IEC harmonizes global testing standards and efficiency classes of industrial motors
Motor Summit 2008, Zürich

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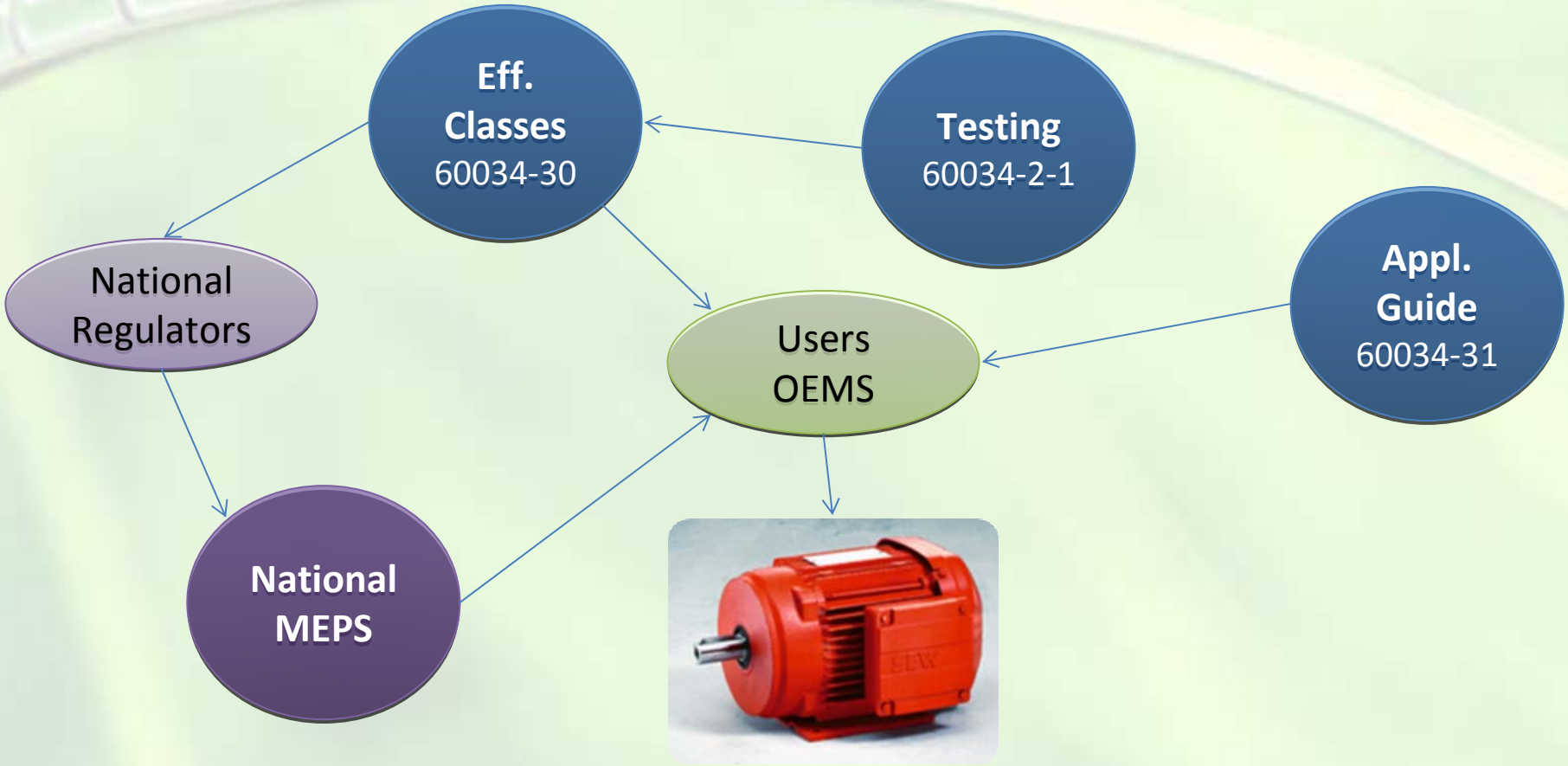
The IEC in brief

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies. These serve as a basis for national standardization and as references when drafting international tenders and contracts.

