INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ACEE

Advisory Committee on Energy Efficiency

Status

Strategic Group 1

AC/11/2013 (2013-03-15)

Further to its review process of Strategic Groups, the SMB, at its February 2013 meeting, made the following decisions:

SMB Decision 146/6 - Report from SG 1, *Energy Efficiency and Renewable Energies*

The SMB expressed appreciation and thanks to SG 1 for its report (SMB/4951/R) and recommendations.

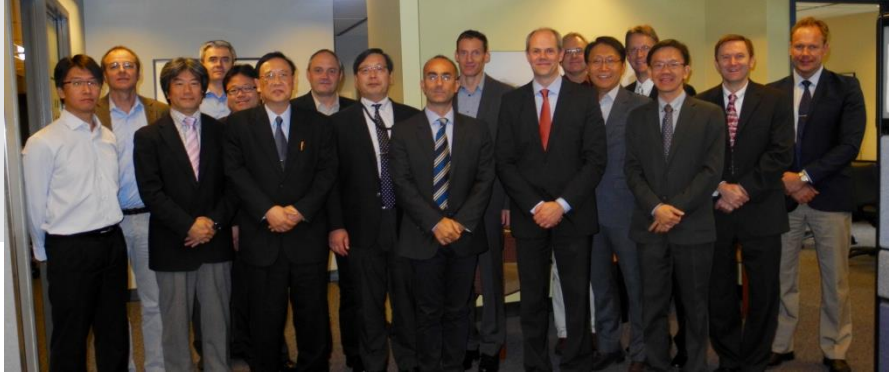
SMB agreed to the setting-up of an Advisory Committee on Energy Efficiency (ACEE) with the scope given in document SMB/4951/R, as modified relative to horizontal issues and to make a call for members and nominations for a chairman by 2013-04-15. Terminology questions will be referred to TC 1 for their consultation.

SMB Decision 146/7 - Disbanding of SG 1, Energy Efficiency and Renewable Energies

SMB thanks SG 1 and Bernhard Thies for their work and decided to disband SG 1 as from 2013-06-30.

ACEE membership

(ACEE/56/INF)



Chairman	**Ralph Sporer (DE)**
Secretariat	**Damien LEE (IEC CO)**

Members

NCs

CA	Luc Boutin
CH	Conrad U. Brunner
CN	Yin Hang
FR	Jean-Jacques Marchais
IT	Franco Bua
JP	Toru Ishikuma
KR	Jun Young Choi
US	Dan Manole

Liaison

CAB	Toshiyuki Kajiya

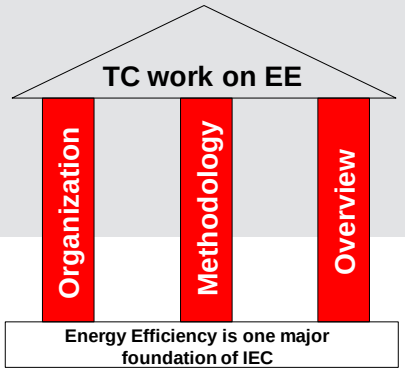
Guest

ISO	Kirsi Silander
IEA	Vida Rozite

TCs

TC 9	Carlo Fasoli
TC 14	Kai Pollari (Yukiyasu Shirasaka)
TC 22	Peter Zwanziger
TC 23	Philippe Vollet
TC 27	Sven Linow
TC 59	Fabio Gargantini
TC 64	Jacques Peronnet
TC 65	Joseph Briant
TC 66	Kris Szajdzicki
TC 85	Guiju Han
TC 100	Toshihiro Inokuchi
TC 105	Wolfgang Winkler
TC 120	Hideki Hayashi
TC 121	Karl Hiereth

Vision/Mission of ACEE



Energy Efficiency is a major foundation of IEC

Guidance

- Guide(s) for technical committee work
- Harmonized, systematic approach for inclusion of energy efficiency in IEC standards
- Consulting of standardization management board (SMB) of IEC

