

Grow your business with energy-efficient solutions

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14-15 SEPTEMBER 2011, MUNICH

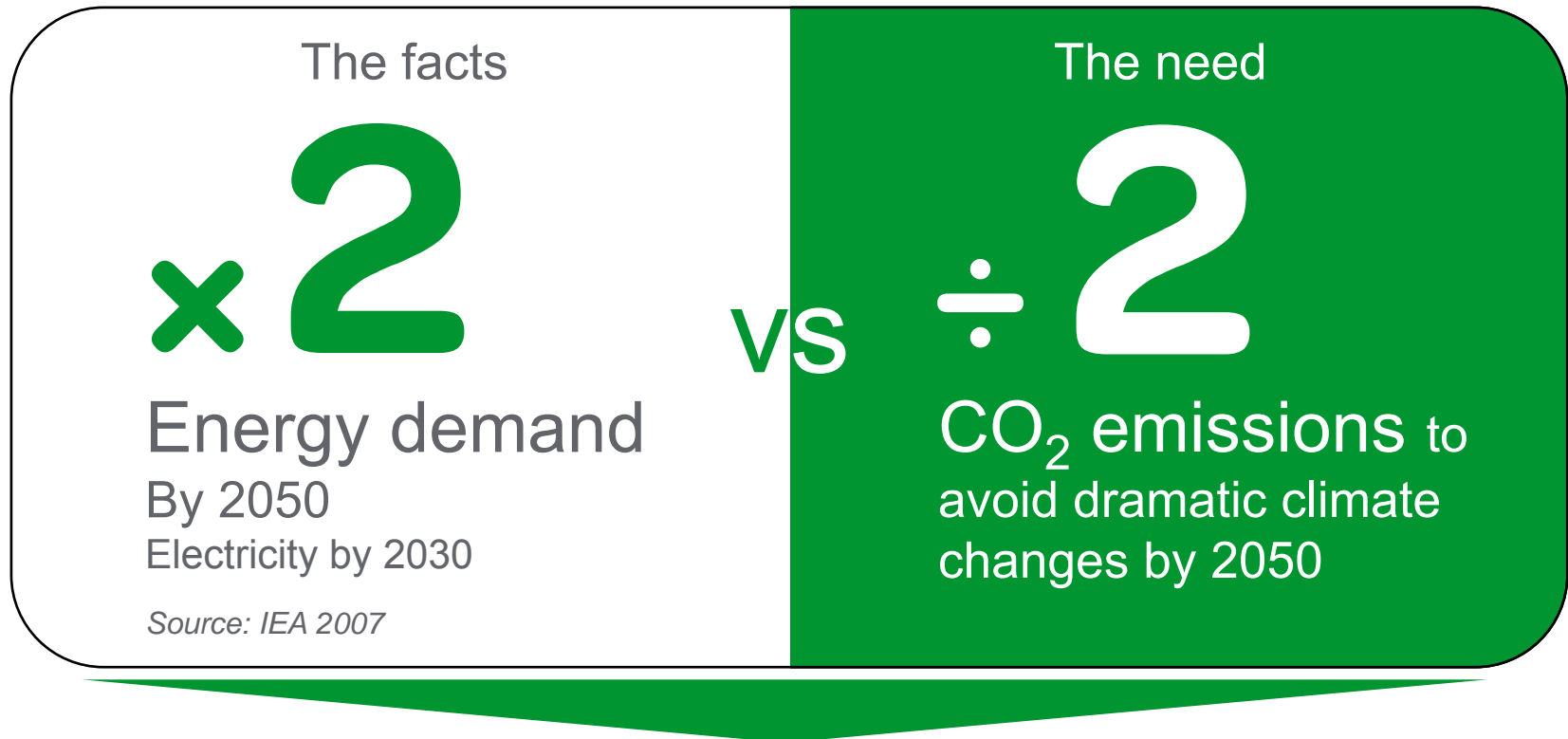
[Machines]

NOW!

