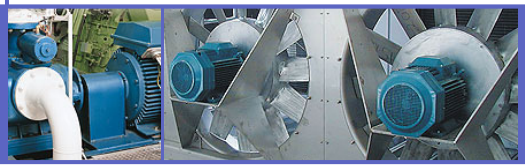
ABB Switzerland Ltd., Normelec
Peter Mazenauer
Managing Director

Motor Summit ’08
25 November 2008

Industry Drives Clean Technonogy



Environmental challenge

The energy challenges we face

– energy security and climate change –

are global and call for a global response

Our special Responsibility

ABB's Vision

As one of the world's leading engineering companies, we help our customers to use electrical power efficiently, to increase industrial productivity and to lower environmental impact in a sustainable way.

Power and productivity for a better world

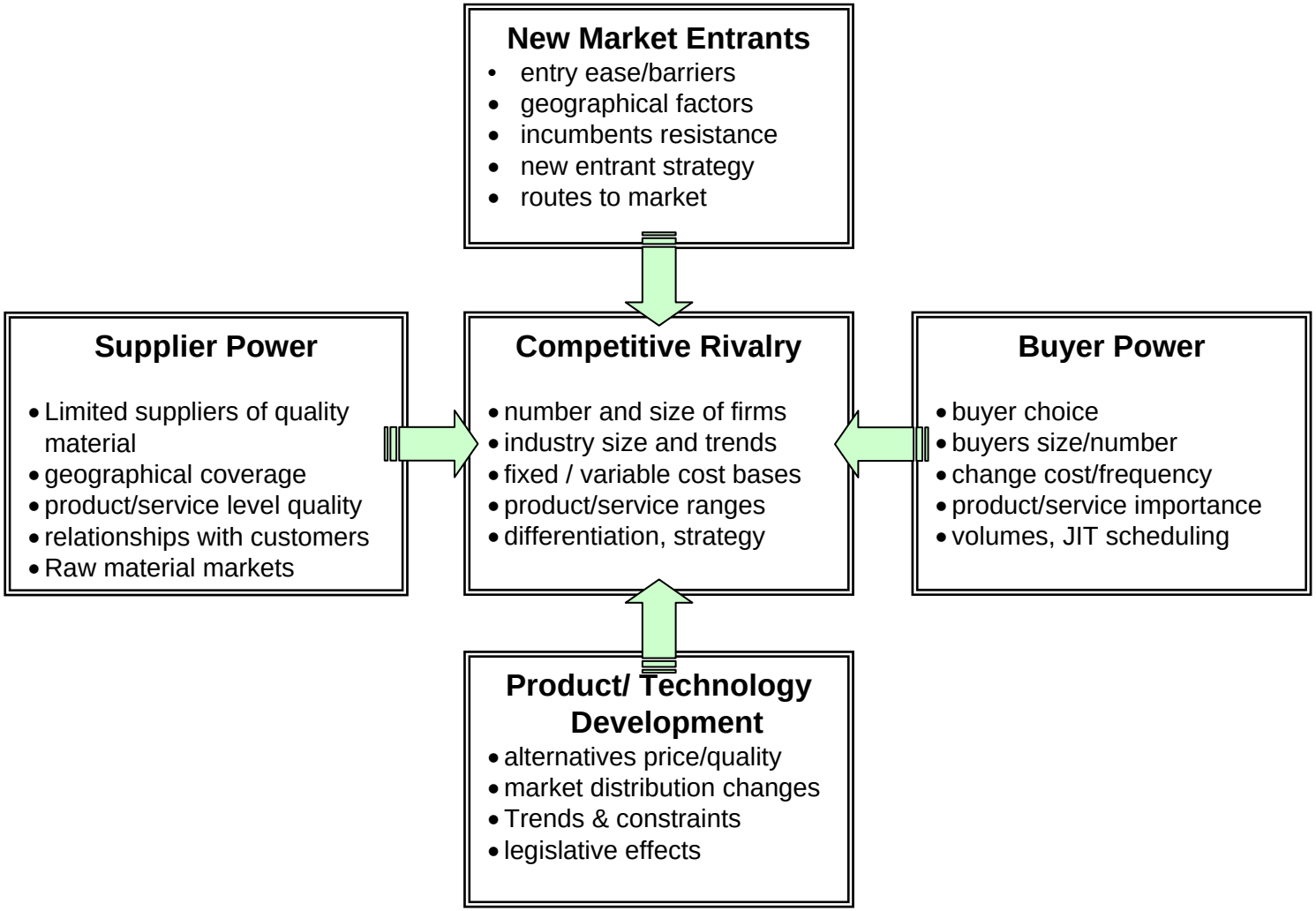
The perfect World

- The Decision Makers are *“homo ecologicus”*
- Mid/ long term advantages drive investments
- Correctly dimensioned motor systems are selected
- Variable Speed drives are the standard, DOL the exception
- All possible supporting government initiatives are know and used
- Manufacturers compete on quality, efficiency, etc.

The Real World

- Decision makers belong to the “homo economicus” species
- Investments are still often based on cost, not “eco” benefits
- Motors are over-dimensioned
- Advantages of inverter driven motors are not fully understood
- Awareness of life cycle costs is underdeveloped
- Selection of efficient electrical motors is not on the radar screen
- Customers are not aware of Governmental schemes aimed at encouraging energy efficient technologies

