



# Why Standards?

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- Global confusion
- Sequence of development
- What is a standard?
- News from IEC
  - TC 2
  - SC 22G
  - ACEE
- New Task for Motor Driven Units
  - Aligement IEC & ISO

# Global confusion

- ▶ HTS-03 Multinational Plug Adapter



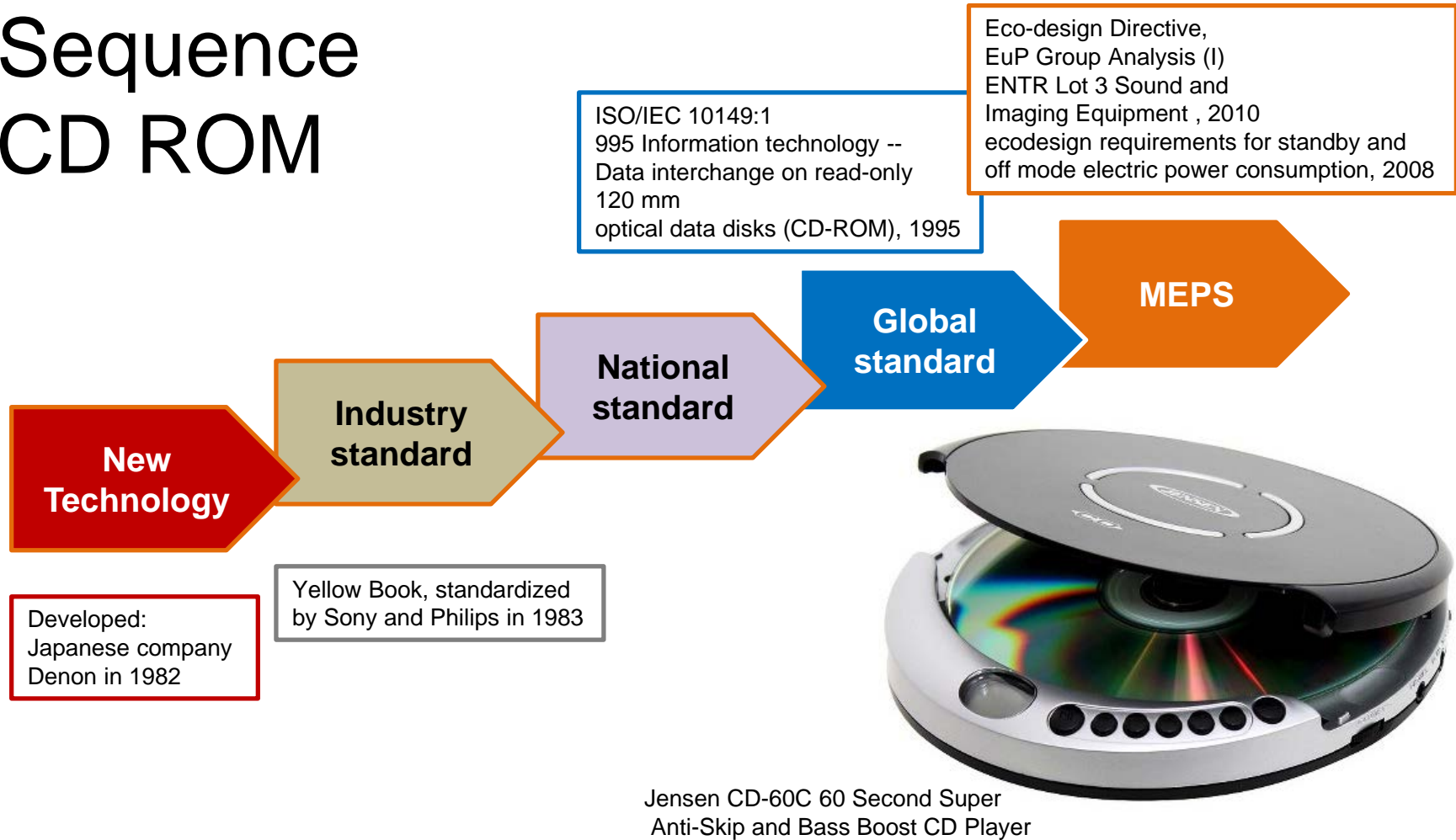
PC charger  
External power supply



- ▶ Plug IEC 60320 (C14)  
(clover leaf)



