

## EMSA Fact Sheet

### Introduction

The Electric Motor Systems Annex (EMSA) bundles best technical practice and policy know how in order to stimulate market transformation towards energy efficiency in the field of electric motor systems and their applications in industry, infrastructure and large buildings. The project deals with pumps, fans, compressor, industrial handling & processing.



(IE3 motor 0.75 kW 4-pole, WEG)

The goal of EMSA is to propagate energy efficiency in electric motor systems of advanced technology and engineering by coordinated policy and market mechanisms. The reduction of electricity demand will reduce global CO<sub>2</sub> emissions.

### Background & Scope

Motor systems are responsible for 40% of global electricity demand. Energy efficiency improvements of 20% to 30% on average have been proven by industrial efficiency programs.

Motors are traded internationally. The marketing of more efficient components and systems is hindered by barriers in technical standards. The harmonization of testing standards and efficiency classification within IEC is a major prerequisite for a competitive global market of premium products. Information, incentives and mandatory energy performance standards are the three key elements of market transformation.

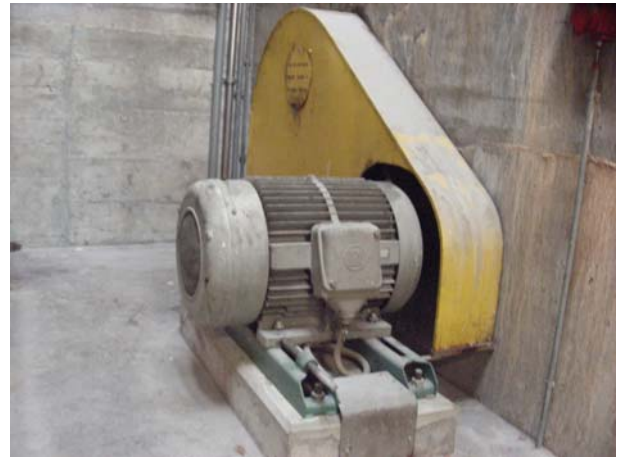
The range of electric motor systems to be treated in the MS is clearly defined. Major focus are the poly-phase electric motors between 0.5 and 500 kW that carry the bulk of the load to drive pumps, fans, compressors and mechanical drives. These machines are produced worldwide in large quantities and are used globally. The majority of the motors are AC, 2-, 4- and 6-pole and with 200 V to 1000 V. The scope of EMSA also includes new emerging motor technologies with higher efficiencies and motor controls.

EMSA was launched in November 2008 as a project under the IEA's Implementing Agreement on Efficient Electrical End-Use Equipment (4E). 4E provides an international forum for governments and other stakeholders to share expertise and develop understanding of electrical end-use equipment and policies; and facilitate co-ordination of policies for efficient electrical equipment.

### EMSA Objective

The objective of EMSA is to build a Global Motor Systems Network in industrialized and developing countries to stimulate

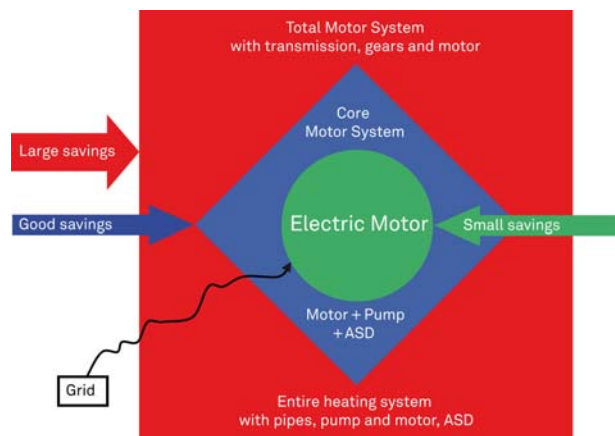
knowledge, technology and policy in the field of efficient motor systems. The contribution of EMSA will be in technical and policy advice, harmonization of standards and the distribution of best practice experience.