Why
energy
optimization



The energy dilemma is here to stay



Frequent power outages

Rising energy prices

Climate change

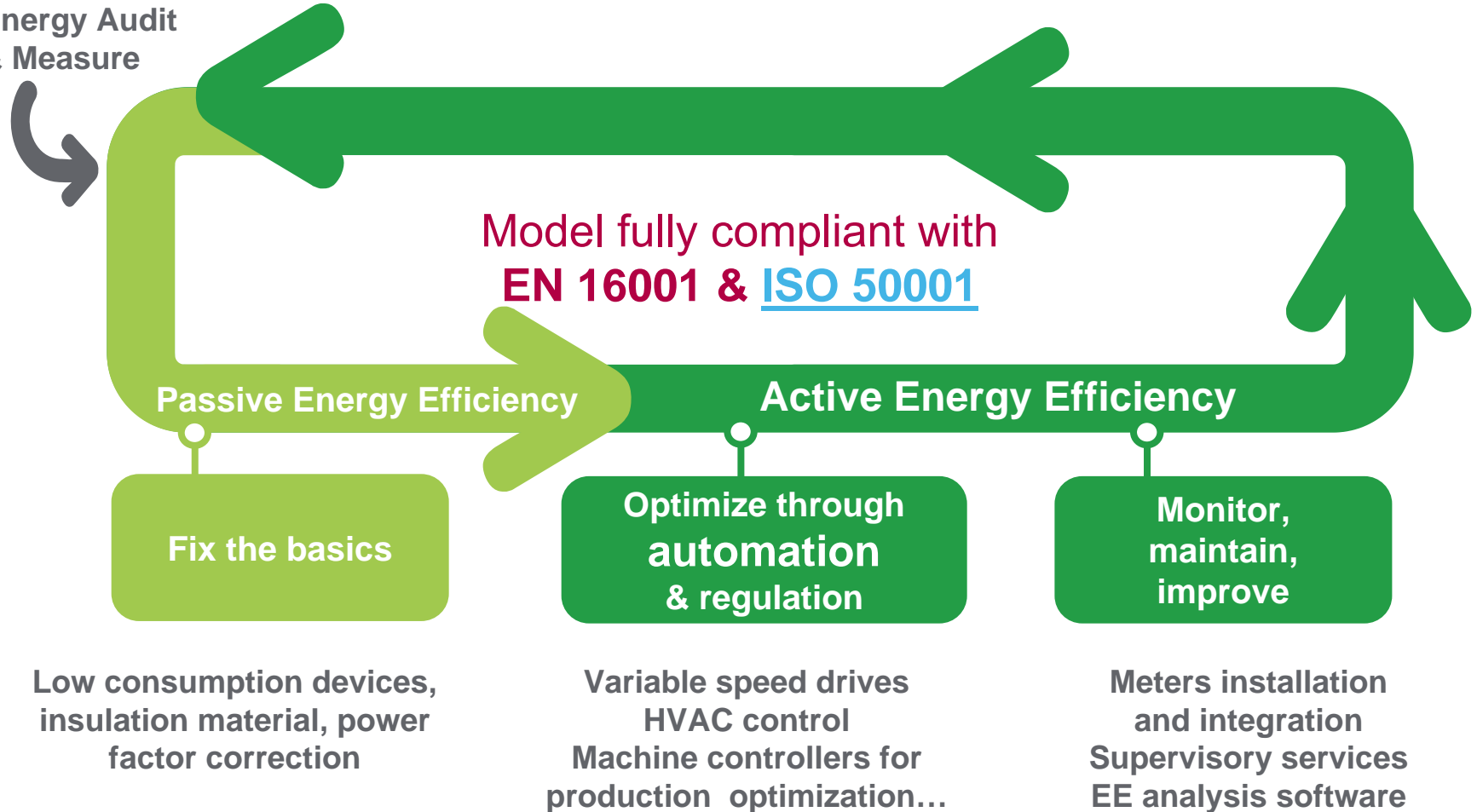
Conflicts for resource access & control

Source: IPCC 2007, figure (vs. 1990 level)

NOW!

