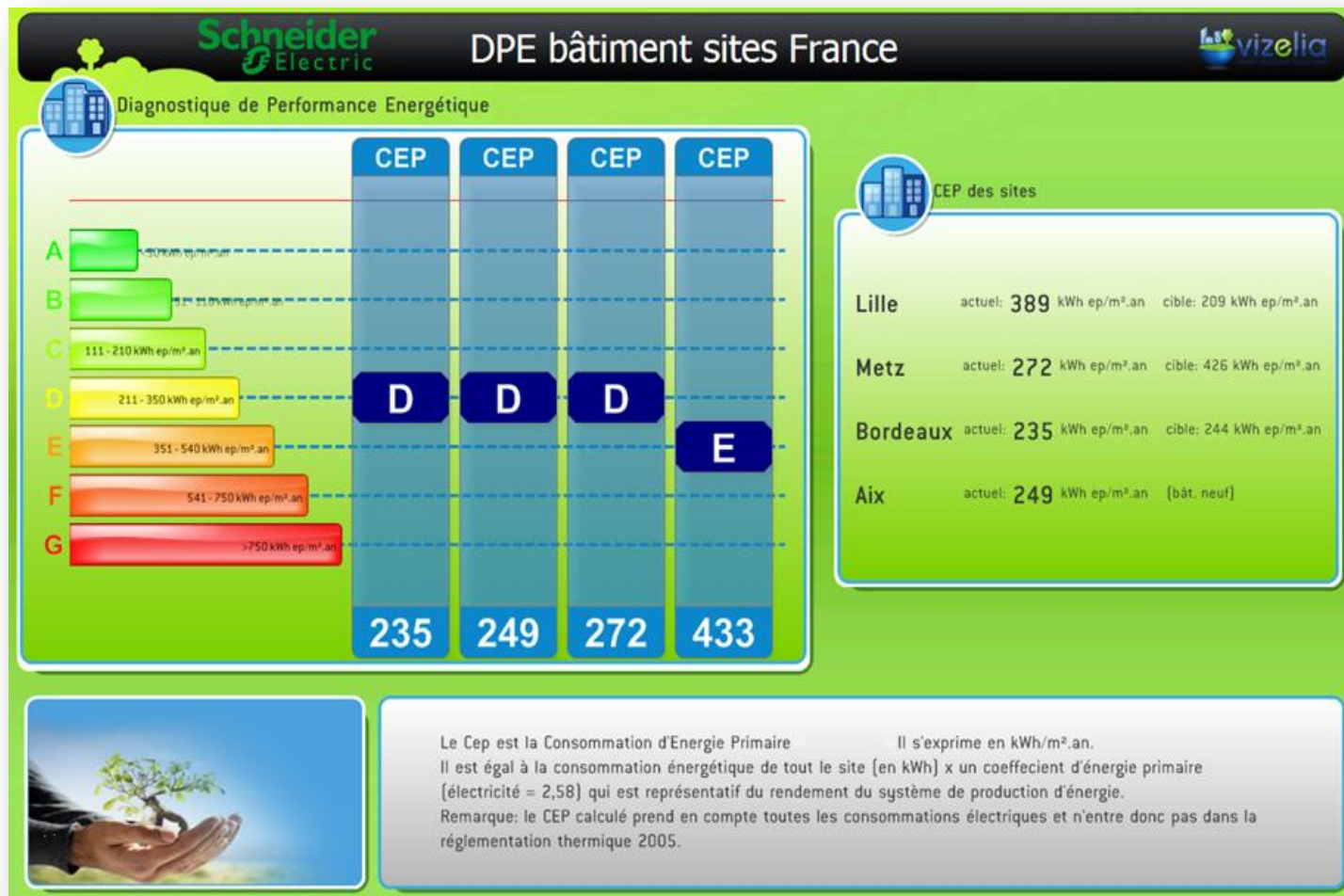
HVAC



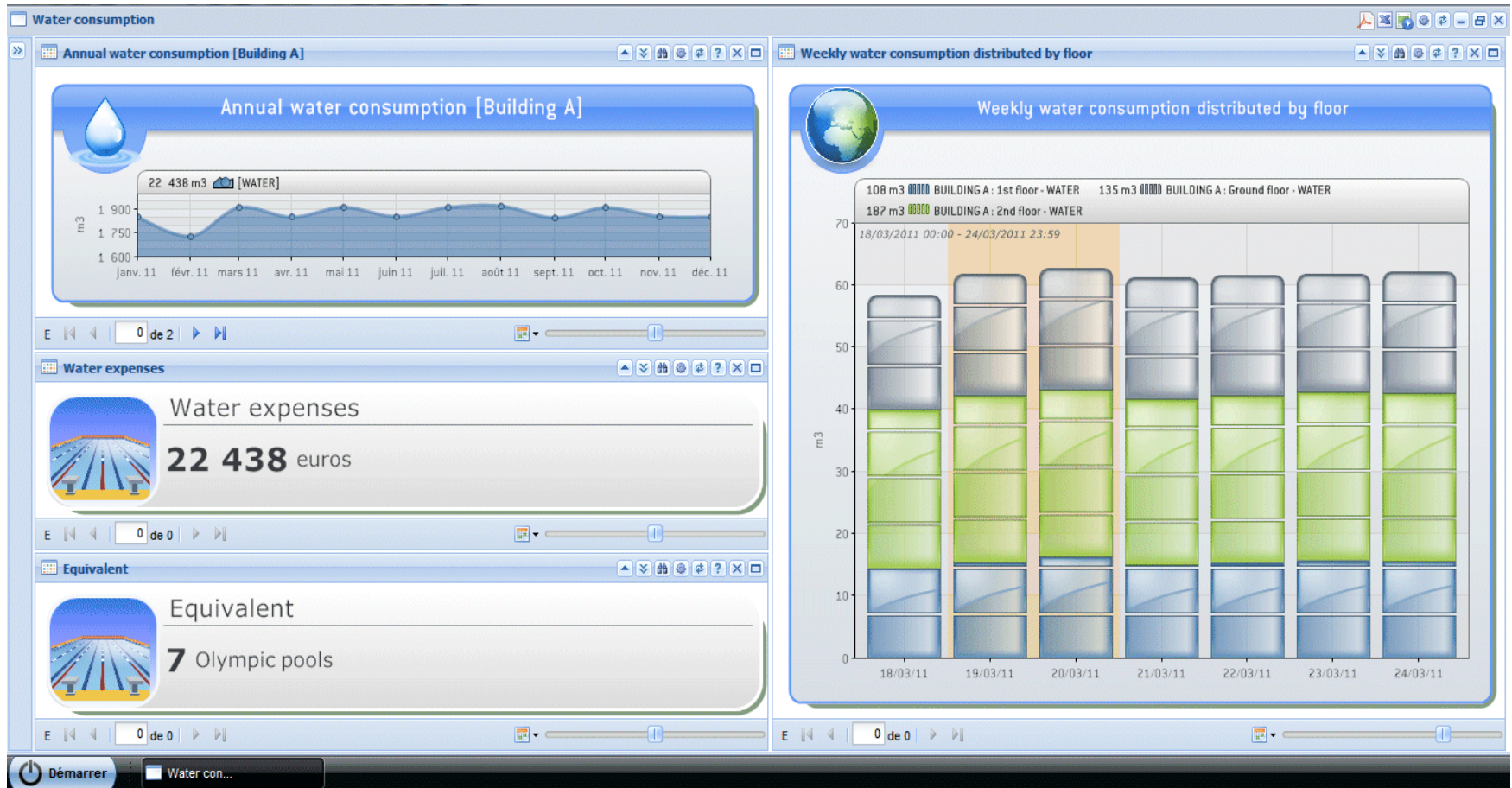
Plugs



