



Generate Negawatts

Energy Efficiency by Applying Existing Technology

About Me



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16+ Years in Electrical Engineering

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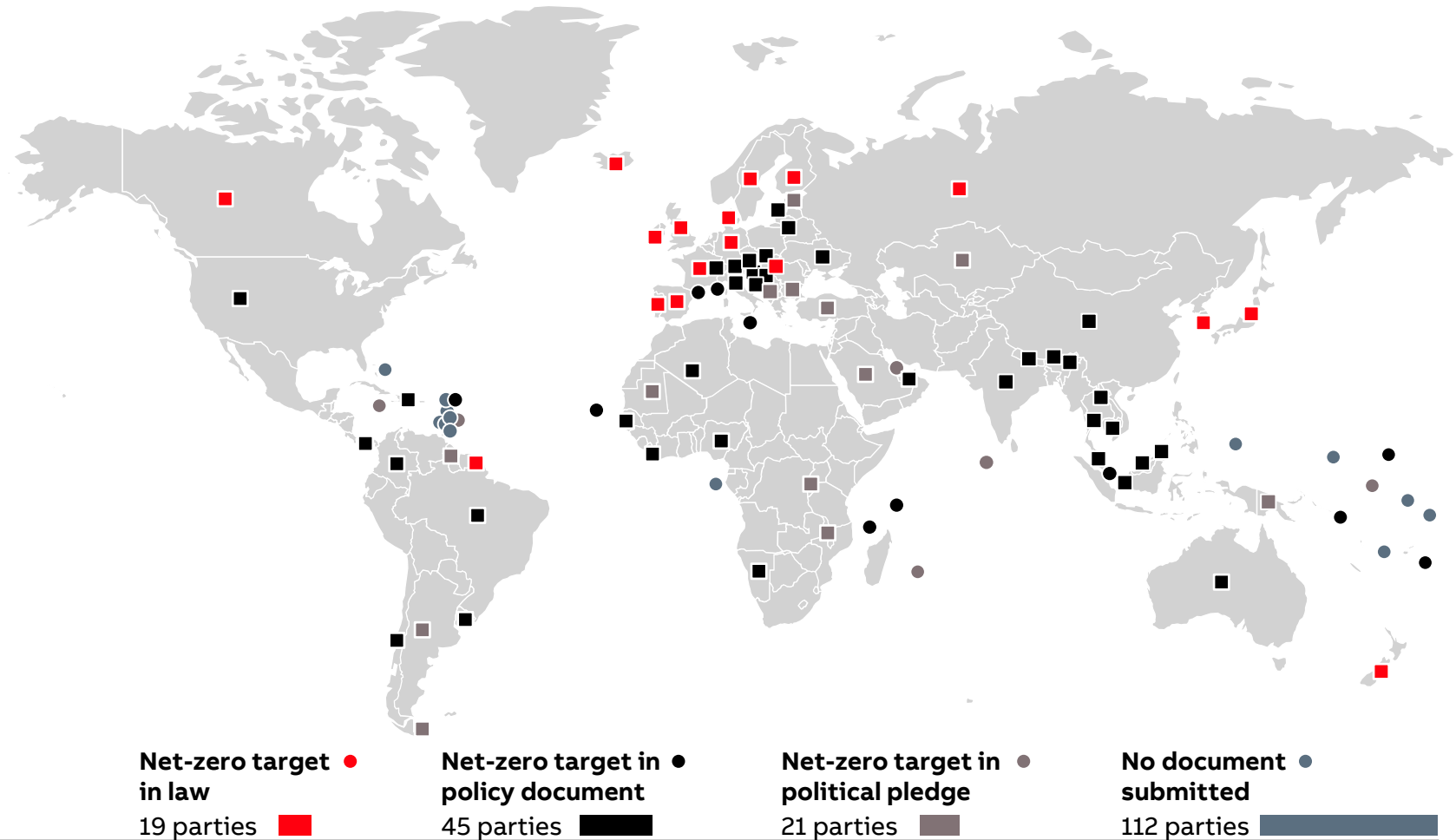
World overview of carbon neutrality pledges

Net-zero target status

Political commitment towards net zero

- Most European countries and North America have net-zero targets in their policy documents
- Aisa is also making efforts towards NetZero. I.e., 2070 India NetZero vision or China' 2060 net zero commitment.
- Africa and some parts of South America are lagging in this effort

85 Parties, representing 89 countries and 73.5% of global GHG emissions, have communicated a net-zero target



Energy Needs

“Global energy investment is picking up, and the rise in clean energy investment since 2021 is leading the way, outpacing the increase in fossil fuel investment by almost three to-one.” IEA

Renewable Energies



Population Growth



Economy Set to Double



1859 - The modern oil industrial revolution was born



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Our electrical infrastructure is leaking...