Solving the energy equation: with a focus on energy efficiency

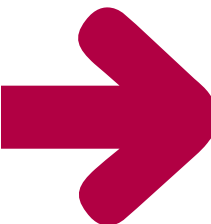
Energy Audit
& Measure



Passive + **Active EE** solutions = Sustained Energy Savings
NOW!

Why improving energy efficiency in machines?

- Energy efficiency is an increasing concern in the global strategy of your customers. By offering them machines that save energy you will have a definite advantage over the competition.



● MachineStruxure™ solutions helps you design more energy efficient machines while increasing:

- Machine performance
- Machine attractiveness for end users



“Together with Schneider Electric we realized the new SP2 NG – an energy efficient machine, bringing tangible improvements to the end user in energy usage, in terms of consumed watts per manufactured unit, enabling up to 30 % energy savings compared to traditional machines.”

ACMA
Flowpack Division

NOW!

End-users have already shifted to “Green”

- Energy savings is already **the second criteria** to choose a machine

in 2007

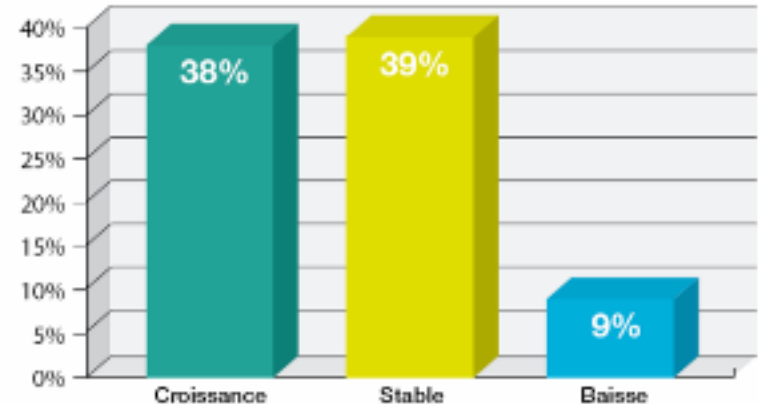
1. Price
2. # of operators
3. Saving Use of Consumables
4. Packing material reduction
5. **Energy Savings**

in 2009

1. Price
2. **Energy Savings**
3. Saving Use of Consumables
4. # of operators
5. Packing Material Reduction

- In 2009, **77%** of end-users have increased or maintain their investment towards “Green”

How is evolving your investment in sustainable development?



Europack-Euromanut (+300 enterprises in Packaging-Consumers Industry) Summer 2009

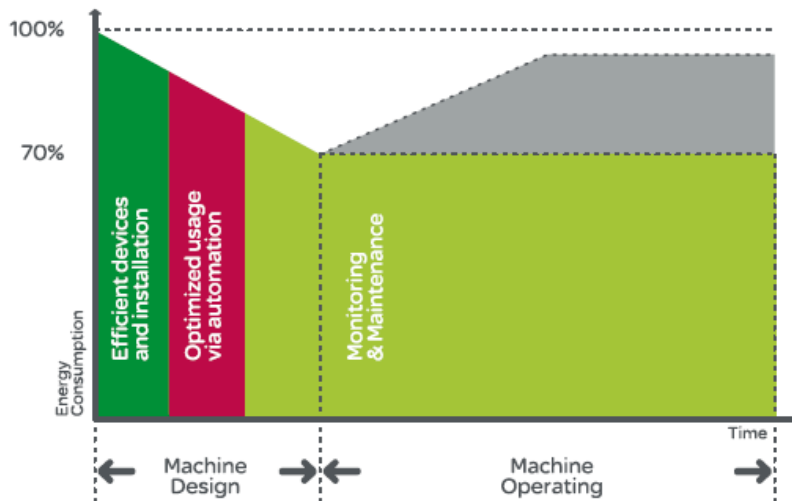
How to
boost energy
efficiency in
machines