Porter's Five Forces of Competitive Position

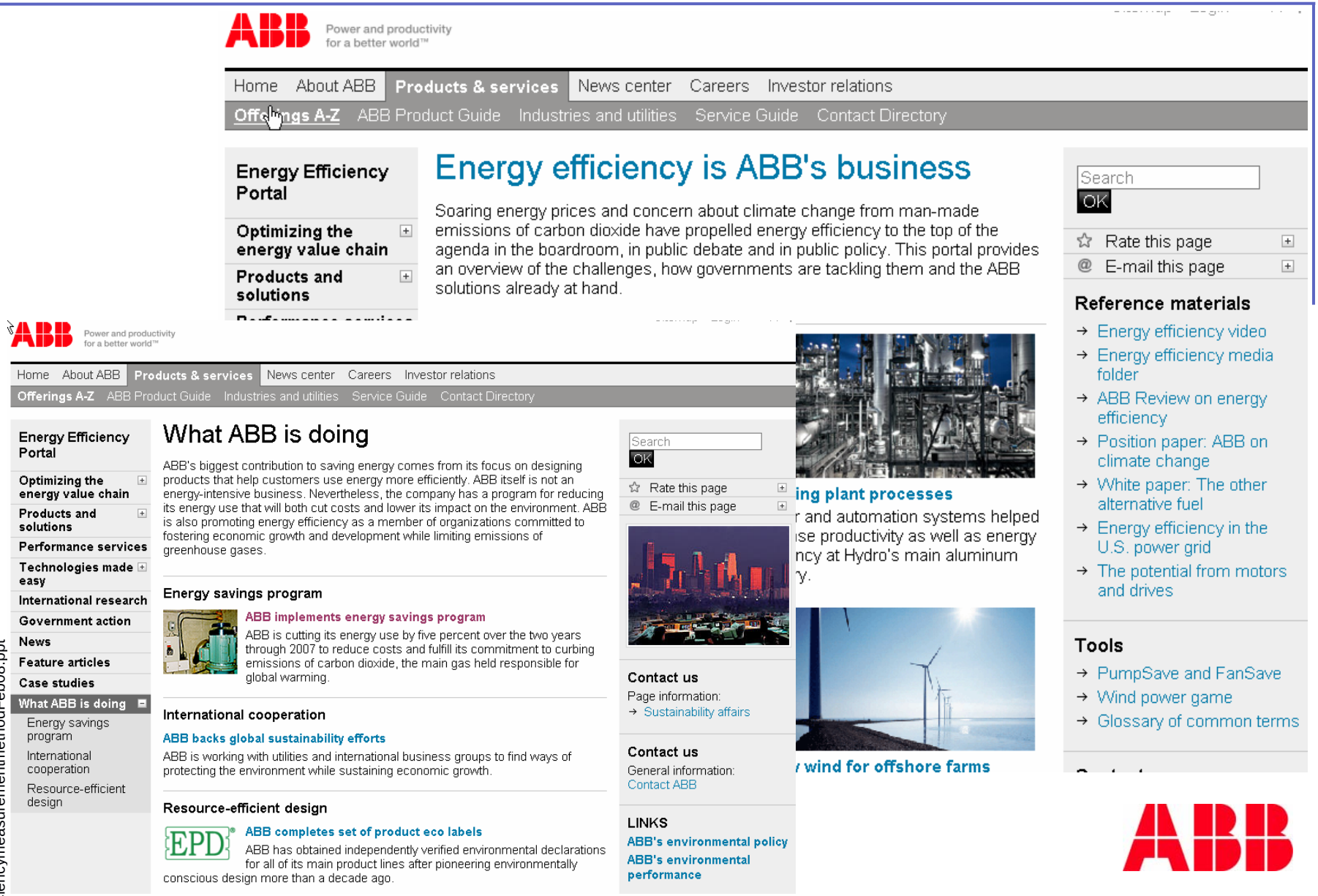


Michael Porter's Five Forces of Competitive Position Model

ABB – Sustainability Driven Top-Down

- Sustainability starts in the Board Room and is communicated to shop floor
- Managers are challenged to put efficiency on the agenda when meeting customers
- Energy efficiency is mandatory in ABB factories
- In all countries dedicated “energy officers” are in place
- Motors and Drives are dominant “eco-components” in ABB’s energy saving message

ABB's Answer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Optimizing the energy value chain
Products and solutions
Energy efficiency is ABB's business
Soaring energy prices and concern about climate change from man-made emissions of carbon dioxide have propelled energy efficiency to the top of the agenda in the boardroom, in public debate and in public policy. This portal provides an overview of the challenges, how governments are tackling them and the ABB solutions already at hand.
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Energy efficiency in the U.S. power grid
The potential from motors and drives
Tools
PumpSave and FanSave
Wind power game
Glossary of common terms
What ABB is doing
ABB's biggest contribution to saving energy comes from its focus on designing products that help customers use energy more efficiently. ABB itself is not an energy-intensive business. Nevertheless, the company has a program for reducing its energy use that will both cut costs and lower its impact on the environment. ABB is also promoting energy efficiency as a member of organizations committed to fostering economic growth and development while limiting emissions of greenhouse gases.
Performance services
Technologies made easy
International research
Government action
News
Feature articles
Case studies
Energy savings program
International cooperation
Resource-efficient design
ABB implements energy savings program
ABB is cutting its energy use by five percent over the two years through 2007 to reduce costs and fulfill its commitment to curbing emissions of carbon dioxide, the main gas held responsible for global warming.
ABB backs global sustainability efforts
ABB is working with utilities and international business groups to find ways of protecting the environment while sustaining economic growth.
ABB completes set of product eco labels