- Founded 1906 in London
  with british scientist Lord Kelvin as first president
- Head office located in Geneva, Switzerland
- 68 National Committees, 77 Affiliate Countries
- 5794 Publications , 1378 Active Projects
  (as of 2007-12-31)

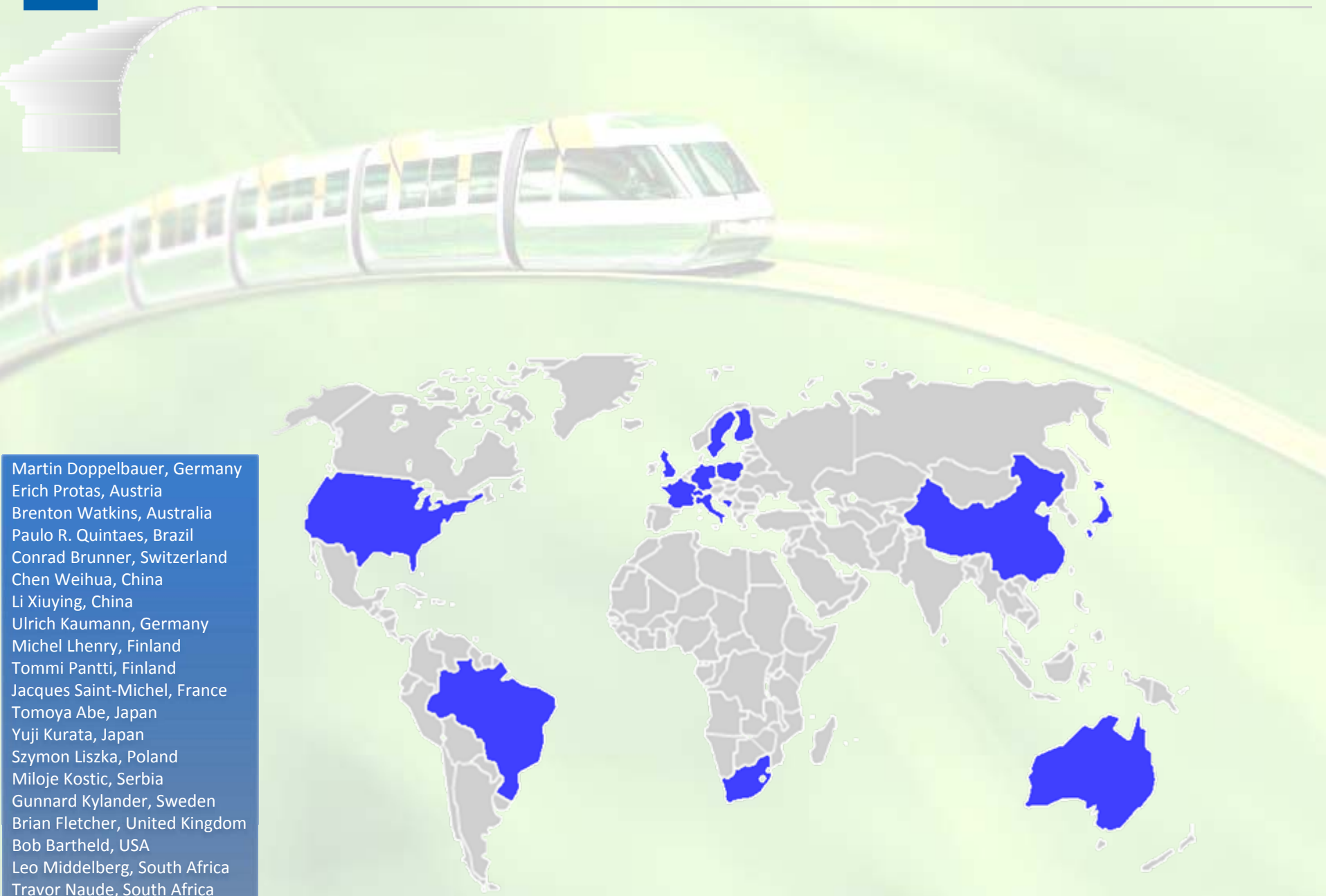
Overview of International Energy-Efficiency Standards for Industrial Motors



Overview of International Energy-Efficiency Standards for Industrial Motors

		IEC TC2	
IEC 60034-2-1	Standard methods for determining losses and efficiency from tests	WG28	Published 2007-09
IEC 60034-30	Efficiency classes of single-speed, three-phase, cage-induction motors (IE Code)	WG31	FDIS 2008-07
IEC 60034-31	Guide for the selection and application of energy-efficient motors including variable-speed applications	WG31	CD 2008-05