# Sequence CD ROM



# What is a standard?

- China

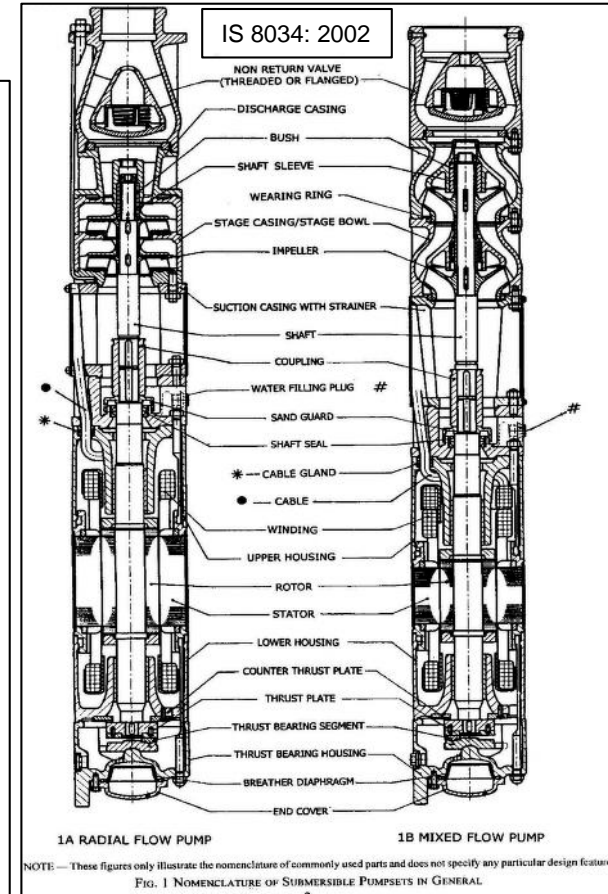
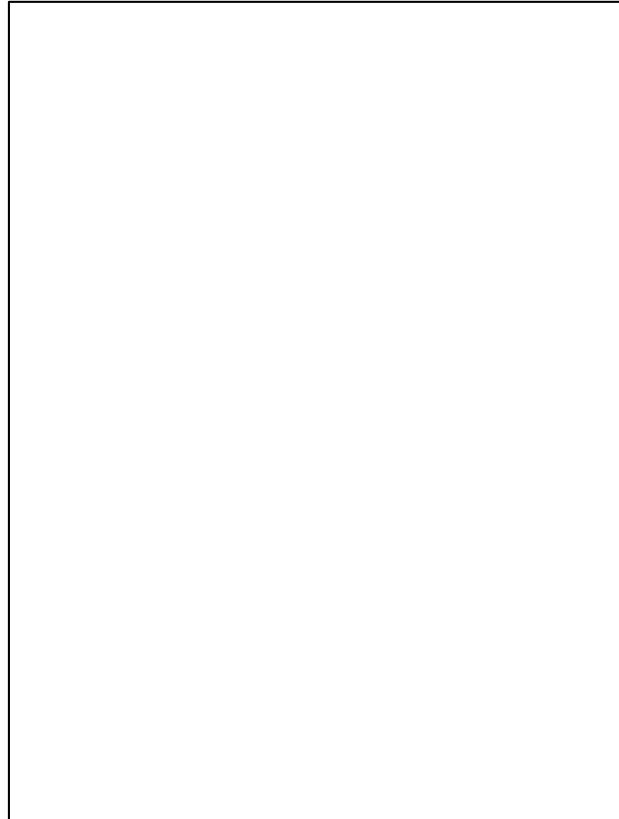
- GB 18613-2012: MOTORS  
MEPS Minimal Energy  
Performance Standard

