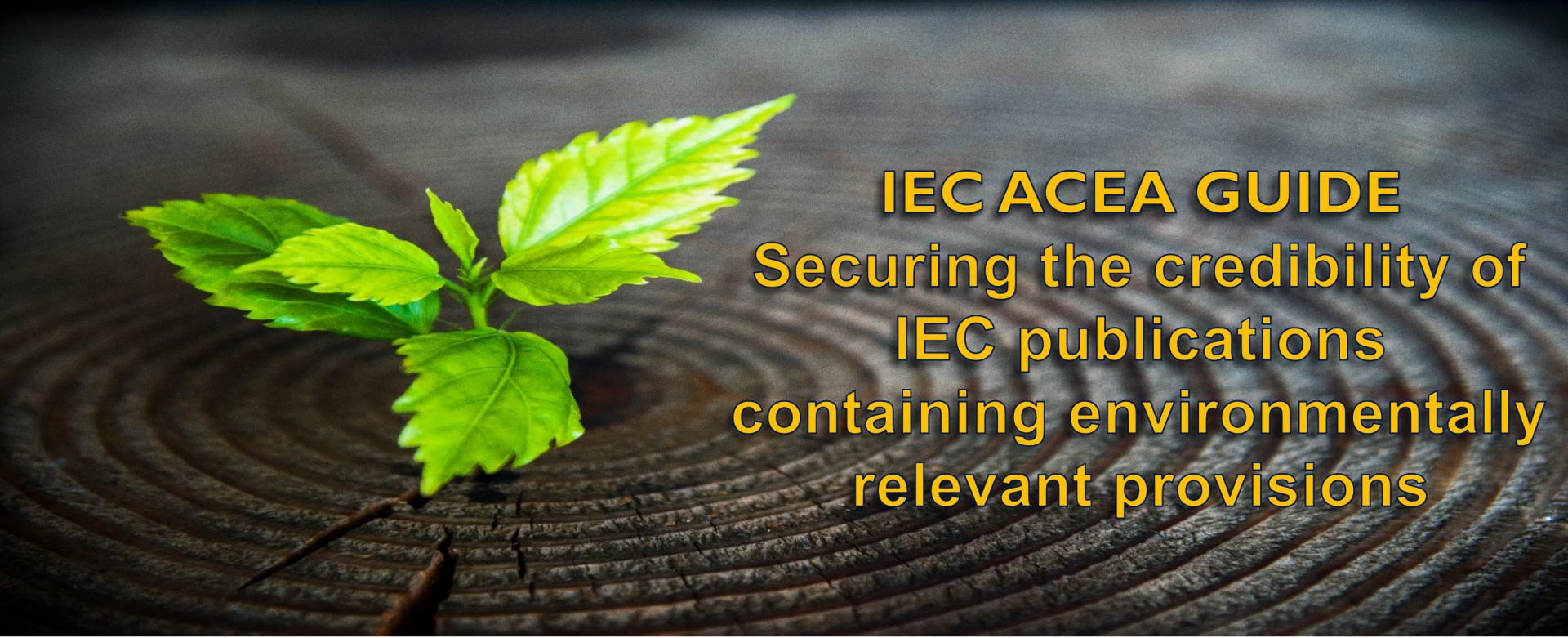

IEC ACEA GUIDE
Securing the credibility of IEC publications containing environmentally relevant provisions

IEC ACEA

IEC ACADEMY Webinar
24 September, 2020

ACEA Advisory Committee on Environmental Aspects

IEC International Electrotechnical Commission

The Speakers

Solange Blaszkowski
ACEA Chair

Jens Giegerich
ACEA TF Credibility lead

Andreas Schneider
ACEA / TC 100

Anna Wendker
TC 59

Paul Richter
TC 59

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- About ACEA
- Background and the motivation to write this Guide
- The Credibility Guide – what it is and its scope
- Environmentally relevant provisions
- The principles of credibility
- Drafting credible environmentally relevant provisions
- Practical examples

About ACEA

- **A**dvisory **C**ommittee on **E**nvironmental **A**spects
- ACEA advises the SMB (Strategic Management Board) on environmental matters
- ACEA helps to ensure that IEC standards developers take environmental protection concerns into account in their standards
- ACEA provides a forum for the discussion of aspects and issues related to environment amongst IEC committees (TCs, SCs and SyCs)
- ACEA writes Guides (not standards, which is the role of IEC committees)
- ACEA confers horizontal functions for environmental aspects to committees in accordance with IEC Guide 108