Energy performance - Benchmark



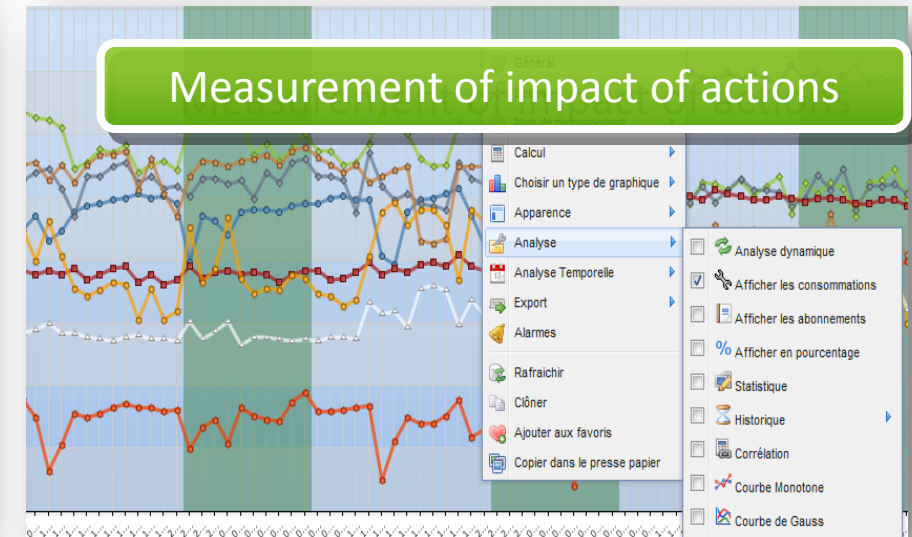
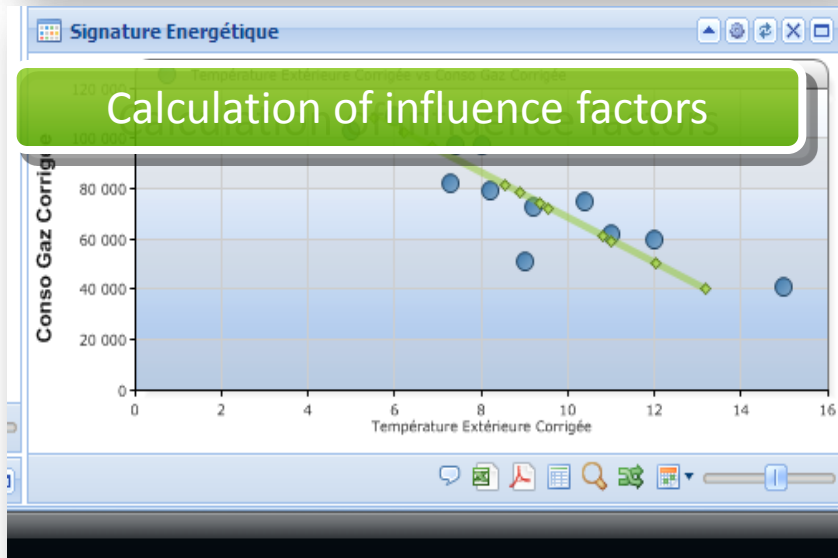