Machines energy optimization in 4 sustainability steps



- For supporting energy savings and obtaining immediate results, we follow the **4 Energy Efficient principles** adapted to the machine life cycle.
- Make **your machine an enabler for End User compliance** to **EN 16001** & **ISO 50001** standards



★ Up to 8% per year is lost without monitoring and maintenance program

Up to 12% per year is lost without regulation and control systems

Measure



- Machine Energy audit
- Measure energy used with expert auditing to identify potential savings and malfunctions on the machine (Pumps and fans, Motors, Air compressors, Hydraulic station, HVAC control, idle...)



★ Fully integrated
in EnergySTEP
Schneider Electric
consulting service

+ Advantages

- Increased visibility on machine energy consumption
- Identification of significant savings on equipment costs (proper sizing for power equipment, cables, motors, ...)

NOW!

Fix the basics on your machine



- Choose the right motors - they account for 60% of electricity usage

- Advise on relevant motor technology and “just-enough” motor to
 - make machine compliant with local regulations
 - reduce space used and installation costs
 - preserve lifetime of motors and sensitive equipment



Eco2

Free software to estimate energy saving

- Optimize motor control

- use Altivar variable speed drives
- use Servo drive and synchronous motors
- Eco2: estimate the potential savings on the energy consumption



Climasys CSO

Thermal calculation software

- Enclosures thermal efficiency : Use Relevant thermal management

- Reliability: longer life time for electronic equipments, reduce breakdowns
- Machine cost savings: suppression of oversized cooling systems

NOW!

Optimize your machine



- **Energy operation modes:** provide high value mechanism with no hardware additional cost
 - Energy management functions embedded in controllers and servo-drives to manage
 - operating modes
 - associated diagnostics
- **Energy Efficiency in dedicated applications:** supply machines that are better controlled, use less energy and are more reliable.
 - HVAC&R: simply design green HVAC&R machines with energy efficient Advanced Controls
 - Conveying: [optimize energy efficiency of conveyors](#)
 - Packaging: [the right technology for energy efficiency](#)

★ Compliant with OMAC standard (Organization for Machine Automation and Control)

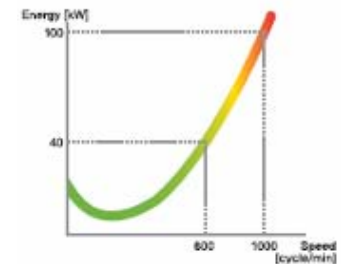


Monitor



● Machine Energy Dashboard

- Track the relevant information (Real power, Energy, current, ...)
- Correlate Energy consumption with machine production data & mode
- Present relevant information to relevant users : machine operator, maintenance, production line engineer, automation engineer, ...



● Relevant architectures

- Tested, Validated, Documented Architectures with monitoring functionalities
- Integrated Energy Monitoring in high performance Machines: built-in functions in PacDrive to simulate and monitor energy consumed by different parts of the machine



● Relevant meters equipments

- Flexible and scalable solutions based on [Power Logic](#) Power meters large offer



