Advancing industrial decarbonization
The journey towards energy efficiency
ABB is a technology leader in electrification and automation, enabling a more sustainable and resource-efficient future. The company’s solutions connect engineering know-how and software to optimize how things are manufactured, moved, powered and operated.
Improving energy efficiency is the most viable solution to meet climate change goals.

**CO2 emission reduction roadmap**

- **Current Scenario**
  - 37% Efficiency

- **Sustainable Development Scenario**
  - 32% Renewables
  - 8% Fuel switch
  - 9% CCUS
  - 15% Other

**CO2 emissions**

IEA - The Sustainable Development Scenario, Paris, 4th December 2019
1. CCUS – Carbon Capture, Usage and Storage
The critical role of motors

Many run inefficiently, impacting both profits and the environment.

~70% electricity consumed by industry is used by electric motor-driven systems

By optimizing and upgrading to high-efficiency systems, we could cut global consumption by up to 10%\(^1\).

As for LV motors, ABB IE5 SynRM+drive packages offer up to 40% lower energy losses compared to IE3 motors.

On large motors, ABB launched the Top Industrial Efficiency (TIE) initiative to ensure always offer the highest efficiency.

1. As per the International Energy Agency

300+ million motor-driven systems

This number is predicted to double by 2040.
Why adding a drive matters

Just under 25% of the world’s industrial motors are equipped with a drive.

Direct-on-line motors often run more than needed and a mechanical break/valve is applied in the systems.

Around 50% of industrial motors would benefit from being paired with a drive.

When added to the existing motor of a pump, fan or compressor, a variable speed drive can typically reduce power consumption by 25%.

Drives allow better start-ups and lifetime optimization of the motor-driven system.
The importance of data

About 85% of companies say they are now adopting IoT initiatives.

$7 trillion spent on digital transformation between 2020 and the end of 2023.

Companies need data-driven decision-making to fully tackle energy efficiency challenges.

Connected assets allow real-time monitoring and predictive maintenance and mitigate risks related to unplanned downtime.

ABB Motion is able to implement energy appraisal and has the right solutions for constant monitoring with ABB Ability™.

LEARN MORE ABOUT ENERGY APPRAISAL.
Software

The monitoring portal: Instant access to performance information

- Integrated visualization of the powertrain performance via a monitoring portal.
- Data about components is transmitted via the cloud from the ABB Ability™ Smart Sensors / NETA-21 to the monitoring portal.
- Enables to take actions that lead to less down time, extended equipment lifetime, lower costs, safer operations and increased profitability.
- Offers full transparency of key operational parameters of individual assets as one unified system.
Data insights are key for better decision making.

ABB audited more than 2,000 motors (Jun-Sept 2023)

31% of energy improvements potential

Over 2 TWh of energy savings

Enough to offset the emissions of a coal plant for 2 months in Germany and US and for 3 months in UAE.

CO₂ SAVINGS

- UAE: 1,498,000 tonnes ROI 6 months
- Germany: 937,320 tonnes ROI 3 months
- US: 856,000 tonnes ROI 6 months

1. EU1 average (~1670 kWh/year)
The path towards an energy efficient future at CERN

Energy-saving potential via an ABB energy efficiency audit

→ **31 gigawatt-hours (GWh)**

**ANNUAL ENERGY CONSUMPTION more than**

- **18,000 European households**
- **4 kilotonnes of CO2 emissions avoided**
- **= planting over 420,000 trees**

**POTENTIAL SAVINGS**

**17.4 %**

across a fleet of **800 motors**

- One pump motor at CERN had an energy-saving potential of **64 %**
- Projected payback time: less than two years

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1. EU average (~1670 kwh/year) 
2. Electricity maps | live 24/7 CO₂ emissions of electricity consumption 
3. How much CO2 does A tree absorb? - One tree planted
Key takeaways

Energy efficiency is a main pillar for achieving a low-carbon society.

Electric motors and drives hold the key for sustainable industries.

The journey towards energy efficiency should be data-driven.
Our partnerships

ABB is the founding member of the Energy Efficiency Movement, a forum that promotes the use of energy-efficient solutions and technologies to save energy, reduce costs, and draw down CO2 emissions.

#energyefficiencymovement

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