ABB has obtained independently verified environmental declarations for all of its main product lines after pioneering environmentally conscious design more than a decade ago.
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ncy at Hydro's main aluminum
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wind for offshore farms

Walking the Talk

ABB China saves on energy

In China, each new ABB factory is designed with energy-saving equipment as part of an energy-efficiency review. Factories are installed with ABB's i-bus system for heating and air conditioning as well as ABB variable-speed drives to control motors. Other common features include rooftop solar panels, and high-efficiency windows, doors and wall insulation.

Much has been achieved at little expense. At ABB's transformer factory in Chongqing, energy savings of 10 to 20 percent were achieved through simple measures like new lighting controls and new drives for pumps and fans. Steam from the laundry was directed to the plant's hot water tanks, insulation around the tanks was improved and inefficient old equipment was replaced.

"These measures can be applied to all ABB factories in China," says Vincent Lim, head of sustainability affairs at ABB China.

"Between 2002 and 2007, electricity consumption across ABB's Chinese operations fell by 55% per unit of revenue."
– Vincent Lim, head of sustainability affairs, ABB China

Emissions reductions beat expectations in Switzerland

2008-09-25 - When Switzerland agreed to cut carbon dioxide emissions by 10 percent in the two decades through 2010, ABB set out to meet the same goal in its local operations. Part five of our series on saving energy in our own facilities shows that the actual savings achieved have been more than five times bigger.

ABB reduces energy consumption of Swedish operations by 5 percent

2008-09-15 - In the fourth part of our series on how ABB is cutting energy consumption in its own operations, we go to Sweden. Over a two-year period, energy consumption by ABB operations has been reduced by 5 percent. Landmark successes in energy savings and employee commitment have been achieved.

Energy savings boost competitiveness of ABB plant in Italy

2008-08-26 - ABB is cutting energy consumption in its factories to reduce its environmental impact and save costs. In the second part in our series on the savings achieved at sites around the world, we journey to Italy to discover how a plastic processing plant has used ABB technology to cut the energy used by stamping machines.

