IEA 4E Electric Motor Systems Annex & Motor Programmes in The Netherlands

Elektromotoren Fachtagung
Internationale Rahmenbedingungen und Entwicklungen für mehr Energieeffizienz
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Content

1. 4E Electric Motor Systems Annex EMSA
   – Policies and savings
   – Motor systems and Motor Driven Units
   – Outreach

2. Dutch programmes on motor systems
   – Network
   – Green Deal
   – Strategy
4E Electric Motor Systems Annex
EMSA Electric Motor Systems Annex

- 6 countries
- 2009 – 2019
  - 3rd phase 2014 – 2017/2019
- motorsystems.org

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EMSA for market transformation

Global

...harmonized global standards

National

...successful policies

Company

...energy management & audits

Personal

...tools & information
Global electricity demand motors

*Policies as driving force for harvesting savings potential*

Motors account for 53% of World Electricity Use (2015)

Sources: IEA World Energy Outlook 2016; EMSA 2016
Minimum Energy Performance Standards
Electric Motors

Efficiency Classes:
IEC 60034-30-1, 2014
Output power: 0.12 - 1000 kW
50 Hz and 60 Hz, line operated
2-, 4-, 6-, 8-poles
Electric Motor System

**System Savings**

The diagram illustrates a Motor Driven Unit with various components: Variable Frequency Drive, Motor, Mechanical Equipment (gear, belt, clutch, brake), and Application (pump, fan, compressor, transport). The process starts with Mains input, goes through the Motor Driven Unit, and results in Flow/Motion output.

### Power Input and Efficiency:

<table>
<thead>
<tr>
<th></th>
<th>Power Input</th>
<th>VFD</th>
<th>Motor</th>
<th>Mechanical</th>
<th>Application</th>
<th>Throttle, other system</th>
<th>Power Output</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>100</td>
<td></td>
<td>95%</td>
<td>92%</td>
<td>77%</td>
<td>49%</td>
<td>33</td>
<td>33%</td>
</tr>
<tr>
<td>Optimised</td>
<td>47</td>
<td>96%</td>
<td>96%</td>
<td>97%</td>
<td>88%</td>
<td>89%</td>
<td>33</td>
<td>70%</td>
</tr>
</tbody>
</table>

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MDUs
## Minimum Energy Performance Standards

**Motors, Pumps, Fans, Compressors MDUs**

<table>
<thead>
<tr>
<th>Region (ranked by electricity use of motor systems)</th>
<th>MEPS: yes / no *)</th>
<th>Electricity use **)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Motors</td>
<td>Pumps</td>
</tr>
<tr>
<td></td>
<td>USA</td>
<td>y</td>
</tr>
<tr>
<td>EU28 ***</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>India</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Japan</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>Russia</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Korea</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>Brazil</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>Canada</td>
<td>y</td>
<td>(y)</td>
</tr>
<tr>
<td>Mexico</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>South Africa</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>Australia</td>
<td>y</td>
<td>(y*)</td>
</tr>
<tr>
<td>New Zealand</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>**Electricity use (%) ****</td>
<td>76%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Total regions: 14
Plus under development: 11  4  3  1  2  2  2
Policy Guidelines for Motor Driven Units
part 2

Pump MDU
- VFD
- Motor
- Pump

Fan MDU
- VFD
- Motor
- Fan

Compressor MDU
- VFD
- Motor
- Compressor

Product Definitions
Testing Standards
Metrics
Successful policy implementation

EMSA publications

Motor MEPS Guide

Motor Policy Guide

Policy Guidelines for Electric Motor Systems

Upcoming


Download: www.motorsystems.org
Policy briefs, Motor Systems Tool
Global network

Newsletter

• 5000 contacts
• 75 countries
• Editions in:
  – English
  – Chinese
  – Japanese
  – German
  – Russian

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Motor programmes in the Netherlands
Dutch network on motor systems

Cooperation of supply chain and government
Aim: information, capacity building, projects
Green Deal efficient motor systems 2013-2015

- 35 projects in industry - example
- Savings of 19 GWh/year, 13% of e-use motor systems
- Focus on motors and VFD… systems next step
Network on motor systems

**Strategy 2017-2020**

- **Ministry of Economic Affairs**: extra energy savings industry needed to meet EE/CO2 emission goals
  - ‘Intensivering energiebesparing industrie’

- **Network Strategy for motor systems industry**
  1) Capacity building (for industry, supply chain, and enforcement)
  2) Audits and auditors (certified)
  3) Finance scheme (esco-concept and financing fund)

- **Existing programmes (industry)**
  - Energy allowance scheme (EIA)
  - Long term agreements (energy management scheme)
  - Standard Savings Measures scheme