- India

- IS 8034-2002:  
Submersible Pumps  
Product specification

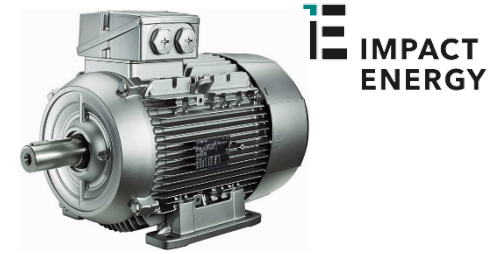
- IEC

- Scope, boundary
- Testing
- Classification



# IEC TC 2: Rotating machines

## Motors and generators



	ASM asynchronous motor	PMM permanent magnet motor	SRM synchronous reluctance motor
Scope, tolerance, rating plate*	IEC 60034-1		
Efficiency test	IEC 60034-2-1	IEC 60034-2-3**	IEC 60034-2-3**
Efficiency class	IEC 60034-30-1	IEC 60034-30-2	IEC 60034-30-2
Guide for application	IEC 60034-31**	IEC 60034-31**	IEC 60034-31**
Certification	IECEE: GMEE***		



\*) QR code optional  
ISO/IEC 18004:2006

\*\*\*) under Revision



\*\*\*) System for Conformity Testing and Certification of Electrotechnical Equipment . Global Motor Energy Efficiency

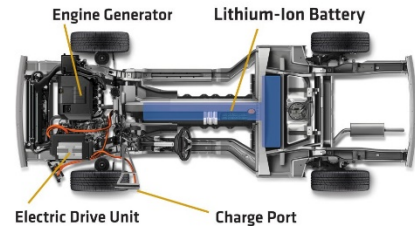
# IEC SC 22G: Converters

## Adjustable speed electric drive systems

	Converter (CDM)	Converter + Motor (PDS)
Efficiency test	IEC 61800-9-2 (edition 1)*	
Semi analytical model		
Efficiency class		
Extended product	IEC 61800-9-1	
Ecodesign Life cycle	IEC 61800-9-3 (project)	



\*) Round Robin program for converter losses: EMSA/IEC WG18.  
 Preparation for IEC 61800-9-2, edition 2:  
 Testing method, reference values and check IE-classes



# IEC ACEE

## Advisory Committee on Energy Efficiency

	Guide 118	Guide 119	Case study 02
Energy efficient product	Definition of Energy Efficiency		
Energy efficient system		Introduce Group/Basic Standards*	
Guide for application			Motors

