

# Digitalisation in electric motor driven systems

EMSA3

The 4E Electric Motor Systems Annex (EMSA) promotes the opportunities for energy efficiency in motor systems by disseminating best practice information worldwide. It supports the development of internationally aligned test standards and policies to improve the energy performance of new and existing motor systems with the aim of achieving 20% to 30% energy savings.

This Policy Brief summarises the key findings of an EMSA survey on digitalisation in electric motor driven systems conducted in 2020 with over 100 respondents worldwide. The report sheds light on the main digital technologies used in industrial facilities, the energy-saving potential attributed to digital technologies, the perceived drivers and barriers as well as the most useful mechanisms to overcome these barriers.



## Observations for Policy Makers

- Respondents rate the average increase in energy efficiency of electric motor systems from the use of digital solutions to be around 18%.
- **Smart sensors, smart control and continuous monitoring** are the digital technologies most used by industrial users in conjunction with motor driven systems. These three digital technologies are expected to have the greatest impact on potential future energy savings.
- **Superior production efficiency, more flexibility and higher system availability** are considered to be the **main advantages**.
- An **increased risk of failure** and **higher implementation costs** were mentioned as the **main disadvantages**.
- The **lack of qualified staff** and **high investment costs** are perceived as **main barriers** to greater uptake of digital technologies.
- **Good technical solutions for cybersecurity** and the **availability of qualified staff** are the **most significant enablers**.
- Around three quarter of respondents consider the **development of training programmes**, the **standardisation of protocols**, and **subsidies for research** as important policy instruments to overcome the barriers mentioned above.

### MORE INFORMATION

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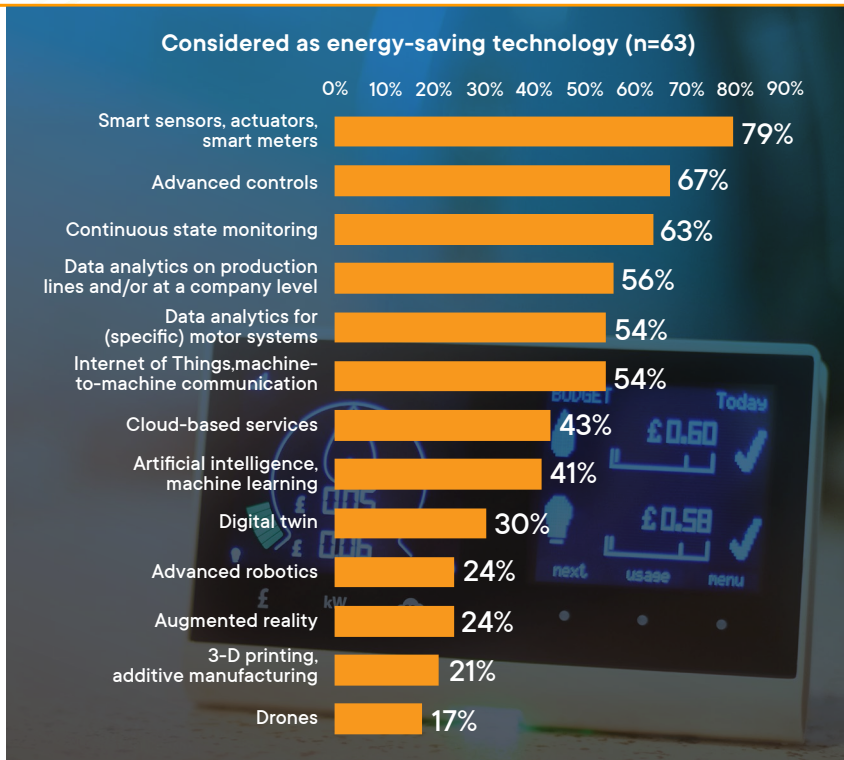
The EMSA Report is available for download at [iea-4e.org/emsa](https://www.iea-4e.org/emsa).

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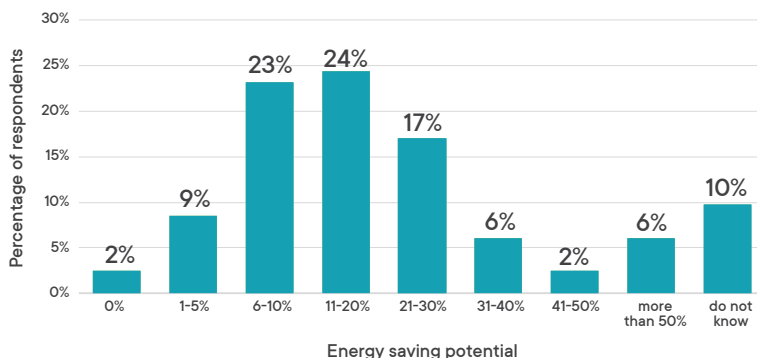
## Key Findings

### Digital technologies for energy savings

Amongst digital technologies, smart sensors, actuators and smart meters were the most widely used (79%) by themselves or their customers, closely followed by advanced controls (67%) and continuous monitoring (63%).



Increase in energy efficiency of electric motor systems by using digital solutions (n=82)



### Energy saving potential

Respondents were asked to estimate the energy saving effect of digitalisation technologies. While the estimated scale of savings varied, half considered the potential to be between 6% and 20%. Nearly one third of all respondents rated the saving potential to exceed 20%, with 6% believing that savings could be larger than 50%.

### Policy instruments

Respondents identified barriers to the greater implementation of digital technologies as the lack of qualified staff, high investment costs and complexity of integration with existing systems.

To overcome these, around three quarters of the respondents consider the development of training programmes, standardisation to harmonise protocols and subsidies for research as the most effective policy instruments.

Instruments to overcome barriers (n=59)