International
Energy Agency

The International Energy Agency (IEA) has identified energy efficiency as the “first fuel” in the fight for net-zero. Estimates by the IEA suggest that globally adopted energy efficiency measures could cut energy use by 7 percent by 2030 while still enabling the global economy to grow by 40 percent.

Simply by switching to modern motors fitted with variable speed drives (VSDs) – a technology which enables motors to precisely match their speed to the requirements of the process – industries could reduce their power usage by a quarter.

The critical role of motors and drives



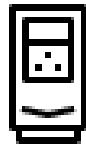
There are more than 300 million industrial electric motor-driven systems in operation in the world



It is estimated 3 in 4 of the world's industrial motors aren't equipped with a drive. That is 75% of the world's motors.



With high-efficiency motors we can cut electricity consumption by 10%



While not every motor can use a drive, experts suggest that **around 50% of industrial motors would benefit** from being paired with one



Electric motors consume over **45% of the world's electricity**



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

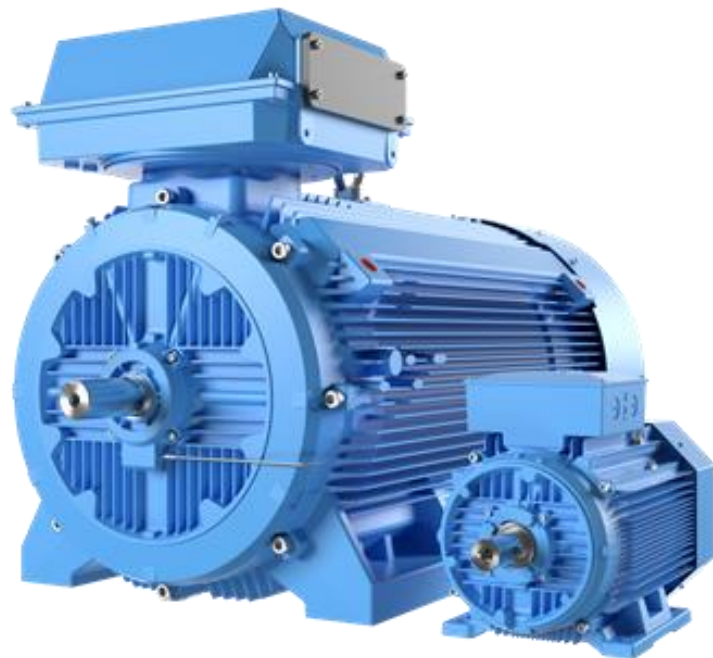


High-efficiency offering

Up to IE4 and IE5 efficiency classes

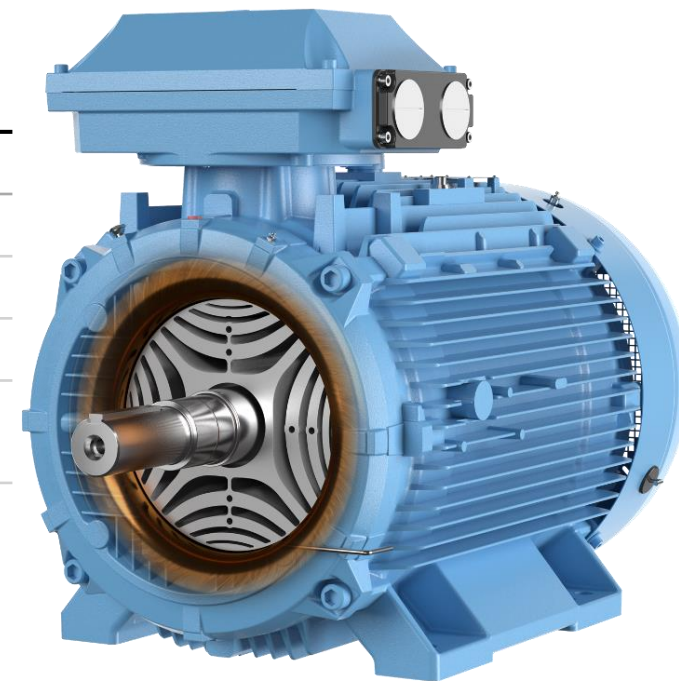
Process performance induction motors

Specification	Cast iron
Output	0,37-1000 kW
Shaft heights	IEC 71-450
Product line	M3BP
Poles	2-12 poles
Efficiency class	IE2, IE3, IE4 (IE5 SynRM)