NEW!
Guide under preparation

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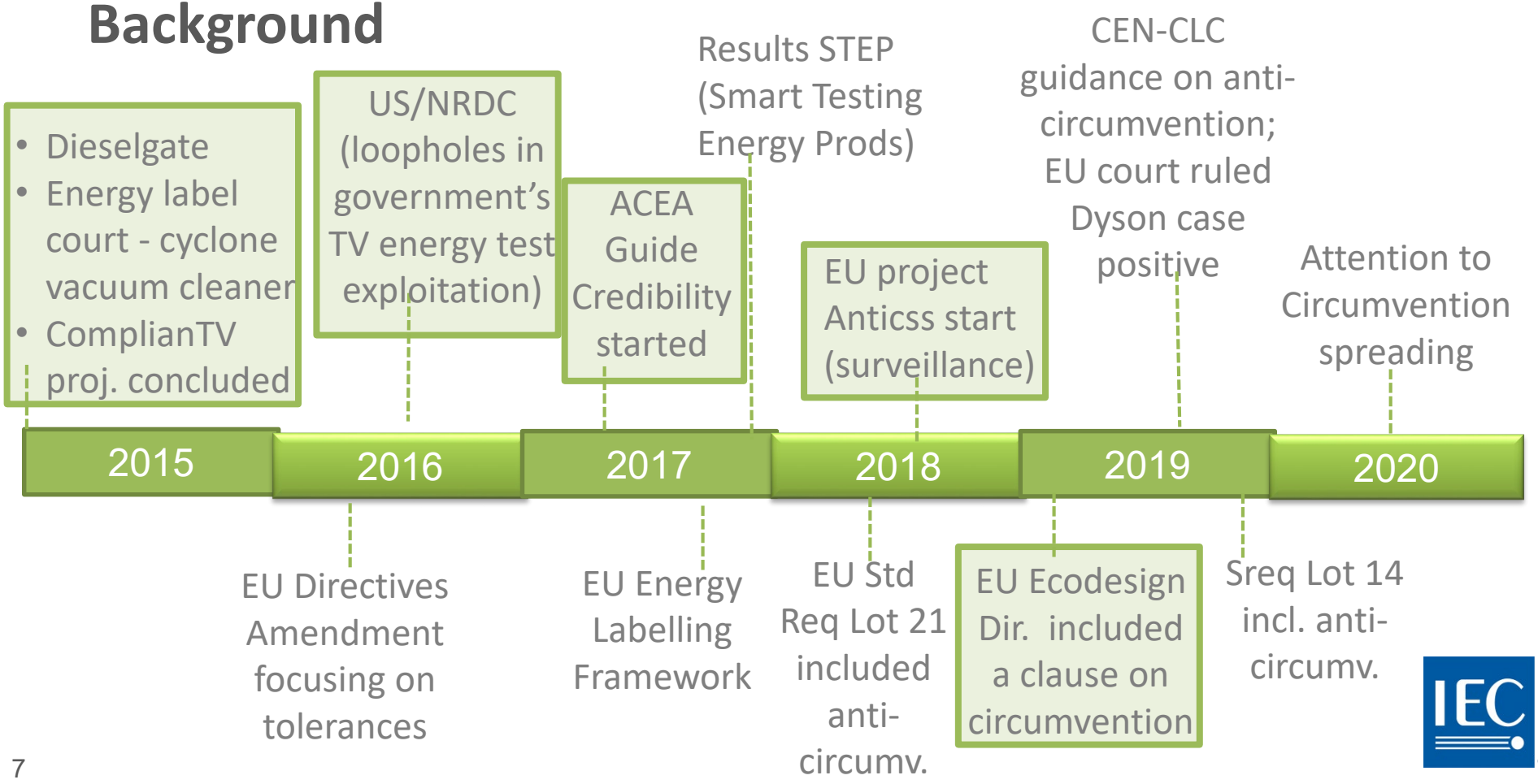
Background


• Dieselgate
• Energy label court - cyclone vacuum cleaner
• ComplianTV proj. concluded
US/NRDC (loopholes in government's TV energy test exploitation)
ACEA Guide Credibility started
Results STEP (Smart Testing Energy Prods)
EU project Anticss start (surveillance)
CEN-CLC guidance on anti-circumvention; EU court ruled Dyson case positive
Attention to Circumvention spreading
2015
2016
2017
2018
2019
2020
EU Directives Amendment focusing on tolerances
EU Energy Labelling Framework
EU Std Req Lot 21 included anti-circumv.
EU Ecodesign Dir. included a clause on circumvention
Sreq Lot 14 incl. anti-circumv.