Information

- Existing standards repository classified towards energy efficiency aspects

Current Status
Working Packages of ACEE

Aspects

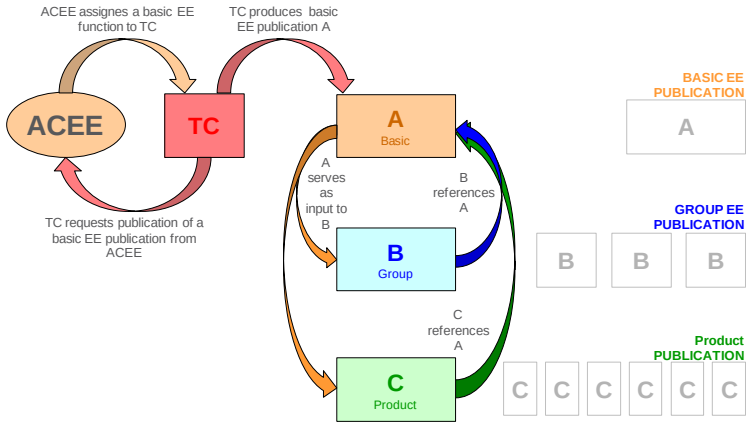
Energy efficiency aspect	Examples of inclusion in standards
Define energy efficiency	▪ Define system boundaries ▪ Define (establish) KPIs (energy efficiency indicators) ▪ Define (establish) energy baseline ▪ Define (establish) driving parameters (adjustment factors, static factors) ▪ Define (establish) reference applications ▪ Define (establish) reference load profiles ▪ Define (establish) reference control strategies
Measure energy efficiency	▪ Define test methods ▪ Define measurements methods ▪ Define measurements plans ▪ Define calculation methods ▪ Define certification and labelling
Assess energy efficiency	▪ Energy audits ▪ Benchmarking methods ▪ Energy efficiency investments evaluation
Improve energy efficiency	▪ Energy management system ▪ Design criteria guidelines ▪ Application guidelines ▪ Best practices ▪ Losses reduction ▪ (standby losses)
Enable energy efficiency	▪ Interoperability ▪ Communication ▪ Standardised data format ▪ Qualification of energy efficiency services

Guide presents a **List of EE Aspects** that may need to be considered by TCs

List serves as a checklist for TCs, which EEAs they could include in their publication

Format: Guide118

Organization



How TCs cooperate on EE
Describes the exchanged information between parts of a system
Harmonize approaches of TCs in IEC through the development of basic EE, group EE and EE publications

Format: Guide 119

Current Status
Working Packages of ACEE

Overview

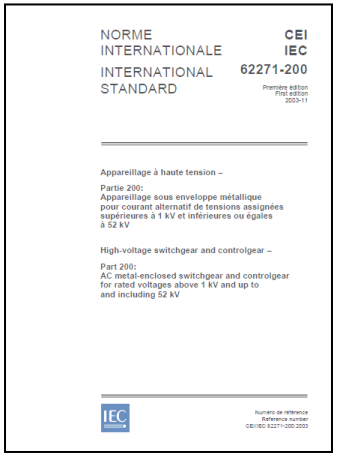
			Energy Efficiency Aspect				Organization		
Standard	Title	Project	Calculating KPI	Labeling of EE	Benchmarking Energy Performance	Managing Energy Efficiency	Basic Publication	Group Publication	Product Publication
IEC/TC 2 "Rotating machinery"									
IEC 60034-2-1:2007-09	Rotating electrical machines - Part 2-1:Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)	Ed. 2	x	x	x				x
IEC 60034-2-2:2010-03	Rotating electrical machines - Part 2-2: Specific methods for determining separate losses of large machines from tests - Supplement to IEC 60034-2-1	none		x		x		x	
(IEC/TR 60034-2-3)	Rotating electrical machines - Part 2-3: Specific test methods for determining losses and efficiency of converter-fed AC induction motors	Ed. 1	x	x	x		x		
IEC 60034-30:2008-10	Rotating electrical machines - Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors (IE-code)	Ed. 2		x					x
IEC/TS 60034-31:2010-04	Rotating electrical machines - Part 31: Selection of energy-efficient motors including variable speed applications - Application guide	none				x		x	

Systematic Overview

List of standards related to EE with additional information about EE aspects covered

Format: List of standards

Generic


NORME INTERNATIONALE
INTERNATIONAL STANDARD

CEI IEC 62271-200

Première édition
First edition
2003-11

Appareillage à haute tension –

Partie 200:
Appareillage sous enveloppe métallique pour courant alternatif de tensions assignées supérieures à 1 kV et inférieures ou égales à 52 kV

High-voltage switchgear and controlgear –

Part 200:
AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

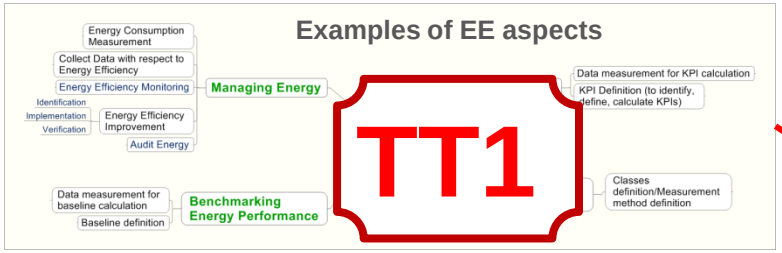
Numéro de référence
Reference number
CEI/IEC 62271-200:2003