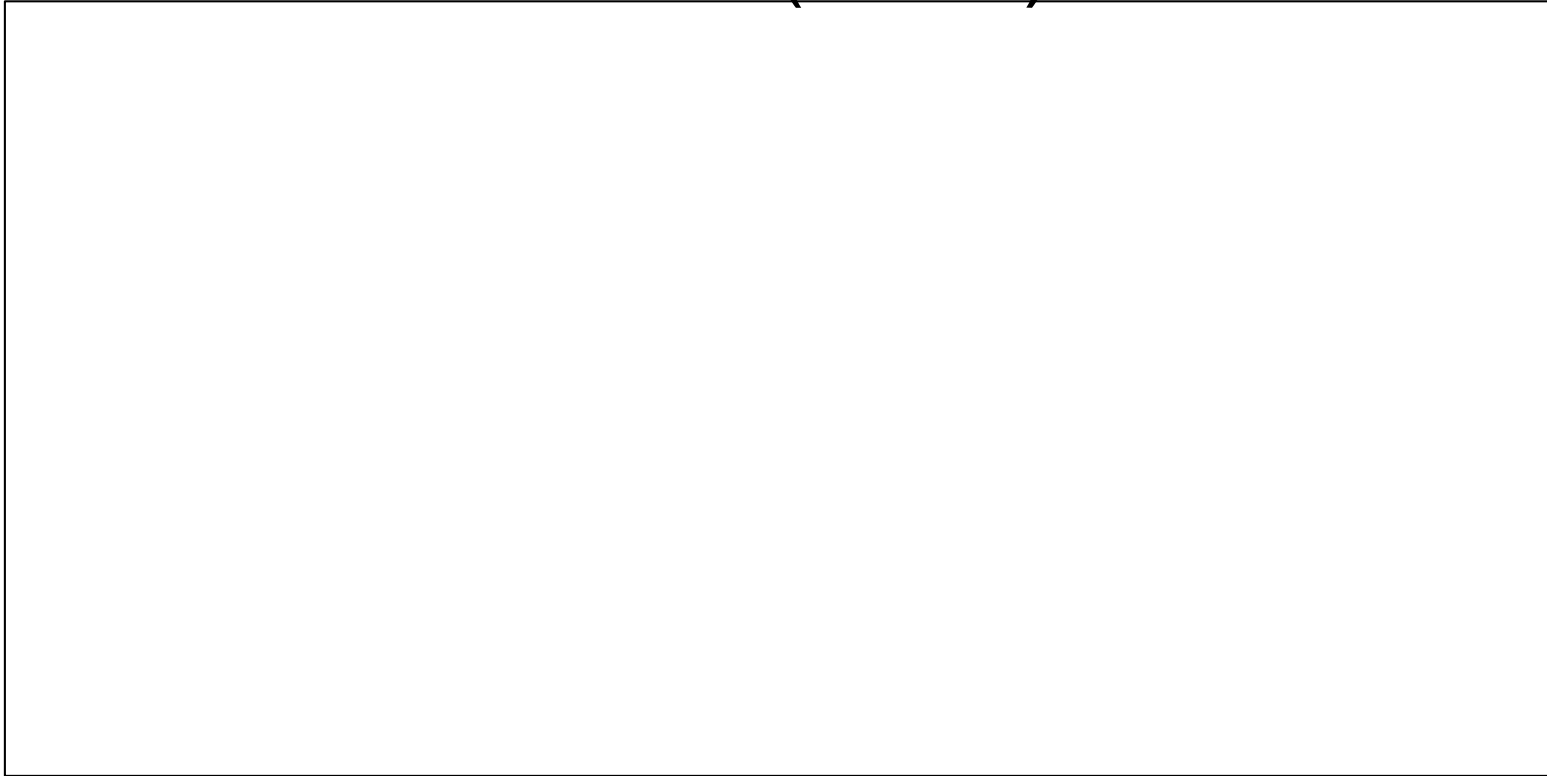
\* ) Several TCs work together



ACEE deals with energy efficiency matters which are **not specific to one single technical committee** of the IEC. It coordinates activities related to energy efficiency. ACEE is responsible for the assignment of horizontal energy efficiency aspects and requirements. ACEE provides guidance for implementation in a general perspective and for specific sectors. **It encourages a systems perspective** for the development of standards for energy efficiency and provides support for system considerations.