ABB facility lights the way to energy efficiency

2008-08-18 - ABB improves energy efficiency for customers, but what about for itself? In the first of a series of stories on how ABB is cutting consumption in its own operations, we look at how simple measures had a big impact at the Coral Springs plant in Florida.

The writing on the wall

Motors and drives potential (Map scenario)

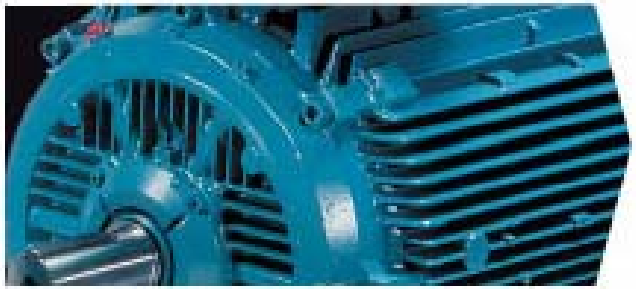
Technologies	2015	2030	2050	Gt CO_2/year
Co-generation technologies	★	★★	★★	0.3
Motor systems	★★	★★★	★★★★	1.5
Steam systems	★	★★	★★	0.3
Energy efficiency in existing basic materials production processes	★★	★★	★★★	0.4
Process innovation in basic materials production processes		★	★★	0.2
Fuel substitution in basic materials production processes		★★	★★★	0.5
Materials/product efficiency		★	★★	0.3
Feedstock substitution		★★	★★★	0.4
CO_2 capture and storage		★★	★★★★	1.5

Note: The reductions are illustrated by a category ★ (< 0.1Gt CO_2/yr of the total reduction), ★★ (between 0.1 – 0.3 Gt), ★★★ (between 0.3 – 1 Gt), ★★★★ (>1Gt).

Source: IEA Energy Technology Perspective 2006

Total efficiency of operations

ABB provides various ways to improve total efficiency of operations



More power with energy saving motors

Electronic speed control

Mechanical optimization of system

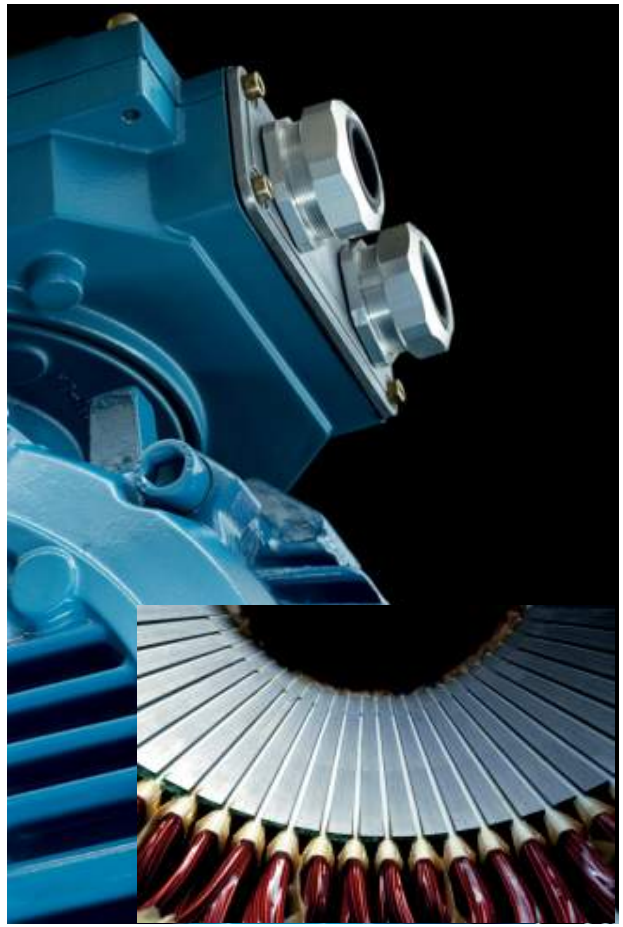
High efficiency motors

- 65 % of total electricity at industrial sites is consumed by electric motors
- Motor purchasing price corresponds to 8 to 12 weeks of its electricity consumption
- The capital cost will represent only 1% of the total life cycle operational costs of the motor
- Reliable motors with a high efficiency level ensure the lowest life cycle costs