International Participation in WG31



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Brenton Watkins, Australia
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Conrad Brunner, Switzerland
Chen Weihua, China
Li Xiuying, China
Ulrich Kaumann, Germany
Michel Lhenry, Finland
Tommi Pantti, Finland
Jacques Saint-Michel, France
Tomoya Abe, Japan
Yuji Kurata, Japan
Szymon Liszka, Poland
Miloje Kostic, Serbia
Gunnard Kylander, Sweden
Brian Fletcher, United Kingdom
Bob Bartheld, USA
Leo Middelberg, South Africa
Travor Naude, South Africa

IEC 60034-2-1 Test Procedures

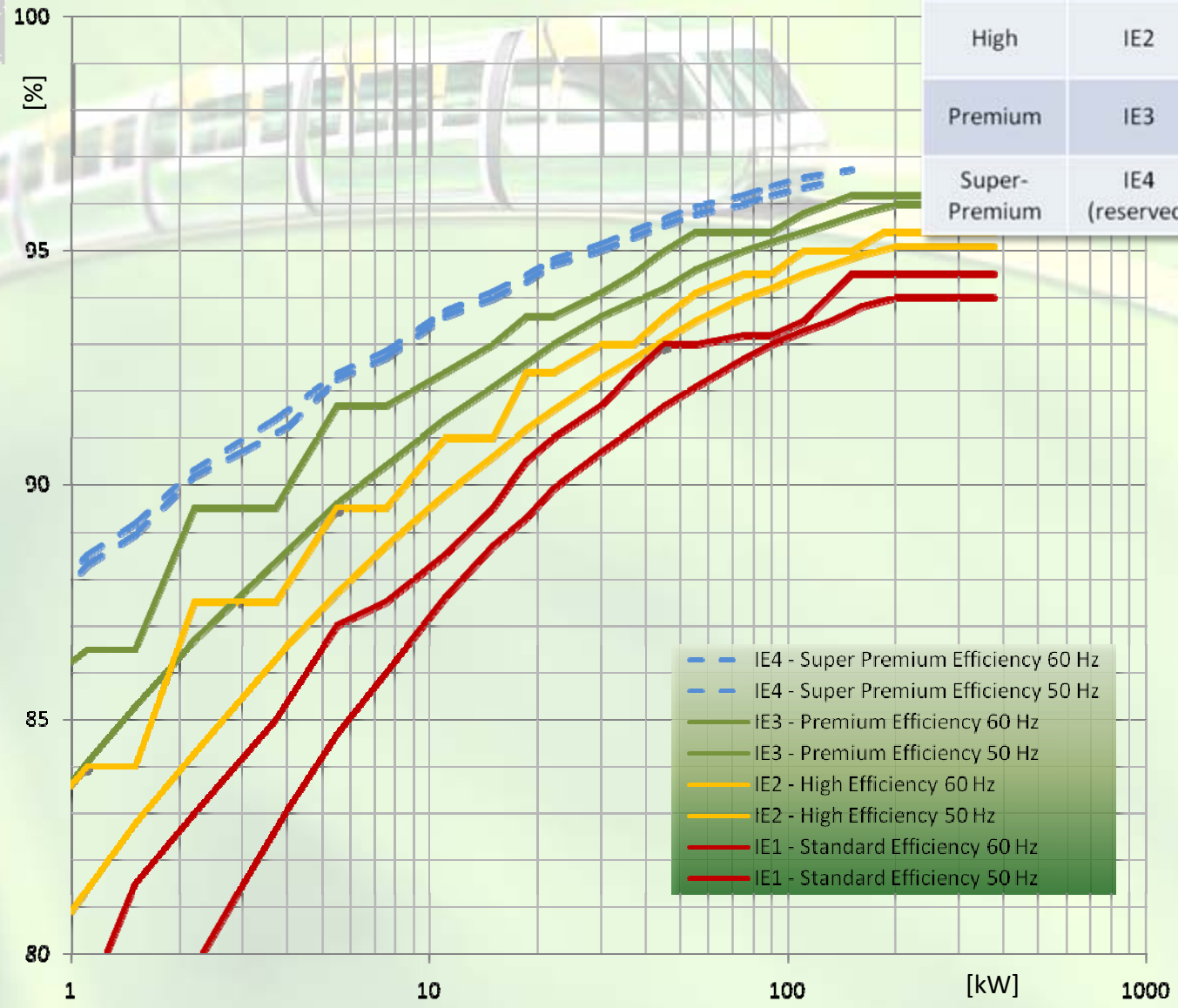
Goal	Define test procedures for all kinds of electrical-machines (focussing on low-voltage motors)
Targeted at	✓ Regulators ✓ Manufacturers
Achievements	• Test procedure for three-phase induction-motors with improved accuracy compared to previous editions of the standard (inherited from IEC 61972) • Globally harmonized with US (IEEE 112B), Canada (CSA C390), Australia/NZ (AS/NZS1359.5) and other IEC member-countries