The Anticss project

ANTICSS – Anti-Circumvention of Standards for better Market Surveillance

- EU Horizon 2020 project
- 19 Members:

Research Organizations

National Energy Authorities

Market Surveillance Authorities

NGOs

Independent Test Laboratories

Reported circumvention cases analysed by Anticss

Product group		Reported cases of circumvention	Reported jeopardy effects
ENER 5	Televisions	✓	✓
ENER 14	Domestic dishwashers	✓	✓
ENER 22	Domestic ovens	✓	✓
ENER 16	Household tumble driers	✓	--
ENER 20	Solid fuel local space heaters (SFLSP)	✓	--
ENER 1	Space heaters and combination heaters	--	✓
ENER 10	Room air conditioning	--	✓
ENER 11	Electric motors	--	✓
ENER 13	Domestic refrigerators and freezers	--	✓
ENER 14	Domestic washing machines	--	✓
ENER 17	Vacuum cleaners	--	✓
ENTR 6	Air-conditioning and ventilation systems	--	✓

Anticss (cont.)

some non-conformities identified. Examples:

10 product groups tested within the Anticss project

- Space heaters
- Televisions
- Room air conditioning
- Domestic refrigerators
- Domestic freezers, refrigerators-freezers
- Domestic dishwashers
- Domestic washing machines
- Household tumble driers
- Solid fuel local space heaters
- Domestic ovens

DISHWASHERS (case DISH3) – results of ANTICSS testing	Declared	Standard test results	ANTICSS test results	Deviation Std. test vs. declared
Drying Performance Index	1,08*	0,85	0,81	-22,0%
Specific Water Consumption (l per ps)	0,64	0,68	0,91	+6,3%
Cleaning Performance Index	>1,12	1,04	1,03	-8,0%
Standard place settings	16	16	12	--

➔ Circumvention; *) Minimum requirement by law

REFRIGERATING (case COLD3) – results of ANTICSS testing	Declared	Standard test results	ANTICSS test results	Deviation Declared vs. Anticss
Energy Consumption (kWh/year)	149	169	186	+24,8%
Energy Efficiency Index	18,0	20,3	22,4	+24,4%
Energy Efficiency Class	A+++	A+++	A++	1 class

➔ Borderline to circumvention (loophole in standard)

Testing standards – opportunities and challenges

Testing standards influence consumer decisions	→	Key to addressing representativeness
Testing standards influence industry competitiveness	→	Imperative to addressing also circumvention
Testing standards can affect energy savings and other environmental performance aspects	→	Important to optimizing the environmental impact of the product including material efficiency

The motivation to write this Guide

- Maintain/regain the trust of IEC environmental-relevant test standards
- Technology changes and changes in user habits requires regular updates of test methods to ensure representativeness
- Products integrate increasingly more functions requiring clearer boundary settings in respect to product-system
- More attention to the risk for circumvention in our standards is needed

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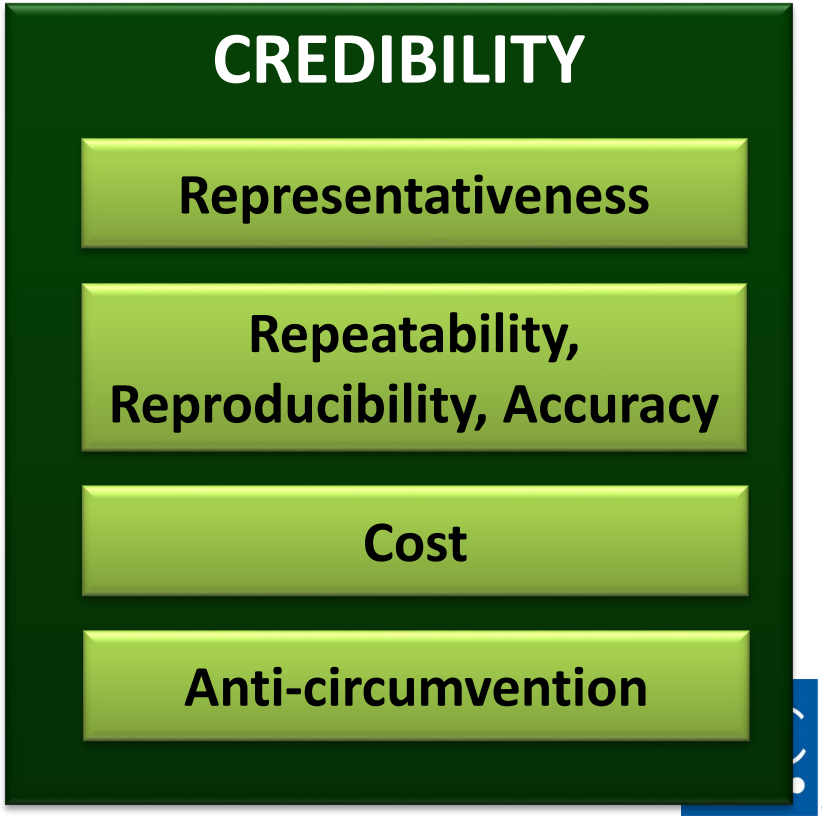
The «Credibility Guide»