Best practices

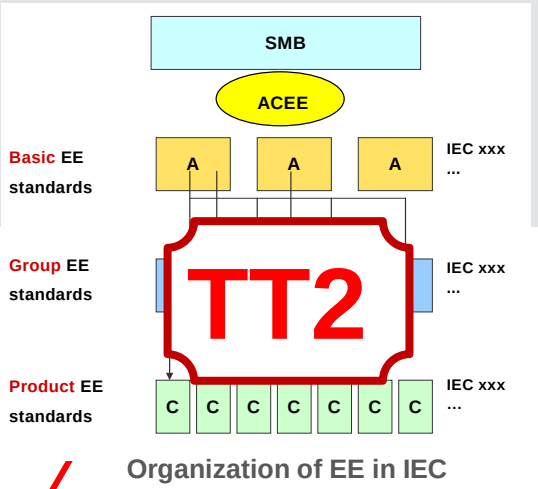
Derive the things that work for all domains per EE aspect

Format: Open – (Annex to a Guide)

How it fits together



Aspects



Organization

Overview

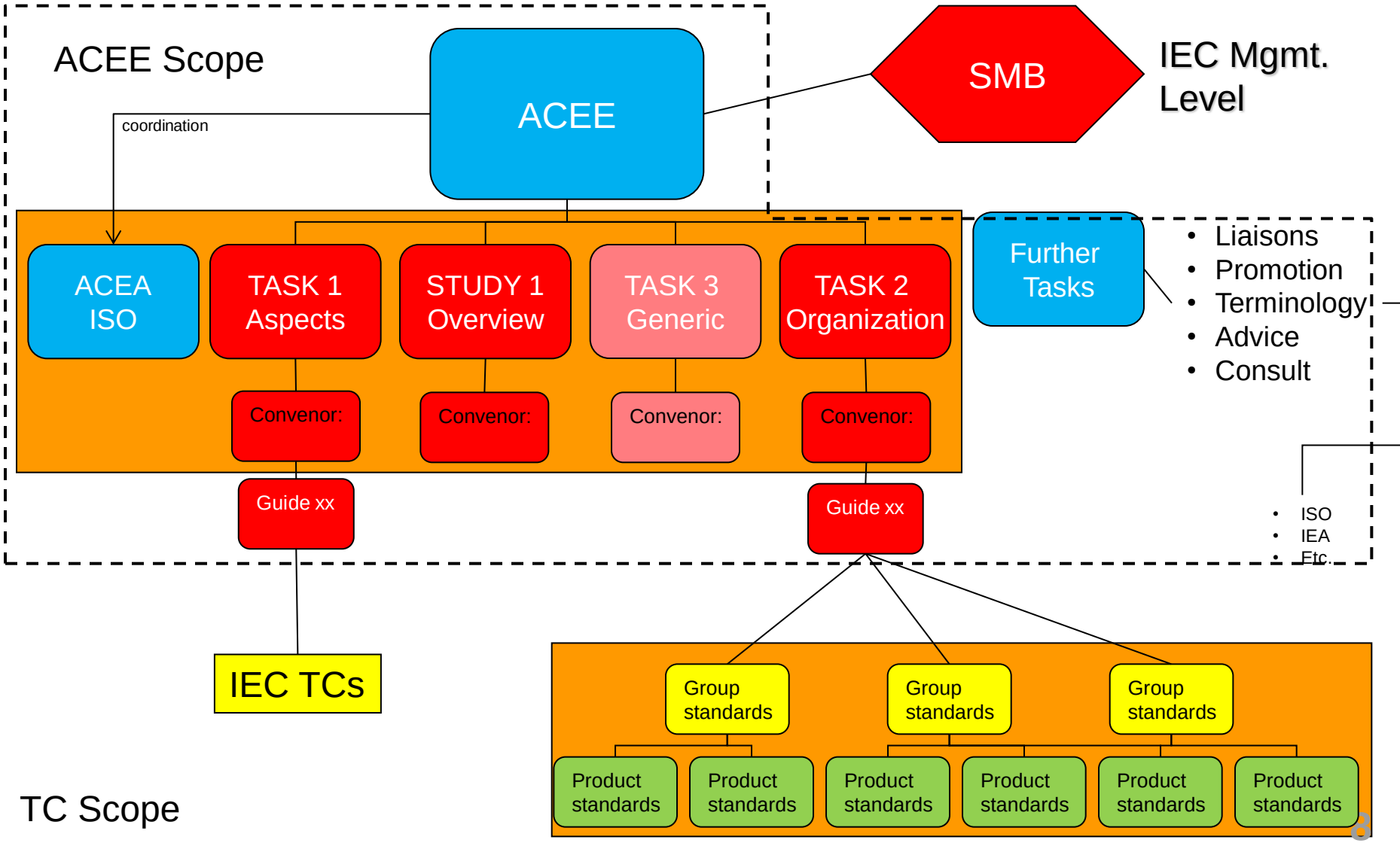
Standard IEC/TC 2 "		Project	Energy Efficiency Aspect: Calculating KPI	Labeling of EE	Benchmarking Energy Performance	Managing Energy Efficiency	Organization: Basic Publication	Group Publication	Product Publication
IEC 60034-		Ed. 2	x	x	x				x
IEC 60034-2-2:2010-03	Rotating electrical machines - Part 2-2: Specific methods for determining separate losses of large machines from tests - Supplement to IEC 60034-2-1	none		x		x		x	
(IEC/TR 60034-2-3)	Rotating electrical machines -	Ed. 1							