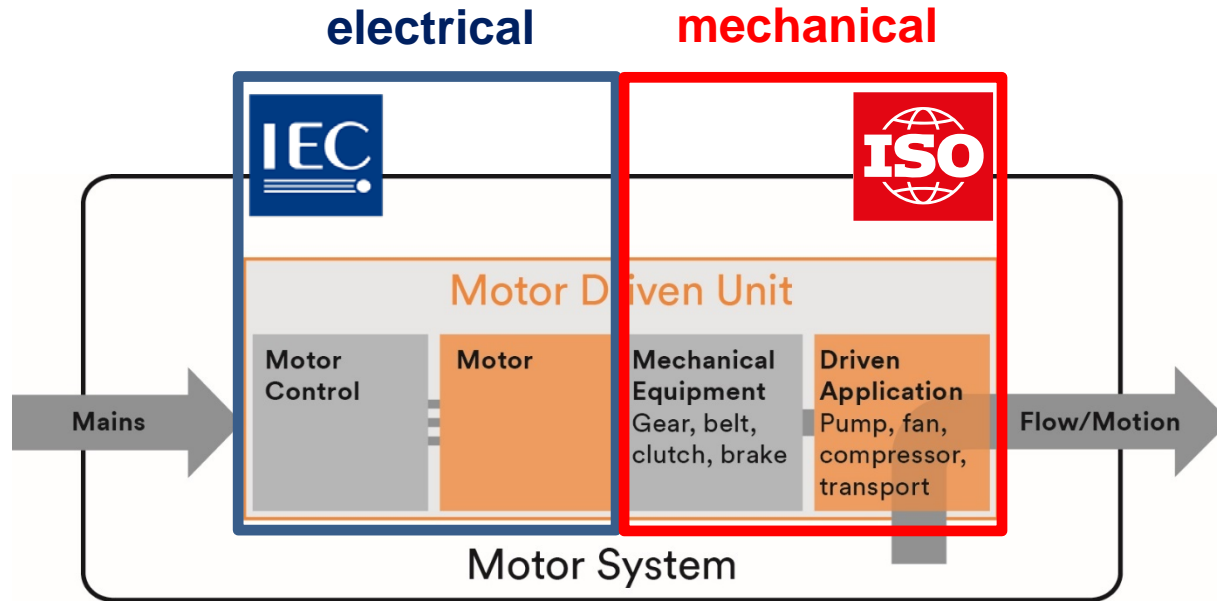


# Motor Driven Unit (MDU)



Source: ACEE Case Study 2, Motors, 2018

# Motor Driven Unit (MDU)



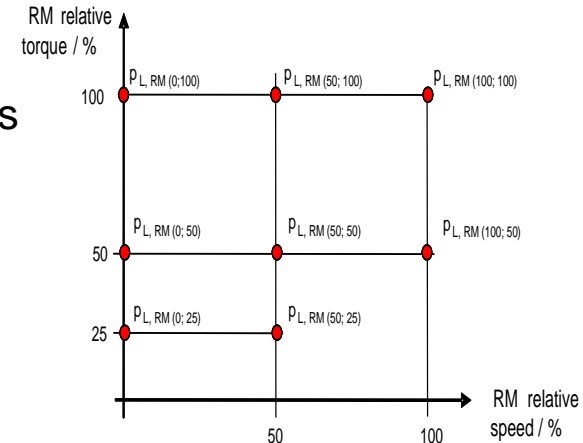
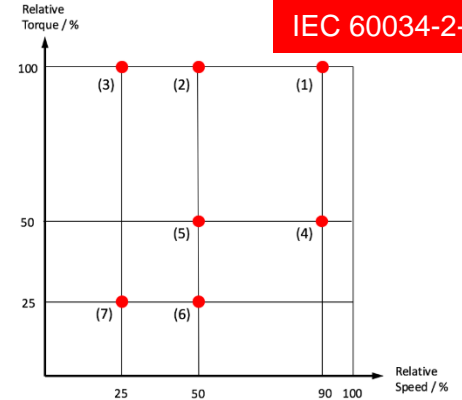
# 9 TCs involved

Motor control		Motor	Mechanical equipment		Driven application			
IEC TC 121	IEC TC 22 SC 22G	IEC TC 2	ISO TC 41	ISO TC 60	ISO TC115	ISO TC 117	ISO TC 86	ISO TC 118
Switchgear & controlgear	Adjustable speed drive	Rotating machinery	Pulleys & belts	Gears	Pumps	Fans	Cooling-Compressors	Air-Compressors
1927	1934	1911	1947	1947	1964	1964	1957	1965

# IEC ACEE: Task Force 6

## IEC & ISO Alignment on MDU

1. Aligned **terminology** and scope for Motor Driven Units
2. Coordinated **operating points** and conditions for tests
3. Typical **operating characteristics** and time/load profiles
4. Coordinated **testing procedures** (product/system)
5. Coordinated **efficiency classification** methods and metrics (product/system)
6. Aligned **interpolation methods** of losses and efficiency