- Title: «Guide to securing the credibility of IEC publications containing environmentally relevant provisions»
- *Credibility Guide* for easy reference



The Credibility Guide – Scope

Applicable to:

- IEC publications that contain environmentally relevant test provisions
- intended for the writers of IEC publications (IS, TS, …)
- normatively referenced document in IEC Supplement (compulsory compliance by IEC committees)

Excluded:

- environmentally relevant provisions not assessed by tests (e.g. those assessed by inspection)

Guide: document published by ISO or IEC giving rules, orientation, advice or recommendations relating to international standardization [ISO/IEC Dir. Part 2:2018, 3.1.7]

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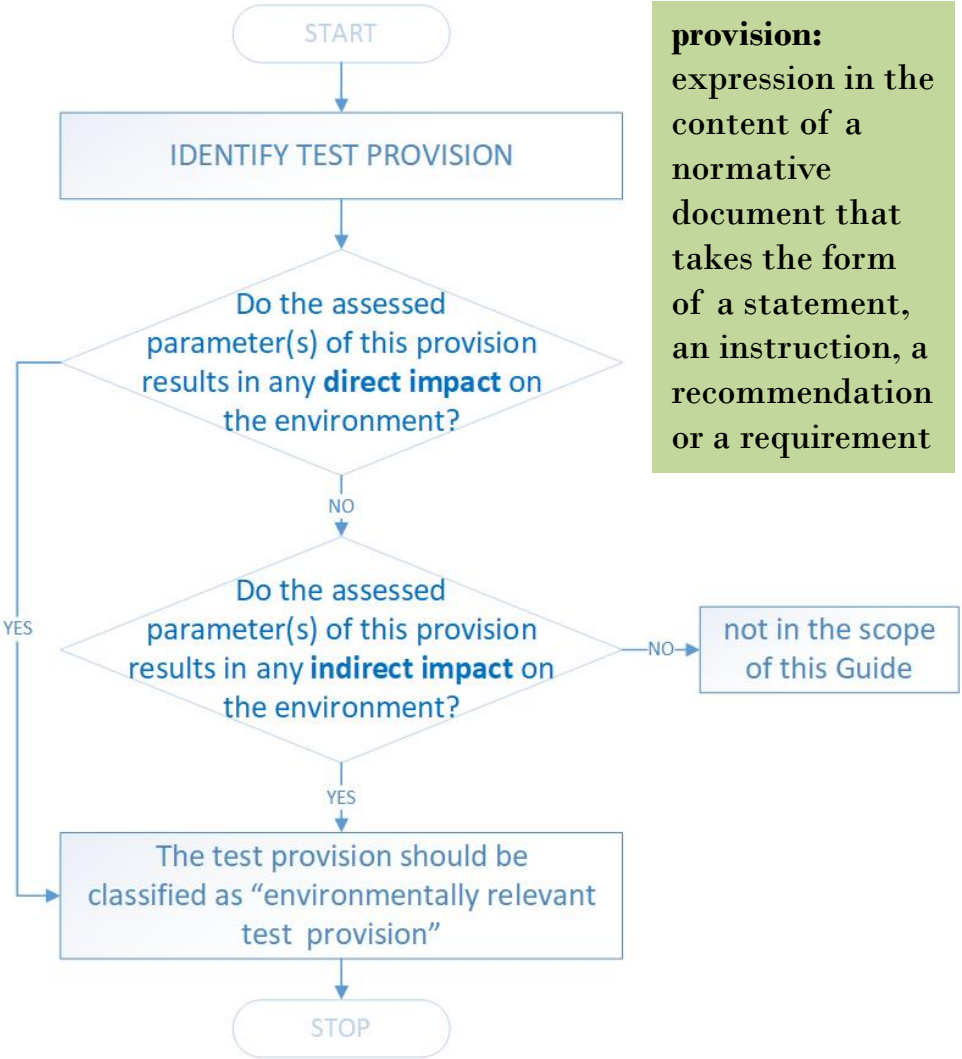
Environmentally relevant provisions

- Are provisions that address environmental issues (impacts)
- Environmental issues can occur due to:
  - the use of resources (e.g. energy, water and materials)
  - emissions to air, water and soil, having an adverse impact on the environment
- They can pose direct or indirect impacts on the environment:
  - Direct impact by e.g. emissions such as greenhouse gases to land, water or air during manufacture, use, or waste phases (e.g. CO_2 emissions by a fossil fuel car)
  - indirect impact on the environment due to the consumption of energy or other resources (e.g. electric car)



provision: expression in the content of a normative document that takes the form of a statement, an instruction, a recommendation or a requirement