SG1

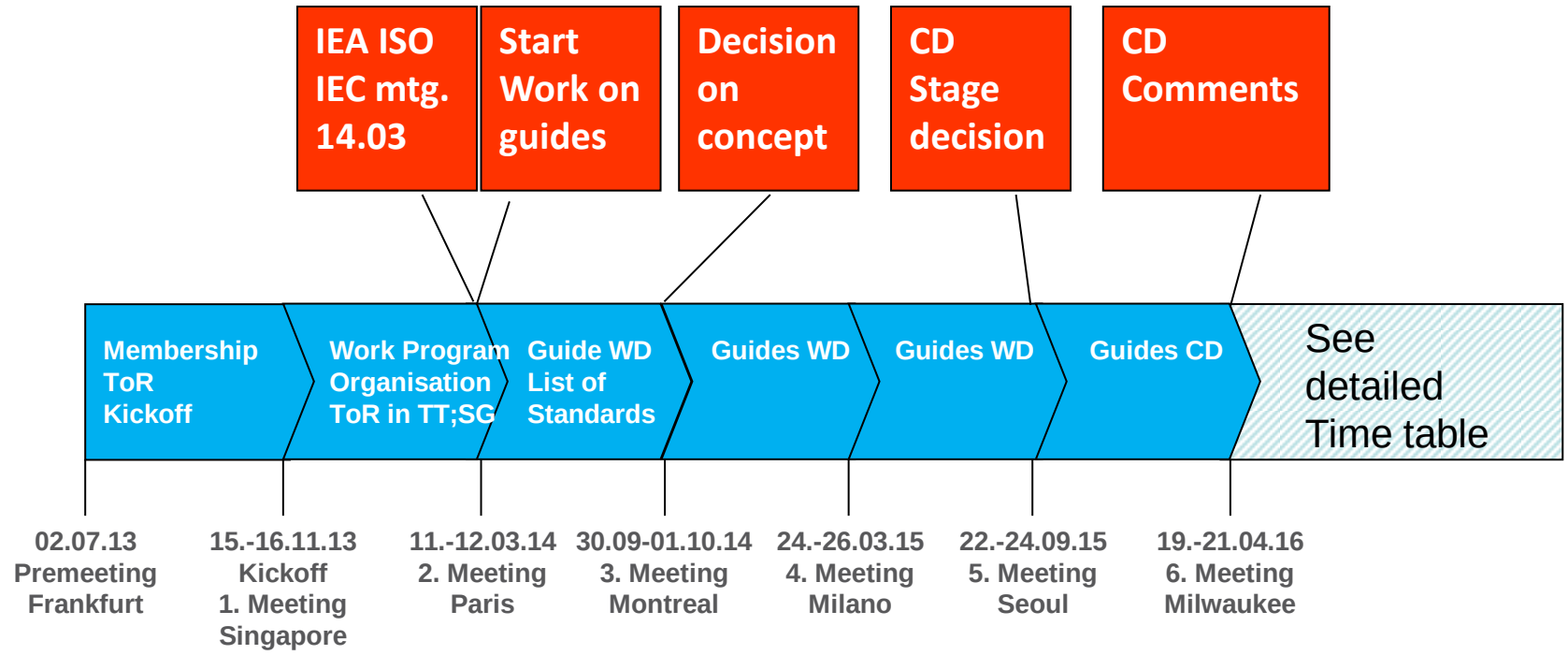
Generic Approaches

TT3

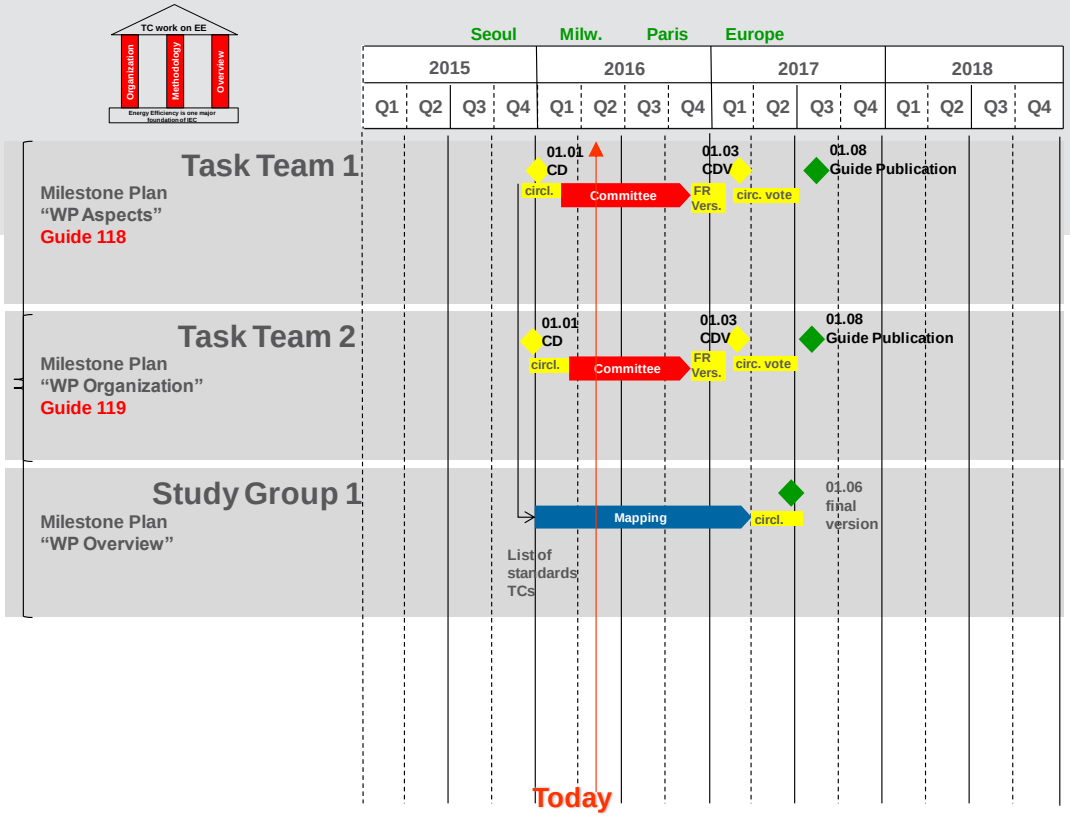
Current Status
Setup of ACEE



Current Status
History - Meetings



ACEE Time Table



Further steps - Guides

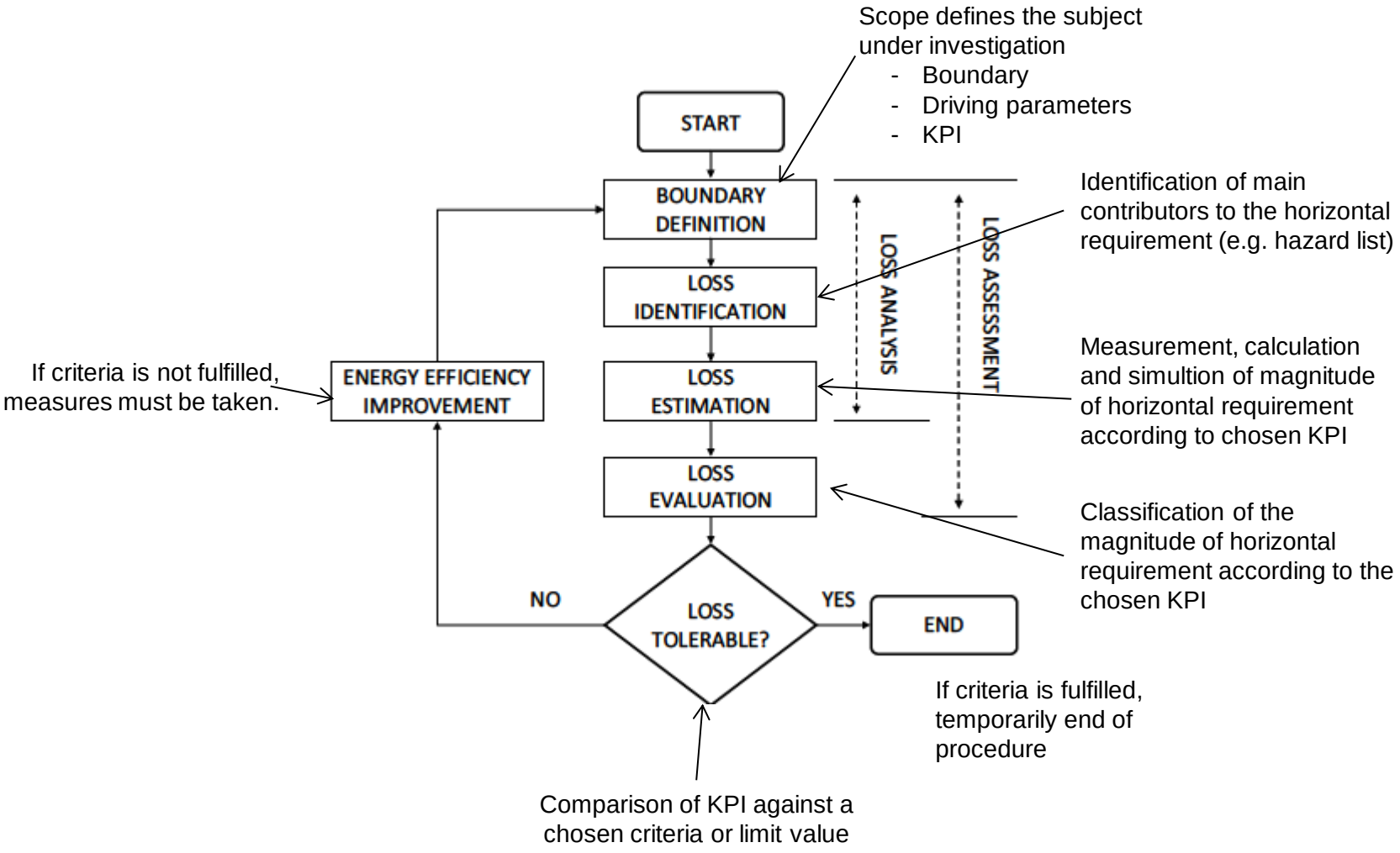
- Include comment resolution – editorial cleanup – 2 month – end June