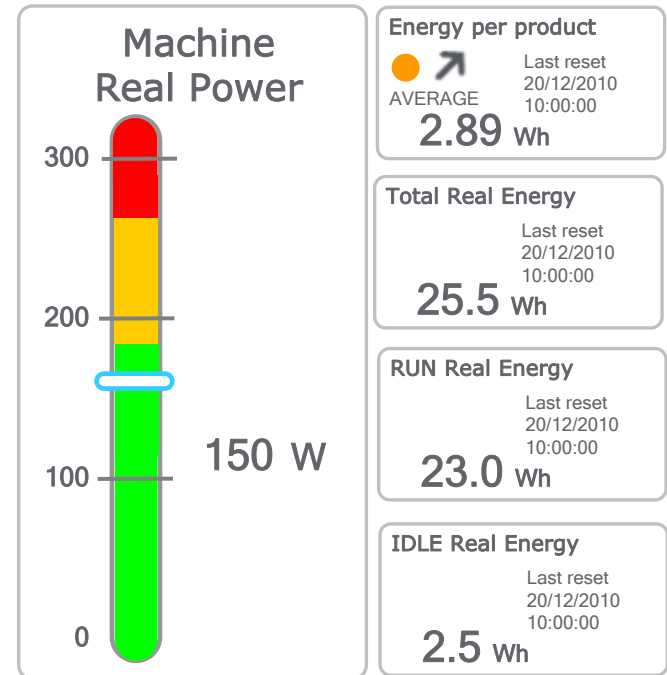


Focus on
Machine
Energy
Dashboard
(MED)

Machine Energy Dashboard overview

- Simple indicators for operator

- Real power : Color ranges for quick detection of any deviation
- Real energy :
 - split by operating mode
 - Spent per product manufactured
- Peak alert
- Trend indicator
- Ready to use and fully customizable (Units, thresholds, reset control, ...)

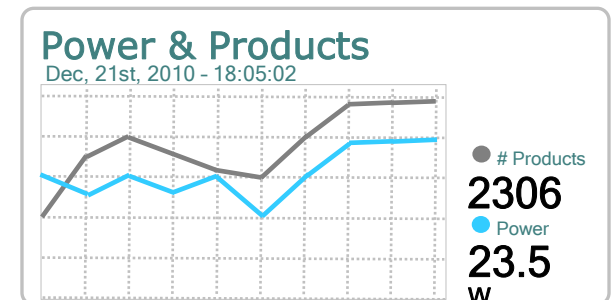
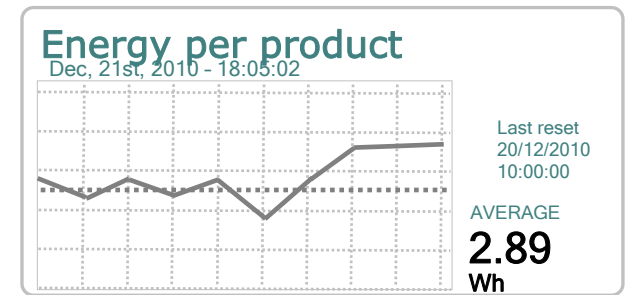


Machine Energy Dashboard overview

● Trend Information

- Energy per product
 1. Energy calculated per product
 2. Average Energy for total amount of products
 3. Energy Demand: constant value
 4. Energy High Limit: constant value

- Power & Products
 1. Average Power per Hour/Minutes ...
 2. Amount of Products per Hour/Minutes ...



Italy – packaging machine : “Energy bar”

