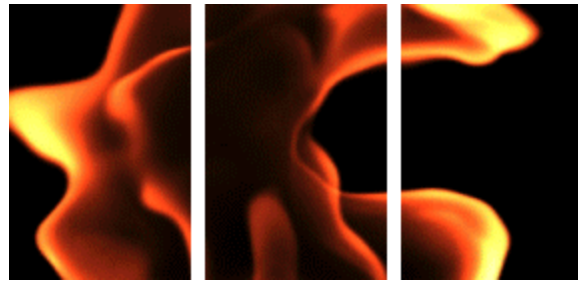


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Solid fuel small combustion installations Road to an European regulation

IEA T32 Dublin; October 18, 2011

Eric Smit

EU regulation for SCI's

- EC Odesign regulation
- Common European pm test method

ECODesign ErP

ECODesign directive for ErP's (2009/125/EC)

Recast of ECODesign directive for EuP's (2005/32/EC)

- Common initiative of DG ENER, DG ENV, DG ENTR
- Framework directive for ECODesign requirements for energy related products (ErP)

Aims at:

- Improvement of energy efficiency and reduction of environmental impact
- Removal of differences in national legislation causing trade barriers in the common EU market
- Security of energy supply

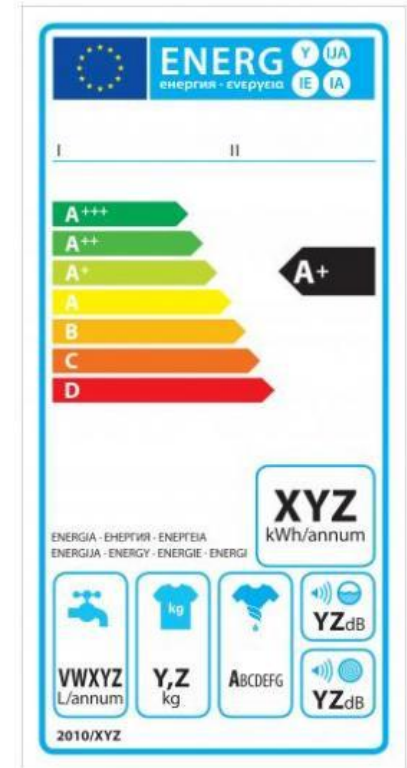
ECOdesign and its effect on ErP's

- Implementing measures will be mandatory in all EU countries by means of a regulation
- Already 15 published regulations for various ErP's e.g. televisions, standby losses, domestic lighting, battery chargers, domestic washing machines
- Planned regulations for several HVAC product groups:
 - Lot 1: gas and oil fired boilers
 - Lot 2: water heaters
 - Lot 10: Air conditioners
 - **Lot 15: Solid fuel small combustion installations**
 - Lot 20: Local room heating products (gas & electric)