- French translation – 2 month – end August
- Circulation as CDV – 3 month – end November
- Discussion in Paris
- Finish!

Next Steps

- **Circulation of CDVs**
  - **Guide 118** *Energy Efficiency Aspects inclusion in electrotechnical standards*
  - **Guide 119** *Preparation of the Energy Efficiency (EE) Publications and the use of Basic EE publications and Group EE publications*
- **Next meeting** *06.-08. December 2016 in Paris*
- **Publication of Guides expected end of 2017**

Generic Engineering Process

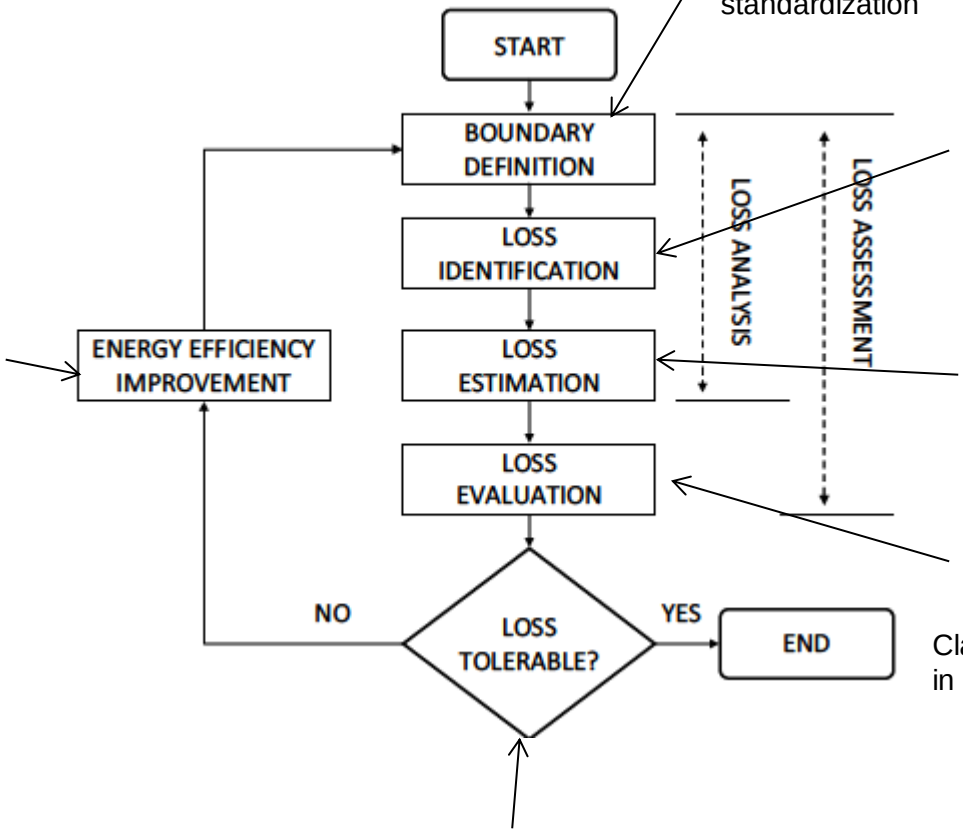
Standards are tools to support implementation of EE