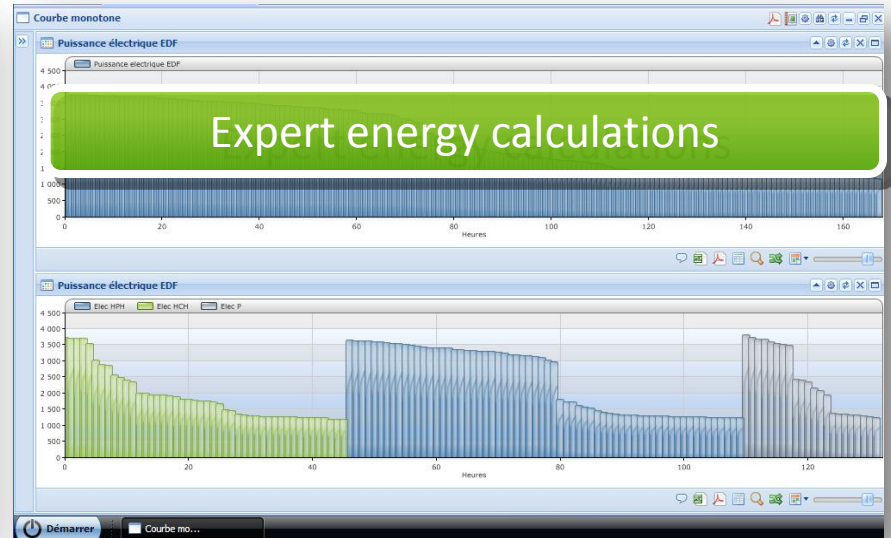
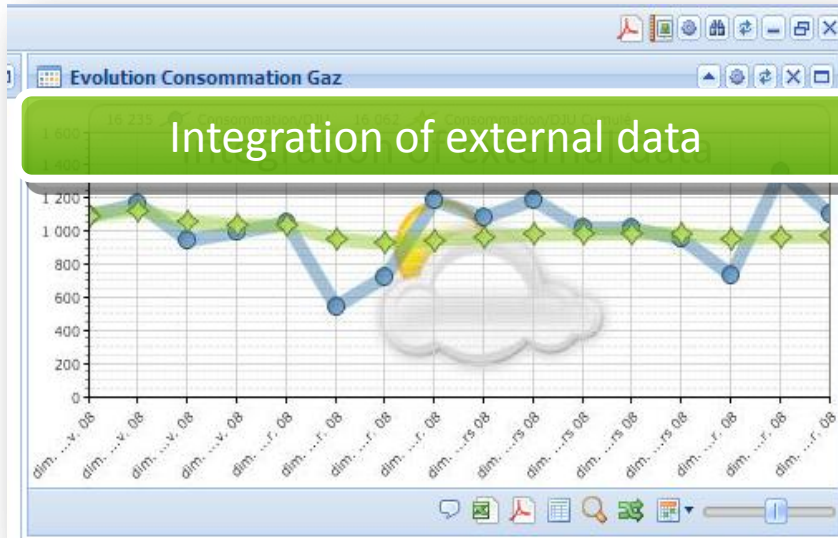
Calculate equivalent