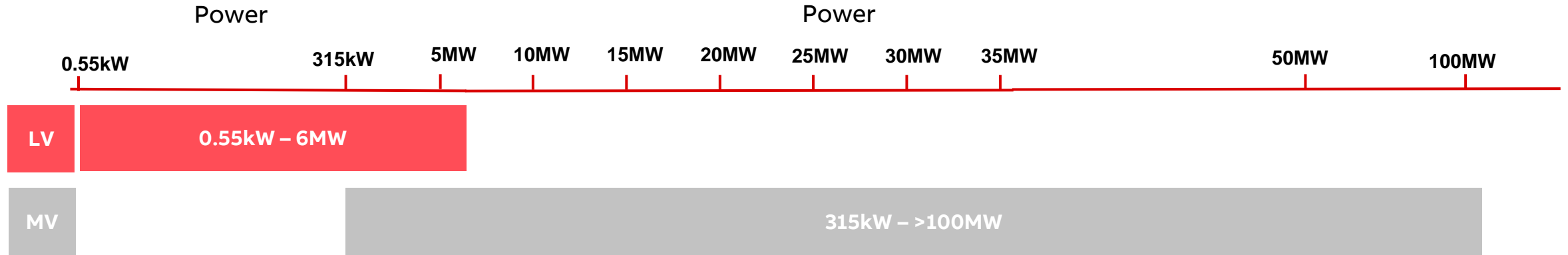
Synchronous reluctance motors

Specification	
Output	5,5-315 kW
Shaft heights	IEC 132-315
Product line	M3AL/M3BL
Efficiency class	IE5



Drives – a complete portfolio

A full offering in both LV and MV



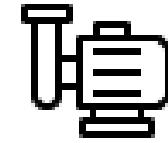
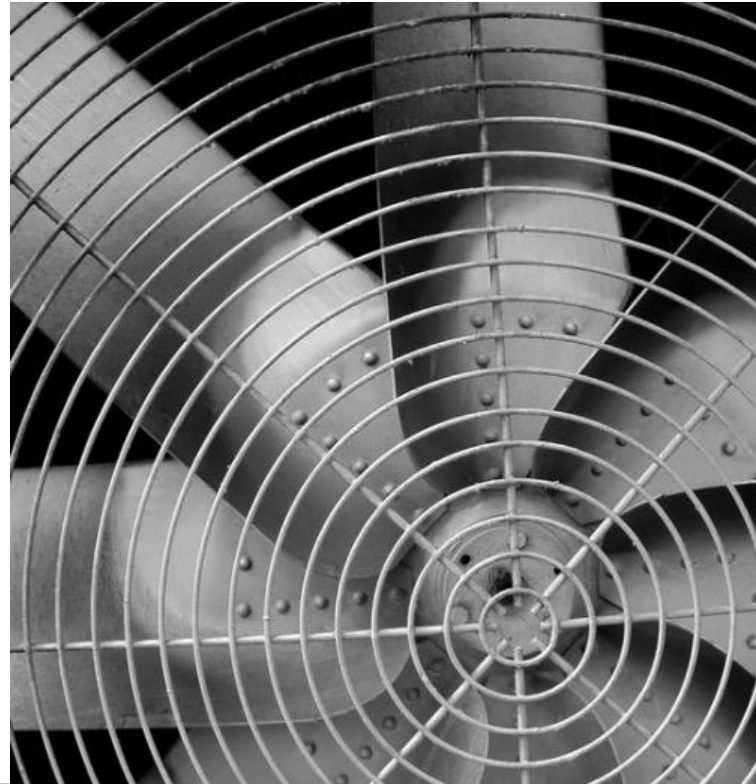
Applications with the greatest energy saving potential



Compressors



Fans



Pumps



YARA – IE5 Synchronous reluctance motor and drive replacement



WHO?

End-User: YARA, Norway



WHAT?

1000 x IE3 Motors

2,500 x IE5 SynRM Motor & Variable Frequency Drive Package



WHY?

Low OPEX and carbon footprint

Predicted Savings upto 40GWhr – 4% of Doggerbank Generation when completed, saving of €350,000 carbon tax savings



Gas turbine replacement with ABB's electrical drive solution



WHO?

OEM: Baker Hughes, Italy

End user: Qatar Fertilizer, Qatar

Consultant: Mott MacDonald, UAE



WHAT?

1x ACS5000, IP42, water cooled

1x VFD Transformer, 11 MVA

2x 9.6 MW, 6.6kV/ 4pole/ IP55 Motors



WHY?