Generic Engineering Process

Standards are tools to support implementation of EE

Scope definition is integral part of regulation and standardization **TR/S**



tr/s

Checklist are seldom in TR/S

S

Technical measures are not described in regulation. (Exeption S that are mandatory – VDE in AT) Basic measures can be found in basic and group publications

Measurement, calculation and simultion on technical level are described in standards **tr/S**

Classification are described in standards **tr/S**

S: Standards
TR: Technical regulation

s: standards less relevant
tr: technical regulation less relevant

Limit values can be found in regulation. Only exceptions like EMC in standards **TR/s**

Energy Efficiency Aspects

ISO 50001 Process

Energy efficiency aspect categories	Energy efficiency aspect
Define energy efficiency	Define terminology
	Define system boundaries (including the scope for energy efficiency)
	Define EE KPIs (energy efficiency key performance indicators)
	Define energy baseline
	Define driving parameters (adjustment factors, static factors)
	Define reference applications
	Define reference load profiles
	Define reference control strategies
Measure energy efficiency	Define test methods
	Define measurements methods
	Define measurements plans
	Define calculation methods
	Define classes
Assess energy efficiency	Energy audits
	Benchmarking methods
	Energy efficiency investment evaluation
Improve energy efficiency	Energy management system
	Design criteria guidelines
	Application guidelines
	Best practices
	Losses reduction
	(Standby losses)
Enable energy efficiency	Interoperability
	Communication
	Standardised data format
	Qualification of energy efficiency services
	Measurement infrastructure

Examples ANNEX C

Annex C
(informative)

Inclusion of energy efficiency aspects in IEC publications

Annex C complements 5.3 by giving some examples of energy efficiency aspects inclusion in publications. For this reason, Table 1 in 5.3 has been reproduced hereunder; a third column has been added, listing examples of publications that address one or more energy efficiency aspects presented in 5.3.

Table C.1 – Energy efficiency aspects and examples of their inclusion in publications

Energy efficiency aspect categories	Energy efficiency aspect	Examples of inclusion in publications
Define energy efficiency	Define terminology	• ISO/IEC 13273-1 – Energy efficiency and renewable energy sources – Common international terminology – Part 1: Energy Efficiency
	Define system boundaries	• IEC 61800-9-1 Ed.1: Adjustable speed electrical power drive systems - Part 9-1: Energy efficiency of power drive systems, motor starters, power electronics and their driven applications - General requirements for setting energy efficiency standards for power driven equipment using the Extended Product Approach (EPA) and semi analytic model (SAM) • IEC TR 62837 – Energy efficiency through automation systems
	Define EE KPIs (energy efficiency key performance indicators)	• IEC 60364-8-1 : Low-voltage electrical installations – Part 8-1: Energy efficiency • IEC 60034-30-1 – Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE-code) • IEC 60034-30-2 – Rotating electrical machines – Part 30-2: Efficiency classes of variable speed AC motors (IE-code) • IEC/TS 60076-20 Ed. 1.0: Power transformers - Part 20: Energy efficiency • ISO/IEC 30134 (series) Information Technology – Data Centres – Key Performance Indicators • IEC 61800-9-2 Ed.1: Adjustable speed electrical power drive systems - Part 9-2: Ecodesign for power drive systems, motor starters, power electronics & their driven applications - Energy efficiency indicators for power drive systems and motor starters • IEC TR 62837 – Energy efficiency through automation systems • ISO 22400-2, Automation systems and integration – Key performance indicators for manufacturing operations management – Part 2: Definitions and descriptions
	Define energy baseline	• ISO 50006:2016 – Energy management systems – Measuring energy performance using energy baselines (EnB) and energy performance indicators (EnPI) – General principles and guidance