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The principles of credibility

- Representativeness
- Repeatability
- Reproducibility
- Accuracy of the measurement
- Cost
- Anti-circumvention
- Periodic review and timely maintenance

Principles – Representativeness

- Representativeness focuses on a qualitative assessment of the degree to which the provision reflects the true population of interest
- Includes considerations on geographical location, usage period and technology coverage
- Includes changes in product technologies, measurement equipment, measurement techniques and end-user expectations

Principles – Repeatability, Reproducibility, Accuracy and Cost

- Repeatability, reproducibility, and accuracy are the classic measurement principles
- Cost refers to cost of equipment and routine calibration, materials, time and manpower needed for determining conformity with the IEC publication

Defining circumvention

circumvention

activity that results in an advantageous and invalid outcome to an assessment

Note 1 to entry: The lack of validity in the assessment outcome could be due to an intentional or an unintentional act, either of which circumvent the provisions of a standard, a policy or legislation.

Note 2 to entry: The assessment is presumed to be made to a goods, service or system. Consequently, if the assessment is deemed to be advantageous, it benefits the provider of the goods, service or system.

Principles – Anti-circumvention

Anti-circumvention:

- Targets the obstruction of circumvention by openly addressing and minimizing risks of misusing test procedures
- Foreseeing and avoiding the possibility for circumvention should be integrated when designing a test method

Principles – Periodic review and timely maintenace

Regular review and updates of test cases and test methods to address:

- technology advancements
- functional integrations
- changes in user expectations and practical use

Review cycles (stability dates) should be chosen depending on:

- speed of technology change
- usage of new technologies by the users
- change in user habits and use conditions
- change in regulatory and market requirements

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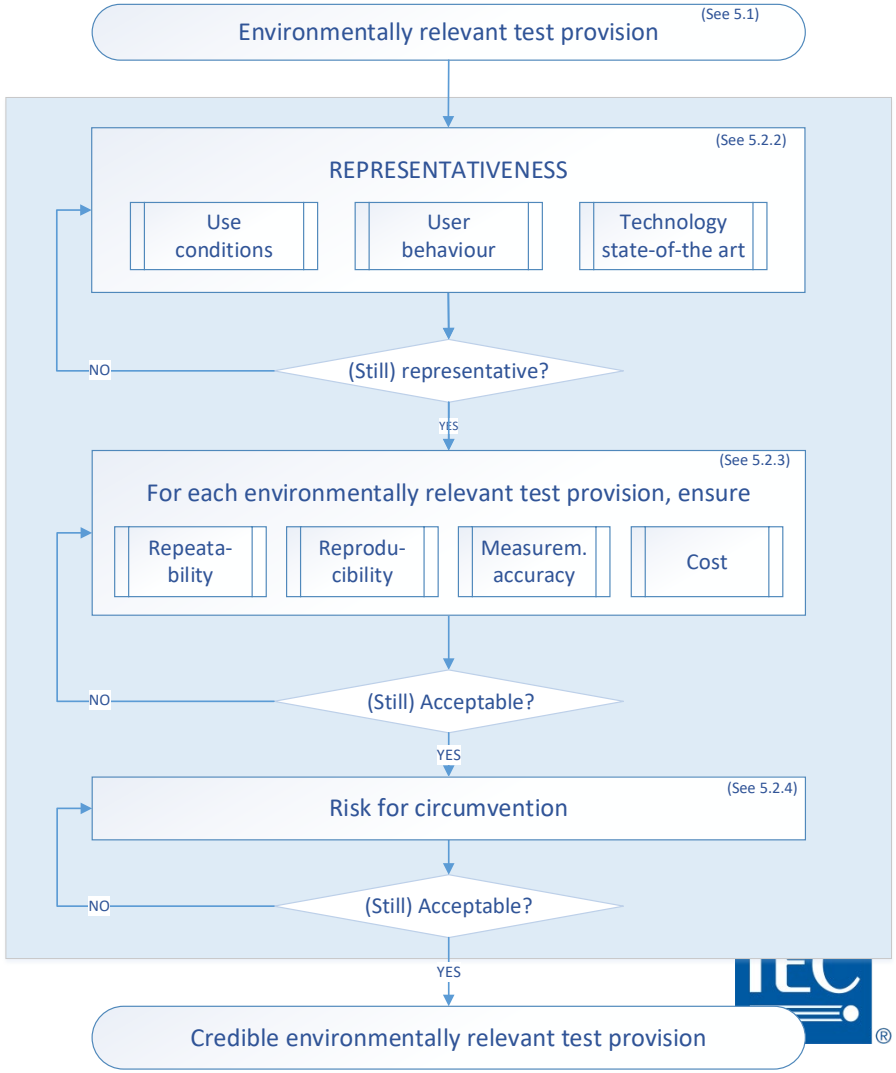
Drafting credible environmentally relevant provisions