Low OPEX and carbon footprint

Local Service support

Voice of customer to OEM and EPC during tendering phase

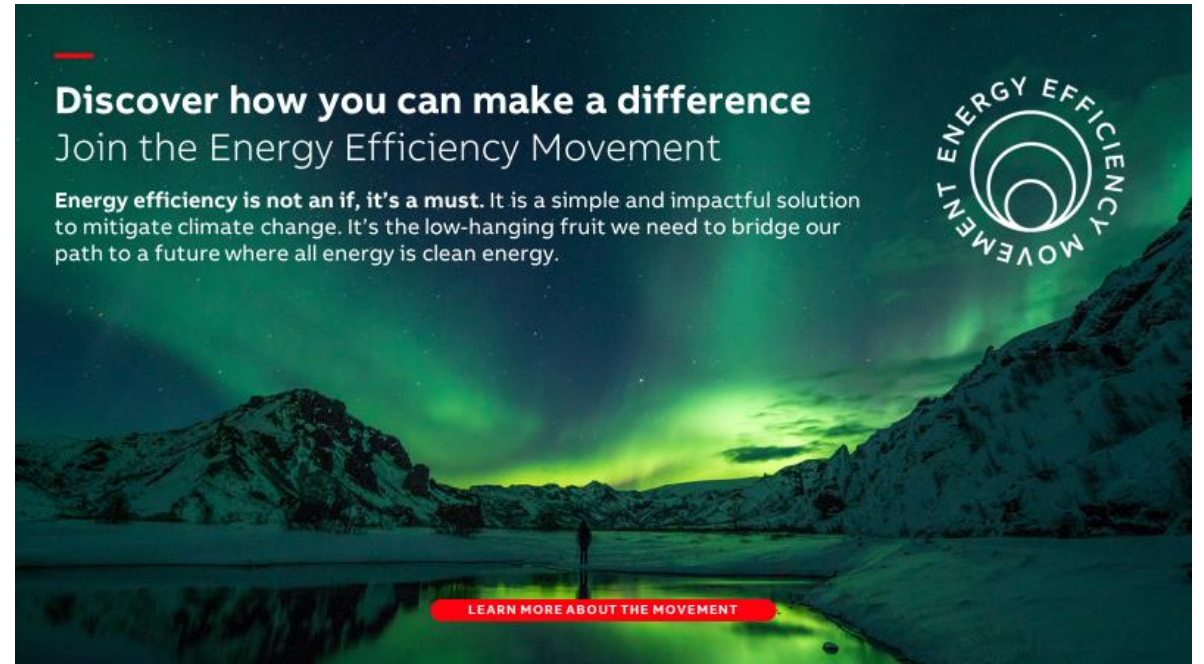


The three steps to the 'first fuel' of energy efficiency

1. Generate
Negawatt's

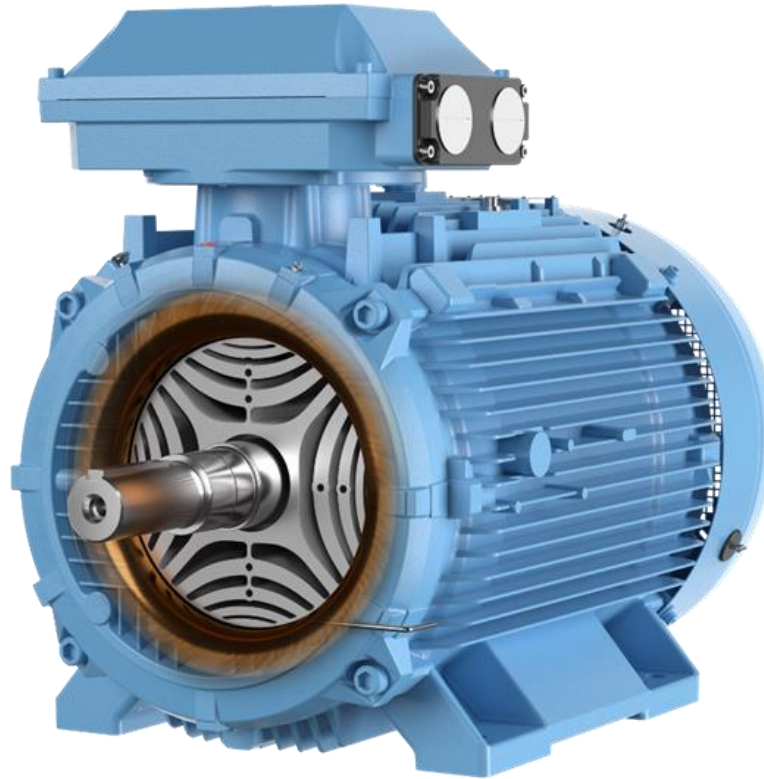
2. Using Today's
Technology

3.



Webinar - SynRM Ex: Energy efficiency in explosive atmospheres

30th November 2023



ABB