Examples ANNEX C

Energy efficiency aspect categories	Energy efficiency aspect	Examples of inclusion in publications
	Define driving parameters (adjustment factors, static factors)	• (to be completed)
	Define reference applications	• IEC 60456 – Clothes washing machines for household use – Methods for measuring the performance
	Define reference load profiles	• (to be completed)
	Define reference control strategies	• EN 15232 – Energy performance of buildings – Impact of Building Automation, Controls and Building Management" • IEC TR 62837 – Energy efficiency through automation system
Measure energy efficiency	Define test methods	• IEC 60034-2-1 – Rotating electrical machines – Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)
	Define measurements methods	• IEC 62442-1 Energy Efficiency of electrical lighting equipment-Ballasts for fluorescent lamps Part 1: Method of measurement to determine energy consumption of ballast-lamp circuits • IEC 62301 – Household electrical appliances – Measurement of standby power • IEC 62018 – Power consumption of information technology equipment – Measurement methods • IEC 60034-2-1: Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)
	Define measurements plans	• IEC 62888 – Railway applications – Energy measurement on board trains
	Define calculation methods	• EN 15193: Energy performance of buildings – Energy requirements for lighting
	Define classes	• IEC 60034-30-1 – Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE-code) • IEC 60034-30-2 – Rotating electrical machines – Part 30-2: Efficiency classes of variable speed AC motors (IE-code) • EN 50598-2 – Ecodesign for power drive systems, motor starters, power electronics and their driven applications – Part 2: Energy efficiency indicators for power drive systems and motor starters • EN 50588-1 – Medium power transformers 50 Hz, with highest voltage for equipment not exceeding 36 kV – Part 1: General requirements
Assess energy efficiency	Energy audits	• ISO 50002:2014 – Energy audits – Requirements with guidance for use • ISO 11011:2013 – Compressed air – Energy efficiency – Assessment • EN 16247-5:2015 – Energy audits – Part 5: Competence of energy auditors
	Benchmarking methods	• EN 16231:2012 – Energy efficiency benchmarking methodology

Examples ANNEX C

Energy efficiency aspect categories	Energy efficiency aspect	Examples of inclusion in publications
	Energy efficiency evaluation	• ISO 20140-1:2013 – Automation systems and integration – Evaluating energy efficiency and other factors of manufacturing systems that influence the environment – Part 1: Overview and general principles
	Energy efficiency investment evaluation	• ISO/AWI 20364 – Energy Savings Evaluation – Economics and financial evaluation of energy saving projects
Improve energy efficiency	Energy management system	• ISO 50001:2011 – Energy management systems – Requirements with guidance for use • ISO 50004:2014 – Energy management systems – Guidance for the implementation, maintenance and improvement of an energy management system
	Design criteria guidelines	• IEC TS 60034-31 – Rotating electrical machines – Part 31: Selection of energy-efficient motors including variable speed applications – Application guide
	Application guidelines	• ISO 50004:2014 – Energy management systems – Guidance for the implementation, maintenance and improvement of an energy management system • IEC 60364-8-1, Low-voltage electrical installations – Part 8-1: Energy efficiency • IEC TR 62837 – Energy efficiency through automation system
	Best practices	• IS 399 Energy Efficient Design Management • CLC/prTR 50600-99-1, Information technology – Data centre facilities and infrastructures – Part 99-1: Recommended practices for energy management
	Losses reduction	• CLC/prTR 50600-99-1, Information technology – Data centre facilities and infrastructures – Part 99-1: Recommended practices for energy management
	(Standby losses)	• (to be completed)
Enable energy efficiency	Interoperability	• (to be completed)
	Communication	• ISO/IEC 15067-3 – Information technology – Home electronic system (HES) application model – Part 3: Model of a demand-response energy management system for HES
	Standardised data format	• (to be completed)
	Qualification of energy efficiency services	• EN 15900:2010 – Energy efficiency services – Definitions and requirements
	Measurement infrastructure	• IEC 62974-1 – Monitoring and measuring systems used for data collection, gathering and analysis

NOTE 1 A single publications could address more than one energy efficiency aspect.

NOTE 2 Not all energy efficiency aspects eventually addressed by cited publications have been highlighted.

Further examples e.g. IEC 62301 "Household electrical appliances – Measurement of standby power"

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Thank you

Ralph Sporer
Chairman ACEE
Siemens AG