Ricetta Attuale:	02/05/2011	Lunedì				
0	Marcia con Prodotto					

Ricetta Editata:	Parametri Trave (Pendolamento Velocità)	
0		
Non in Macchina		

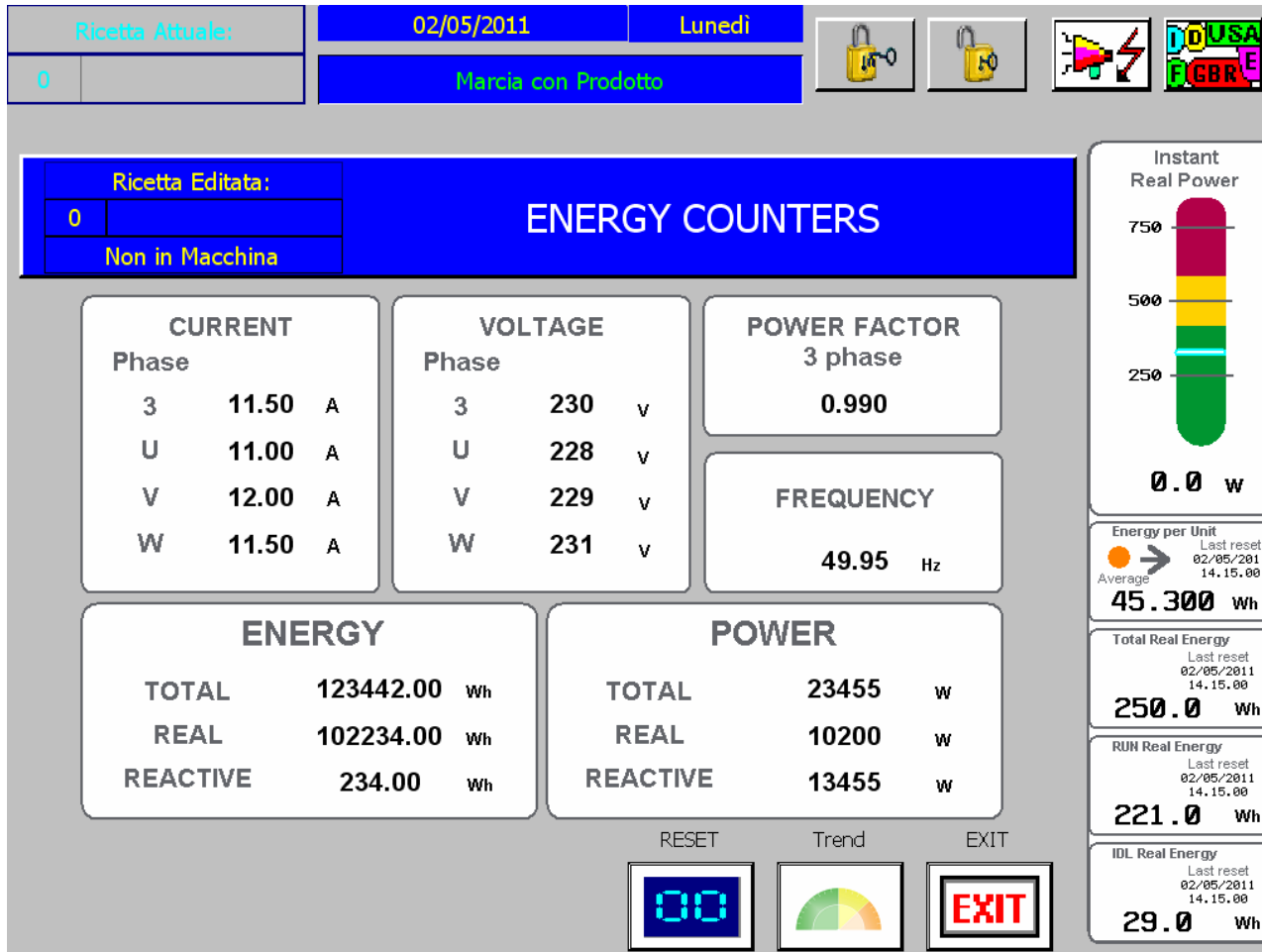
Instant Real Power
0.0 W
Energy per Unit
Last reset: 02/05/2011 14.15.00 Average: 45.300 Wh
Total Real Energy
Last reset: 02/05/2011 14.15.00 250.0 Wh
RUN Real Energy
Last reset: 02/05/2011 14.15.00 221.0 Wh
IDL Real Energy
Last reset: 02/05/2011 14.15.00 29.0 Wh

PREV. PAGE

NEXT PAGE

EXIT

Italy – packaging machine : “Energy bar”





With MachineStruxure,
increase your machine's energy
efficiency by up to 30% while
improving performance



NOW!
You know!

> Annex

ISO 50001 standard



Published last June 2011 !