First step is to assess representativeness

- Associated use conditions
- Foreseeable user behaviour
- Status of technology

Next step is to look into traditional measurement principles and economic and operational associated costs

Last is to assess the risk for circumvention and its mitigation



Additional guidance on real-life representativeness

- Identification of product functions and interaction with inputs and outputs
- Usage profile to reflect real usage by the end-user
- User behaviour in relation to the assessed use case scenario
- Operating conditions used to reflect expected use conditions
- Ambient test conditions reflect the typical usage conditions
- Relevant regulatory requirements establishing definitions, thresholds and anti-circumvention provisions

Minimising the risk of circumvention

- Providing clear provisions and test objectives
- Checking and preventing that changes in settings of the test provision would result in overly (dis-)advantageous changes in the test result
- Assessing the possibility for hardware or software to be misused (defeat mechanisms)
- Repeat the above periodically to limit the risk of circumvention

Outlook and next steps developing this Guide

PREPARATORY STAGE

- WD circulated to all IEC committees (AC/28/2020)
- We encourage committees to provide comments on the Guide (**by 16 Oct 2020)**

COMMITTEE DRAFT AND ENQUIRY STAGES

- CD (Committee Draft stage) will be circulated to the SMB for vote and comments, to approve its advancement to the enquiry stage and for it to be normatively referenced in the IEC Supplements (compulsory to IEC committees) (Q1 2021)
- CDV (Enquiry stage) (via SMB Secretariat) of English and French translation of the Guide circulated to NCs for a 12-week voting period
- Final step is the publication of the Guide

Contents

Practical cases:

Case 1 from TC 100 / TVs
Andreas Schneider

Practical case 1: TC 100 'Audio, video and multimedia systems and equipment'

IEC 62087 series - Determination of power consumption

- TVs have significantly improved in video signal processing, display of luminance levels and tone gradations
- TV on-mode power consumption test signals remained unchanged since 2008 (IEC 62087 ED2), 2 maintenance cycles followed with different focus
- NGO tests and research projects conducted 2015 – 2017 showed that on-mode power consumption of some TVs significantly differ between displaying real-life content and when tested with the IEC test signal loop

IEC 62087 series

Audio, video, and related equipment - Determination of power consumption

IEC 62087-1:2015 ED1	**Part 1: General**
IEC 62087-2:2015 ED1	**Part 2: Signals and media**
IEC 62087-3:2015 ED1	**Part 3: Television sets**
IEC 62087-4:2015 ED1	Part 4: Video recording equipment
IEC 62087-5:2015 ED1	Part 5: Set-top-boxes (STB)
IEC 62087-6:2015 ED1	Part 6: Audio equipment
IEC 62087-7:2018 ED1	Part 7: Computer monitors

IEC/TC100/TA19/MT62087

- 2018-04: PT100-15 to investigate power consumption of high dynamic range TVs (IEC/TR 63274)
- 2019-05: MT62087 tasked to revise TV test procedure affecting part 1 – 3 (ED2)

Practical case 1: TC 100 'Audio, video and multimedia systems and equipment'

TC100/TA19/MT62087 – Tasks to improve TV testing

- HDR (High Dynamic Range) video affecting on-mode power consumption of TVs
- Ultrahigh definition (UHD) / 4k resolution TVs became mainstream
- Motion Dynamic Dimming (MDD) function of some TVs was found to respond to frequent scene cuts of the IEC standard dynamic range (SDR) test signal more favourably compared to real-world TV content
- Automatic brightness control (ABC) settings in the test method are not representative of typical home ambient lighting anymore and cannot quantify energy savings provided by a TV's ABC feature
- Smart TVs require network connection

HDR video test signals in main HDR formats with new content & scene length mix, amended test procedure.

HD and UHD test signals in HDR.

MDD to be switched off during test.

Alignment of SDR & HDR video test loop deferred.

Dynamic ABC test signals introduced.

LED ambient lighting for test.