Benchmark against target



Analysis tools - KPI

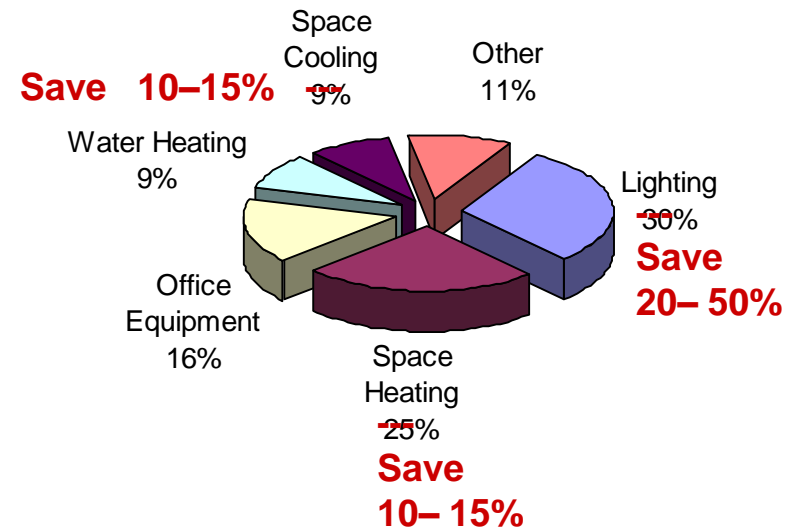


Integrated Building Solutions

Operation & Maintenance Benefits

- Single Source for service
 - Improved response time
 - Removes need for multiple service agreements and providers
- Maximum energy savings
 - Energy management and control systems
 - Demand controlled ventilation
 - Lighting
 - Access Controlled Operation
- Reduction of cabling
 - One IT architecture for Data, VoIP, BMS
 - Less time for implementation

Average Energy Use in US Commercial Buildings



Let your energy savings work for you

**Remote Energy Management
Bringing Energy Efficiency to a modern world**