- ISO 50001 is based on the ISO management system model familiar to more than a million organizations worldwide who implement standards such as
 - ISO 9001 (quality management), ISO 14001 (environmental management), ISO 22000 (food safety), ISO/IEC 27001 (information security)
- Follows the Plan-Do-Check-Act process for continual improvement of the energy management system
- Provides a framework of requirements enabling organizations to :
 - Develop a policy for more efficient use of energy
 - Fix targets and objectives to meet the policy
 - Use data to better understand and make decisions concerning energy use and consumption
 - Measure the results
 - Review the effectiveness of the policy
 - Continually improve energy management.
- ISO 50001 can be implemented individually or integrated with other management system standards.



NOW!

Motor consumption in the world represents

Motor's energy bill = motor cost x 100

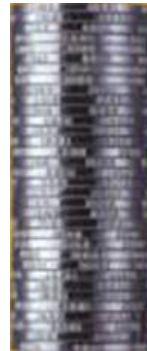


- in **Industry** 60% of electricity



- in **Building**, 30% of electricity

\$ Energy
97%



Installation & Maintenance : 2%



Investment : 1%



Global costs during Motor Life (average 15years)



Big Motor:
1 Month
Energy Bill
= Motor Cost



NOW!

Optimising energy efficiency of conveyors

Optimising energy efficiency

of conveyors

January 2010/White paper

By Daniel Clénet,

Make the most of your energy

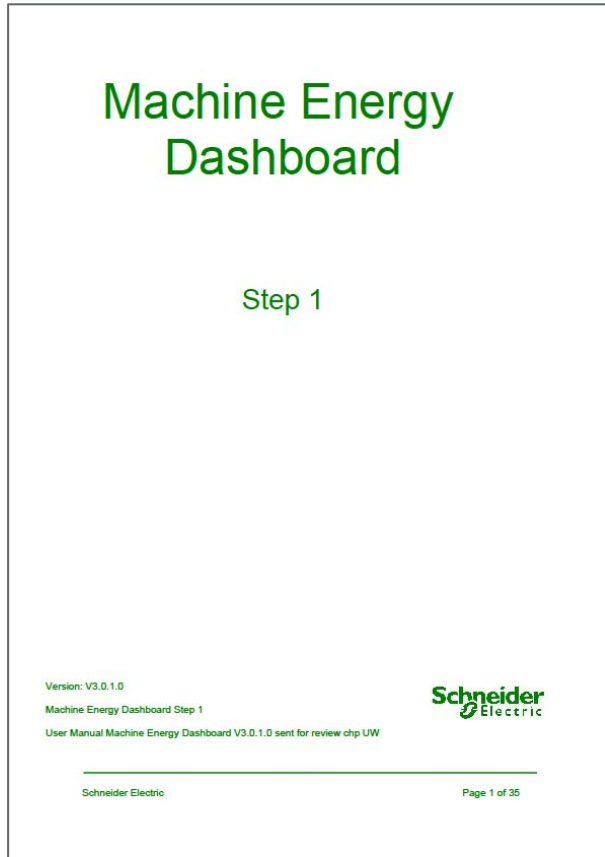


Packaging : The right technology for Energy Efficiency

- Create the Energy Footprint of your machine : simulate and monitor using same software features
- Use High efficiency servo motors with Lexium SH
- Share DC-bus using using PacDrive iSH and Lexium LXM62 / ILM62 multiaxis solution
- Save cabinet cooling energy by shifting servo drives to the machine frame - Integrated servo drives series Lexium ILM
- Optimize flexible machines with ATV32 and brushless motors
- Design energy efficient motion with ECAM
- Design energy efficient path design for robots with PacDrive Robotics library
- Use Intelligent Line Shaft and PacDrive Libraries to optimize synchronous servo axes consumption
- Request Schneider Electric Consulting/Engineering for a comprehensive consulting for machine solutions and engineering services support



Machine Energy Dashboard User guide



PowerLogic system Panorama

Perfect for
Machines
Energy
Monitoring

Advanced energy metering



Basic energy metering



Kilowatt-hour meters



Panel instruments



Current transformers