Labelling directive

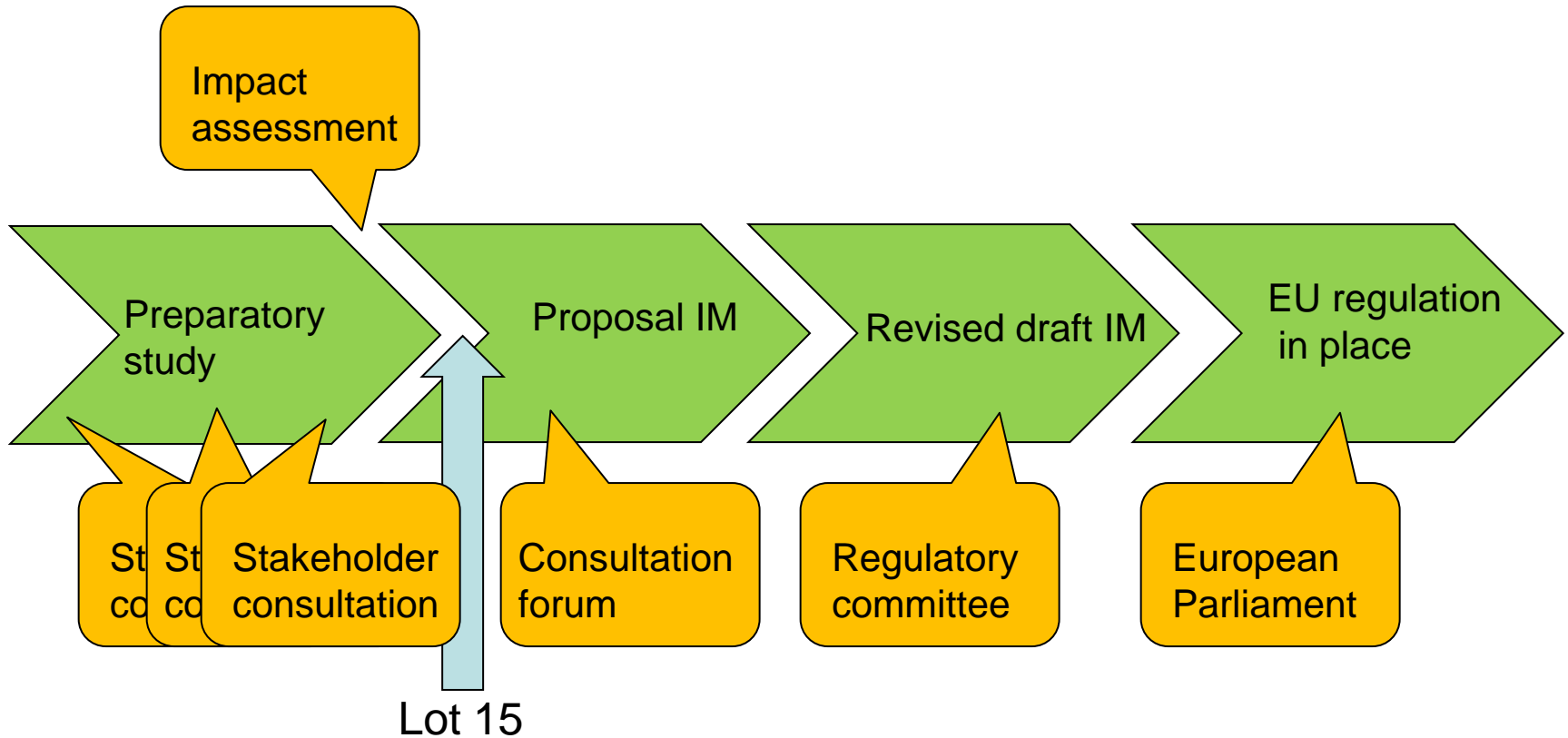
Directive 2010/31/EU

- Implementing measures will be accompanied by a labelling act in the form of a regulation
- Introduction of new efficiency classes A+, A++ and A+++ on top of the existing A grade for most ErP's, to reflect technological progress
- Maximum of 7 classes (A+ to F, A++ to E, A+++ to D).