High efficiency motors

Higher motor efficiency, more reliability

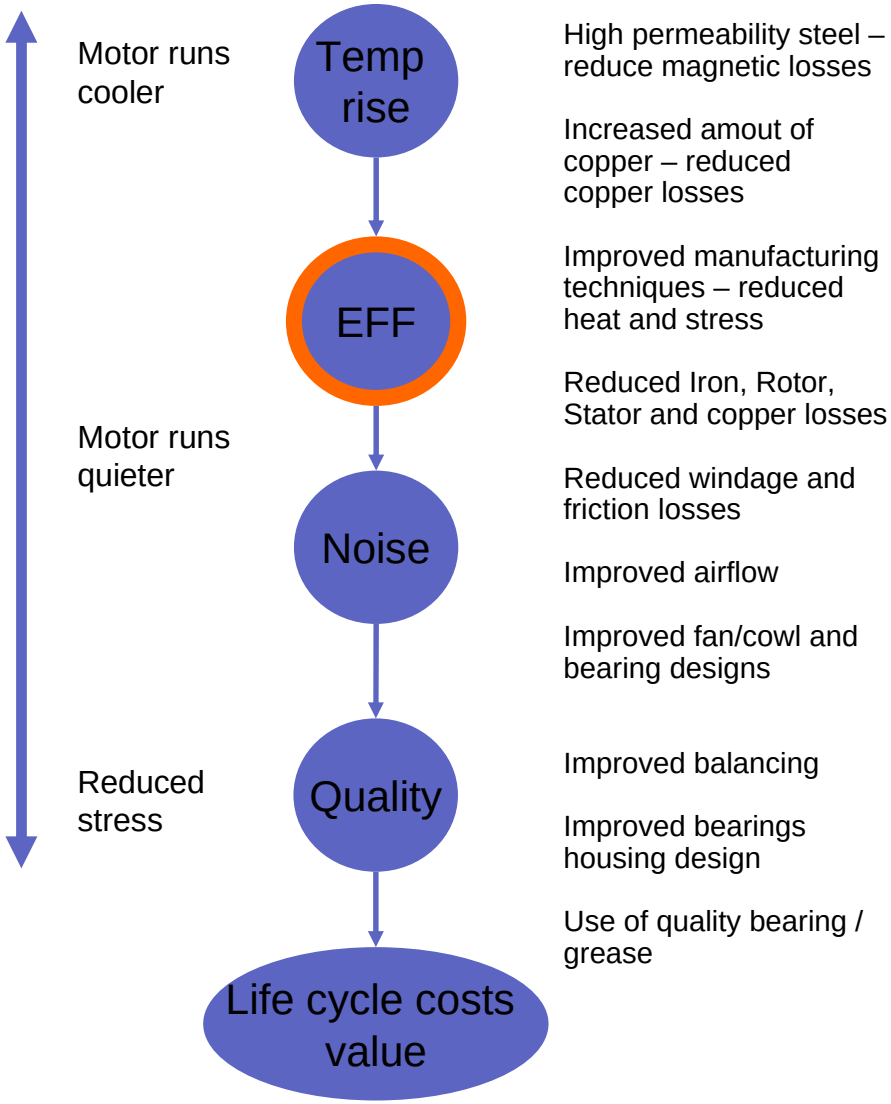
- High efficiency does not only mean savings in lower operating costs, in CO_2 and greenhouse gas emissions, it also means:
  - longer life time
  - higher reliability
  - lower maintenance
- High efficiency value means that motor runs cooler to extend the life-time of bearings and windings
  - 15K reduction in bearing temperature doubles the regreasing intervals



A positive effect on lifecycle cost

Four steps to added value

- By promoting high quality products and seeking to minimize their overall life-cycle costs, ABB ensures that its motors will deliver excellent all-around performance



Actions to drive clean Motors

- Clear portfolio policy
  - Product families for various customer clusters
  - Aligned efficiency classes with value contribution to customer segments
- Clear message in documentation
  - Catalogues with clear and transparent information w.r.t. measuring method, “old” and “new” efficiency values
- External Communication
  - Case notes, best practice examples
- Internal Actions
  - Extensive employee training programs covering the “efficiency message”

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for a better world™