IEC 60034-30 Efficiency Classes

Goal	Define energy-efficiency classes for industrial electrical motors
Targeted at	✓ Regulators ✓ Manufacturers ✓ Users
Achievements	• Globally harmonized efficiency limits for 50 Hz and 60 Hz. • Open for future developments, although the expansion of the scope to new motor types remains a task for future editions • Broad application, also to motors with some special arrangements (brakes, gearboxes, ...)

IEC 60034-30 Efficiency Classes for 4-pole Motors

	IEC 60034-30	Europe	USA
Standard	IE1	eff2	-
High	IE2	eff1	Energy Efficient
Premium	IE3	-	NEMA Premium
Super-Premium	IE4 (reserved)	-	-



IEC 60034-31 Application Guide

Goal	Give application guidelines and hints to end-users and OEMs of energy-efficient motor drive-systems
Targeted at	✓ Manufacturers ✓ Users
Achievements	• Focus on all aspects of energy savings in drive-systems - Motors - Variable Speed Drives - Application

Saving more Energy in Industrial Applications

IEC 60034-31

	Components		Applications		
	Electric-Motor	Mechanical Elements	Process	24V Power-Supply	Energy Storage
S1 Continuous Duty	Energy-Efficient Motors	Energy-Efficient Gearboxes, Belts, Pumps, Compressors, Fans etc.	Variable Speed Drives	High-Efficiency Power-Supply	
	Power-Factor Compensation		Proper and Regular Maintenance	Sleep-Mode	
S2 Short-Time	Use Smallest, Most Cost Effective Components				
S3...S10 Intermittent Duty	Beware of Rotor-Inertia		Variable Speed Drives	High-Efficiency Power-Supply	DC-Link Coupling
			Soft-Starters		
			Reduced Wheight	Sleep-Mode	Batteries, Ultra-Caps etc.

Voting Results

	60034-2-1 2/1443/FDIS	60034-30 2/1518/FDIS	60034-31 2/1501/CD
Argentina	-	-	-
Australia	Yes	No	-
Austria	Yes	Yes	-
Belgium	Yes	Yes	-
Brazil	Yes	Yes	-
Canada	Yes	Yes	-
China	Yes	Yes	-
Czech Republic	Yes	Yes	-
Denmark	Abstain	Abstain	-
Finland	Yes	Yes	-
France	Yes	Yes	-
Germany	Yes	Yes	-
Greece	Yes	Yes	-
Hungary	Abstain	-	-
India	Abstain	Yes	-
Ireland	Yes	Yes	-
Italy	Yes	Yes	-
Japan	Yes	Yes	-
Korea (Rep. Of)	Yes	Abstain	-
Luxemburg	Yes	Yes	-
Mexico	Abstain	Abstain	-
Netherlands	Yes	Yes	-
New Zealand	-	No	-
Norway	Abstain	Yes	-
Poland	Yes	Yes	-
Portugal	Yes	Yes	-
Romania	Yes	Yes	-
Russian Fed.	Yes	Yes	-
Slovenia	Yes	Yes	-
South Africa	Yes	Yes	-
Spain	Yes	Yes	-
Sweden	Yes	Yes	-
Switzerland	Yes	Yes	-
U.S.A.	Yes	No	-
United Kingdom	Yes	Yes	-

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Spain	Yes	Yes	
Sweden	Yes	Yes	
Switzerland	Yes	Yes	
U.S.A.	Yes	No	
United Kingdom	Yes	Yes	-

- Increase Eff. Levels
- Include 8-pole Motors
- Clarify S3 duty
- Exclude non-general purpose motors

- Include 8-pole Motors
- Add IEEE and CSA test methods
- Give instructions how to convert results between test methods

Include Specific Tables for ODP Motors

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