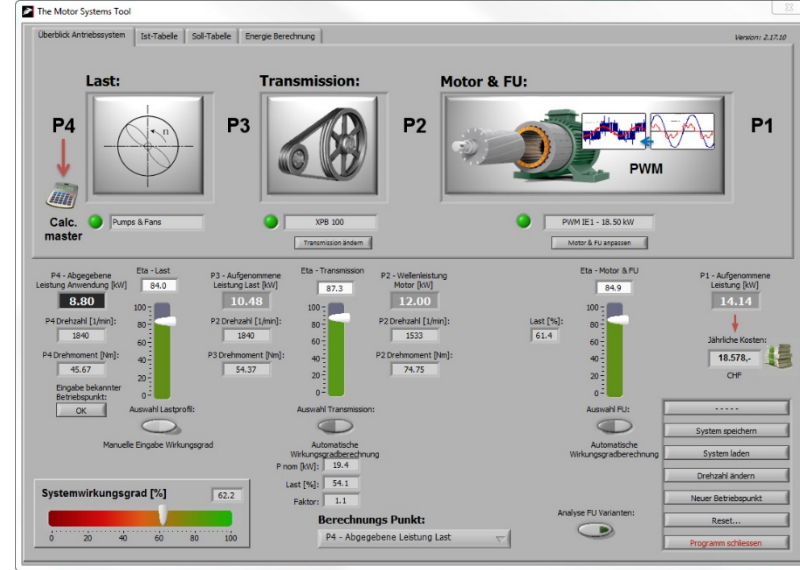
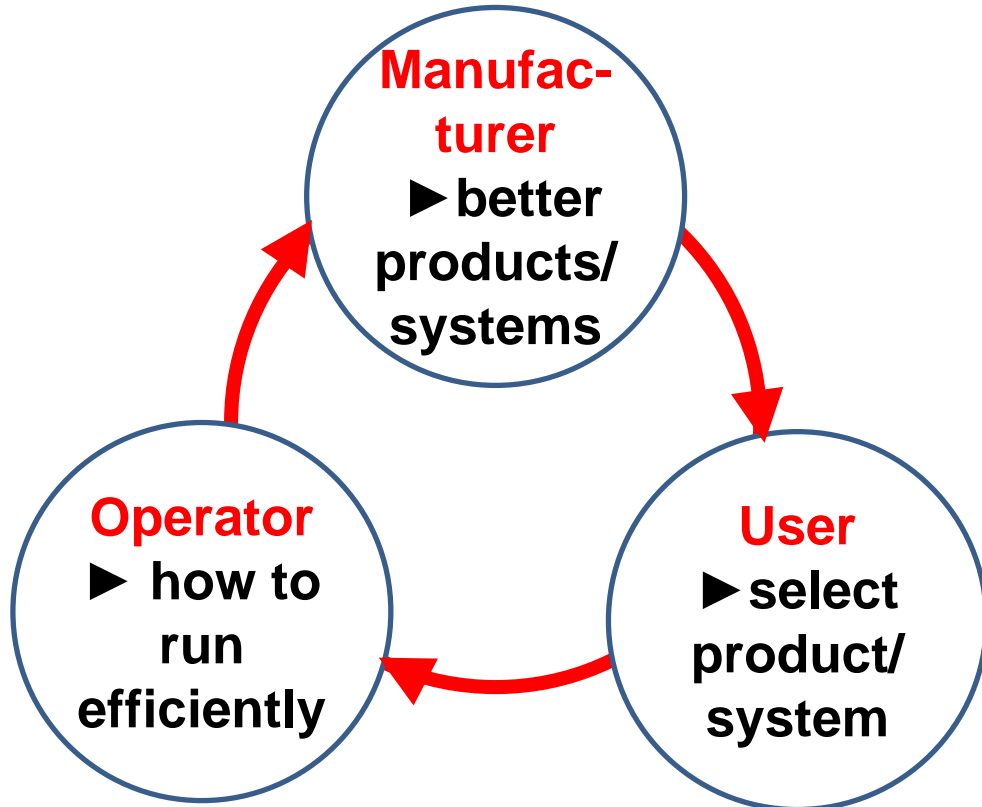


# Outlook for global MDU standards

- Component standards
  - Preferred testing method
  - Efficiency classification
  - Guide for the application
- System standard
  - Alignment IEC & ISO
  - Systems testing methods
  - Systems efficiency classification
  - Basic / Group Standards (where necessary)



# Can standards help?



Motor-Systems-Tool  
[DTI/www.motorsystems.org](http://DTI/www.motorsystems.org)

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- [www.motorsystems.org](http://www.motorsystems.org)
- [www.impact-energy.ch](http://www.impact-energy.ch)