Continue offline testing, pending investigations on LAN & WLAN traffic effects on power consumption

Practical case 1: TC 100 ‘Audio, video and multimedia systems and equipment’

Challenges & conclusions

Multiple / competing technologies & formats gain market relevance

- ⇨ Need to continuously research influence of emerging and new product technologies (device & system level, codecs) on test provision
- ⇨ Consider function over device boundaries to determine aspects to be tested
- ⇨ More complex test procedures

Ensure representativeness of test cases while maintaining classic measurement system requirements

- ⇨ Timely develop / amend test methods to new technologies and changes in use
- ⇨ Take reasonable development steps
- ⇨ Continuous review with changing focus – shortened stability periods
- ⇨ Potential loss of backwards compatibility of test results
- ⇨ Secure expertise & resources

Practical cases:
Case 2 from TC 59 / Dishwasher
Anna Wendker / Paul Richter

General procedure for cleaning performance tests

1. Test preparation
Pre-conditioning of test units, preparation of dish load items and soiling agents

2. Soil application
Different soiling agents with different functions (i.e. spinach, minced meat -> filtration; milk, porridge -> burnt on soil; …)

Electrolux Global DishCare Lab
Sweden, Stockholm

3. Drying of soil agents:
Oven drying method in EU @80°C for 2h

4. Loading of dishwasher racks
According to specified loading plans to ensure repeatability/ reproducibility

5. Test programme/ run

6. Evaluation of cleaning result:
Scoring methodology according to remaining soil area or number of redeposited particles

7. Test reporting

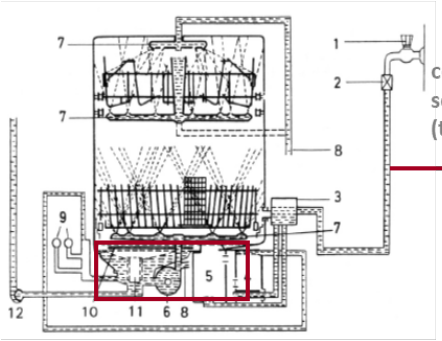
1) Introduction of the CCD (combined cleaning & drying) procedure

- IEC 60436:2004 specified single cleaning and drying test to minimize test burden
- Cleaning performance, energy consumption and programme time measured with a soiled load
- Drying performance with a clean test load

→ IEC 60436:2015 specifies combined Cleaning and Drying Testing (CCD)

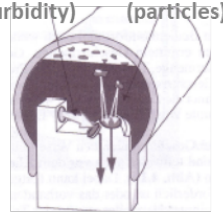
Practical cases – Case 2 from TC 59 Dishwasher

Machine running in the declared test programme → Sensor measures turbidity and amount of particles → Adaptation of the programme *(fictional)* → Performance criteria



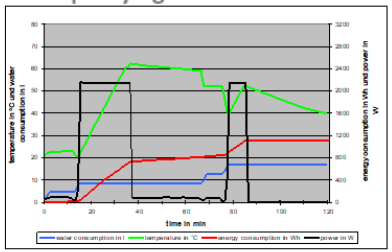
conduction sensor (turbidity)

reflection sensor (particles)



Soiled water

temp. cleaning: **61° C;**
temp. drying: **52° C**



↑ **cleaning results**

~ energy use

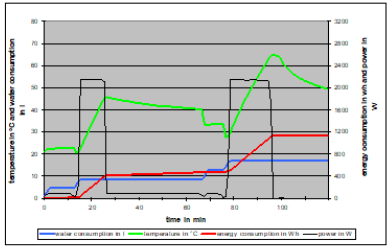
↓ drying results

What is the correct assessment of such a machine?

↓ cleaning results

~ energy use

↑ **drying results**



temp. cleaning: **46° C;**
temp. drying: **65° C**

Clean water

2) Introduction of the new consumer-relevant test load

- Definition of load is fairly old, reflects the load of a family in the 70's
- Common household items are missing
- Variety of dishware types, shapes, and materials is small

People‘s loads are and will remain more complex

Source: Bonn University, Paul Richter

New test load with bigger variation of shapes and materials

About the speakers

Ms. Solange Blaszkowski holds a B.Sc. in Chemistry from UFPR, Brazil, a M.Sc. in Physical Chemistry from the UFRJ, Brazil. In 1997 she received her Ph.D. in Catalysis from the TUe, in The Netherlands. After working for few different companies, in 2000, she joined Philips in the Netherlands, holding positions in public-private partnerships, sustainability and product safety & compliance, respectively, at Philips Research, Consumer Lifestyle, and Lighting. In 2015 she joined Philips Intellectual Property & Standards to take up her current position as Director Standardization Environment.
In the field of standardization, Ms. Solange Blaszkowski holds the following chair and membership:

- At NATIONAL level (Dutch NC), Ms. Blaszkowski is chair of the mirror committee for IEC/TC 111 and CLC/TC 111X and for CEN-CLC JTC10. She is also member of the mirror committees for ISO TC 207 and ISO TC 323.
- At EUROPEAN level, she is member of CLC TC 111X on Environment, CEN-CLC ECO-CG (Ecodesign Coordination Group), CEN-CLC JTC 10 on Materials Efficiency, and she is the convener of CEN-CLC JTC 10 / WG 6 on communication of CRMs and material efficiency. Since recently she became also the leader of the CEN-CLC SABE Circular Economy Topic Group
- At INTERNATIONAL level, Ms. Blaszkowski is the chair of IEC ACEA and she is member of various IEC TC 111 groups and IEC SMB/AHG84 on SDGs. She is also member of ISO TC 207 on Environmental Management and ISO TC 323 on Circular Economy.

Ms. Blaszkowski holds few awards, namely the IEC 1906 Award (2018) and two Philips internal awards (individual award from Philips IP&S in 2016 and a group award from Philips Lighting Quality and Customer Satisfaction, 2015).

Mr. Jens Giegerich holds a B.Sc. and M.Sc, in Chemistry from JMU, Germany. In 2015 he received his Ph.D. in Physical Chemistry from the JMU in Wuerzburg, Germany. He joined the German Machinery Association and worked primarily in safety and performance standardization. In 2016 he joined Vorwerk, holding the position of Manager Technical Regulatory Affairs.
In the field of standardization, Mr. Jens Giegerich holds the following chair and membership:

- At NATIONAL level (German NC), Mr. Jens Giegerich is a member of the mirror committee for IEC/TC 111, CLC/TC 111X, CEN-CLC JTC10 and ISO TC 323. He is also a member of few other non-environmental mirror committees.
- At EUROPEAN level, he is member of CEN-CLC JTC 10 on material efficiency. He is also the convenor of CEN-CLC JTC 10 / WG 2, on durability, and CEN-CLC JTC 10 / WG 5 on recyclability and recycled content. In addition he is convenor of CLC TC 59X / WG 23 on material efficiency under the umbrella of TC 59X on performance of household appliances
- At INTERNATIONAL level, Mr. Jens Giegerich is member of ACEA and leader of the TF Credibility. He is a member of IEC TC 61 WG 49 circular economy and material efficiency and TC 59.

Mr. Jens Giegerich holds the young professional award of DIN (2019).

Mr. Andreas F. W. Schneider holds an university degree in Mechanical Engineering (Dipl.-Ing.), Stuttgart University. He joined Sony Europa GmbH in 1994, having various positions in European environmental affairs and product compliance on project management and management level in the fields of environmentally conscious design & product requirements, product recycling and research. Build up environmental standardization activities. Since 2007 he holds the function of Senior Manager at Sony Europe Technology Standards Office. In the field of standardization, Mr. Schneider holds the following chair and membership positions:

- IIEC/TC100/TA19 (Environmental and energy aspects for multimedia systems and equipment): Technical Secretary
- EC/TC111: Head of German delegation, IEC/TC111/AG1 (Terminology) convenor; ACEA member, representing TC 100
- CLC/TC111X: German delegate & CLC/TC111X/WG09 (WEEE marking) convenor
- DKE/K191 (German mirror committee to IEC TC111, CLC/TC111X, IEC ACEA): Chairman

Mrs Anna Wendker holds a PhD in Home Economics and Nutrition Science from Bonn University, Germany. She joined Miele in 2012 as officer for standardization and regulatory affair topics related to household dishwasher. In the field of standardization, Mrs Anna Wendker holds the following chair and membership:

- At NATIONAL level (German NC), Mrs. Anna Wendker is the chairwoman of UK 513.5 and member of the different UK 513.5 subworking groups.
- At EUROPEAN level, she is the secretary of TC59X WG2 Household dishwashers since 2009.
- At INTERNATIONAL level, Mrs. Anna Wendker is chairwoman of SC 59A since 2012 and working in several working and advisory groups.

Mr. Paul Richter holds a PhD, in Home Economics and Nutrition Science from Bonn University, Germany. He joined AB Electrolux, Sweden as Laboratory Manager and worked also in performance standardization. In 2019 he joined Midea Europe, holding the position as Competence Area Lead Consumer Insight & Innovation at the German R&D Center, Stuttgart.

In the field of standardization, Mr. Paul Richter holds the following chair and membership:

- At NATIONAL level (German NC), Mr. Richter is a member of various working groups covering major and small appliances.
- At EUROPEAN level, he is convener of TC59X WG2 Household dishwashers since 2011.
- At INTERNATIONAL level, Mr. Paul Richter is member of various working and advisory groups under SC 59A.