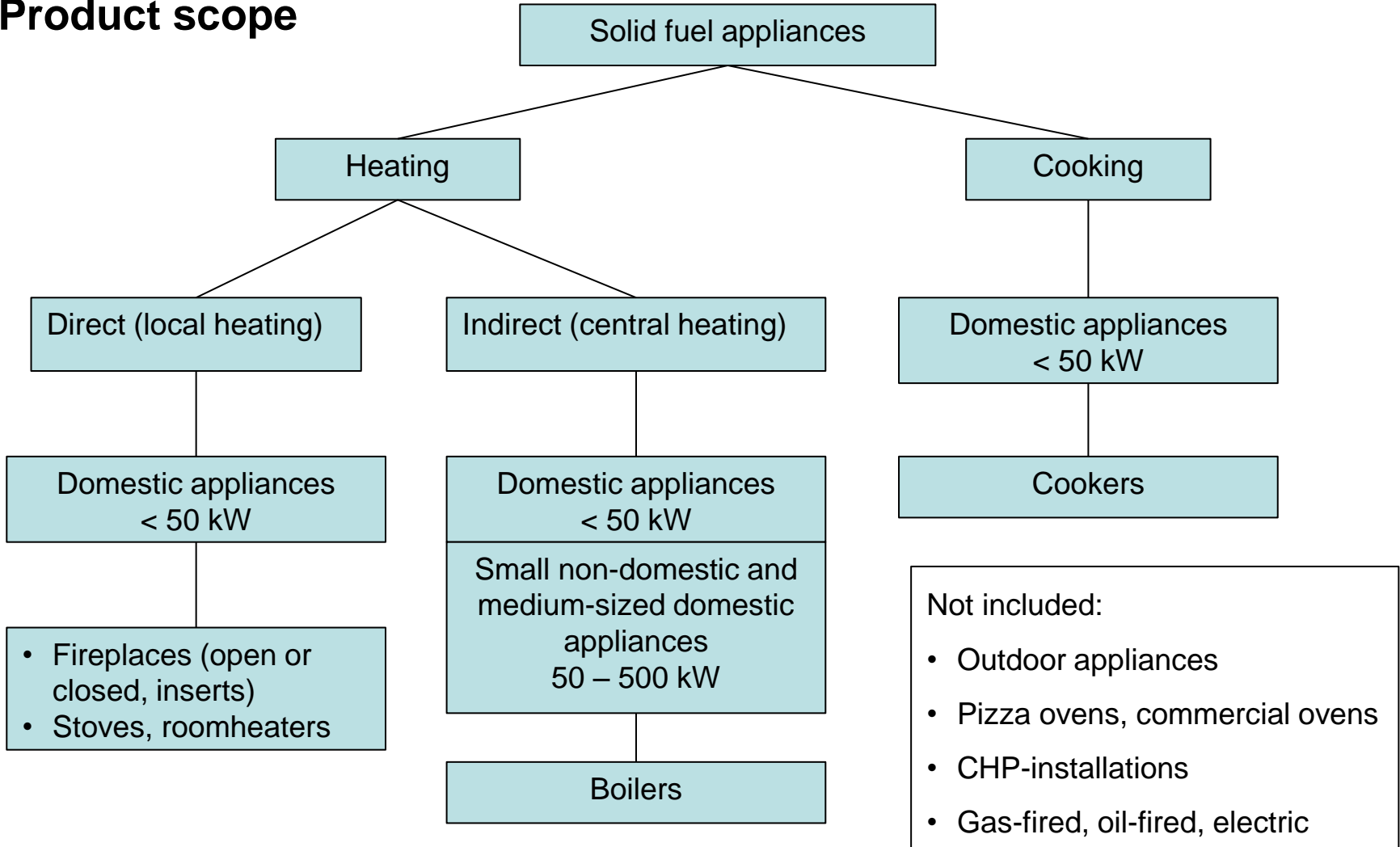
ECOdesign ErP Lot 15

From preparatory study to regulation



ECOdesign ErP Lot 15

Product scope



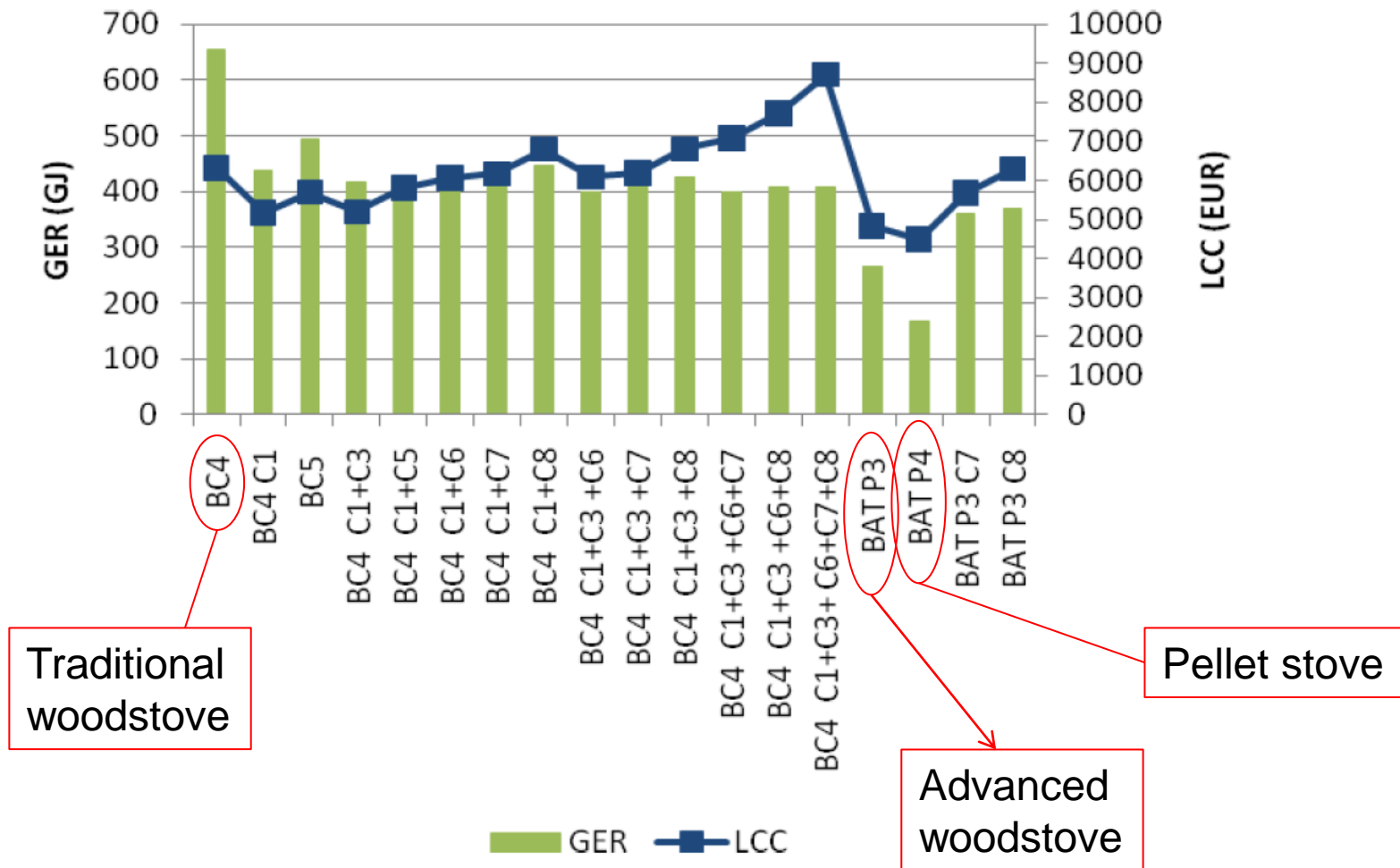
ECODesign ErP Lot 15

Preparatory study: identified issues

- Energy efficiency
- Material use
- Emissions of:
 - CO
 - OGC
 - Particulate matter
 - NOx
 - NMVOC, PAH, Dioxins, NH₃, Heavy metals
- Identification of 10 base cases
- Improvement potential – BAT, BNAT
- Life cycle costs calculation for BC + BAT

ECOdesign ErP Lot 15

Example LCC woodlog stove



Traditional woodstove

Pellet stove

Advanced woodstove

ECOdesign ErP Lot 15

Possible outlook on requirements

BAT = highest label class ??

		BAT	1	2	3	4	5	6	7	8
Product			Closed fireplace & insert	Advanced cooker	Advanced stove	Pellet stove	Pellet boiler	Pellet/Chips boiler	Downdraught gasifying boiler	Stoker boiler, coal
Energy & environmental performance	Efficiency	%, net	84	79	84	94	94	92	92	86
	E _{CO}	mg/m ³ , 13% O ₂	700	1800	600	20	20	30	100	570
	E _{NOx}		70	200	200	10	10	90	90	210
	E _{pm}		40	90	60	12	12	20	20	40
	E _{OGC}		90	110	90	1.5	1.5	1.5	4	70

ECOdesign ErP Lot 15

What is (not) known for the coming period:

- The Lot 1, 2 regulation will be used as basis for Lot 15 regulation (and other HVAC lots as well)
- In line with Lot 2 extension from product approach towards system approach?
 - Combination with e.g. solar and/or water heat exchanger
- Same energy label for all heating products, including gas boilers and heat pumps?
 - Product label
 - Installer label (controls, solar, water buffer)
- Position of mineral fuel is unclear
- Requirements under laboratory conditions
- Time schedule unclear

Test methods

Ecodesign regulation requires common European test methods.

Common test methods for efficiency, CO, OGC, NO_x are available

Three different gravimetric methods exist to measure particulate matter in Europe at the moment:

- Direct sampling on a heated filter (Germany, Austria, Belgium, Denmark)