(Existing fan)

### Motors and Systems

The electric motor and its core motor system (pump, fan, compressor, et cetera including the auxiliary components variable speed drive, gear, transmission belt, brakes, etc.) will be treated in this Annex; they will be approached in the Tasks as separate work items. The complete motor system (the entire heating, cooling, ventilation system in a building, etc.) with pipes, ducts, et cetera which has the largest energy savings can not be considered within the scope of EMSA because of its complexity.



(Motor systems: definitions)

### Energy Efficiency in Electric Motor Systems

In industry audits in all parts of the world we see a lot of old and inefficient motors running. We see oversized motors, systems with not well integrated components and that cannot adapt to changing loads. We see large unnecessary losses of energy and a huge waste of money.

We know from successful pilot projects in many part of the world that there is an efficiency potential that can be realized with payback times below one year or up to a maximum of three years.

Many existing barriers hinder the implementation of this considerable energy savings potential.



(EC motor for fan, ebmpapst)

### EMSA Tasks

The EMSA work plan includes at present the following tasks:

• Implementation Support & Outreach
• Technical Guide for Motor Systems
• Testing Centers
• Training and Capacity Building
• Energy Management in Industry
• New Motor Technologies

Further planned tasks include:

- Instruments for Coherent Motor Policy
- Total Motor Systems Integration



(IE3/Premium motor, Emerson)

### EMSA Participants

From the countries participating in 4E the following are working actively in EMSA at present:

• Australia
• Austria
• Denmark
• Netherlands
• United Kingdom
• Switzerland

A number of other countries are interested to join or have already made arrangements to become EMSA participants. The participating countries share the general cost (Operating Agent and Outreach) as well as the Task oriented work. Industry collaboration is welcome and will require a specific arrangement.

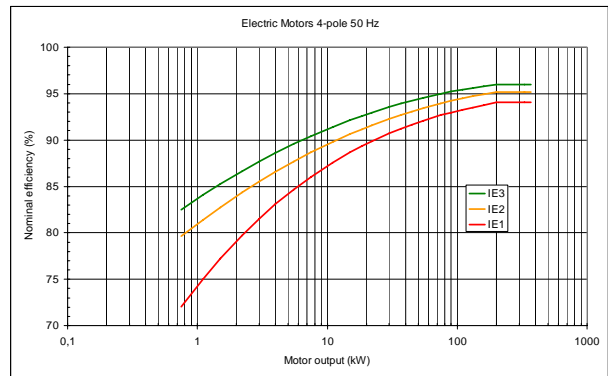
### IEC Standards

The international Electrotechnical Commission IEC has published new international standards that will help harmonize the field of efficient motors systems.

- IEC 60034-2-1 (2007): Motor Testing
- IEC 60034-30 (2008): Efficiency Classes.

	Existing Europe	Existing USA	New IEC
Super Premium Efficiency			IE4
Premium Efficiency		NEMA Premium	IE3
High Efficiency	Eff1	EPAct	IE2
Standard Efficiency	Eff2		IE1
Below Standard Efficiency	Eff3		

New publications on converter-fed motors and a technical guide for the selection and application of motors with variable frequency drive will be published shortly.



(IEC 60034-30:2008: Efficiency classes)

### Publications

EMSA has a regular "Global Motor Systems Newsletter" with approximately four editions per year. You can subscribe under: [www.motorsystems.org/emsa-newsletter](http://www.motorsystems.org/emsa-newsletter)

EMSA distributes motor publications to be downloaded under: [www.motorsystems.org/downloads](http://www.motorsystems.org/downloads).

Recent publications include:

- **Electric Motor MEPS Guide**, Boteler, Brunner, De Almeida, Doppelbauer, Hoyt, Zurich, February 2009 (1<sup>st</sup> edition)



(Existing compressor)

### Events

EMSA is participating in several international motor events. See web site for programs of upcoming and proceedings of past events.

### Contact

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