- Sampling of diluted flue gas (Norway)
- Sampling on an electrostatic precipitator (UK)

These 3 methods each give different results and are therefore not interchangeable.

CEN TC295-WG5 is assigned with the task to develop a common European test method for particulate matter emission

Test methods



EUROPEAN COMMISSION
 ENTERPRISE AND INDUSTRY DIRECTORATE-GENERAL
 Industrial policy and economic analysis
Sustainable industrial policy

Brussels, 28 February 2010

Standardisation mandate to CEN, CENELEC and ETSI under Directive 2009/125/EC relating to harmonised standards in the field of Ecodesign

PRODUCT GROUPS COVERED BY THE PRESENT HORIZONTAL MANDATE (Additional technical details for the expected standardisation work will be provided through updates of Annex B)			
PRODUCTS MENTIONED IN ARTICLE 16 OF THE ECODSIGN DIRECTIVE 2009/125/EC AS PRIORITY FOR THE ADOPTION OF IMPLEMENTING MEASURES BY THE COMMISSION			
Solid fuel small combustion appliances	Preparatory study completed (as well as background study in view of impact assessment)	<p>Standardisation needs: In view of the adoption of an Ecodesign Implementing Reg., ESO are expected to develop harmonised standards covering:</p> <ul style="list-style-type: none"> • Measurement of space heating energy efficiency of solid fuel boilers, stoves, ovens and inserts for open fire places • Classification of controls • Emissions of NOx, CO, Organic Gaseous Compounds • Emissions of Particulate Matter, and its particle size distribution (subdivided in relevant size classes) • Methods for calculating the seasonal room heating energy efficiency of solid fuel boilers, stoves, ovens and inserts for open fire places and their combinations with controls, if appropriate <p>Technical Committee(s): TC 57, TC 295 Consultant: BIO Intelligence Service, France, and Van Holsteijn en Kemna (VHK), the Netherlands Main stakeholder(s): EHI, CEFACD</p>	Mid-2015

Test methods

TC 295 WG 5 opted for a 2-stage approach

- 1st stage: development of standard based on existing gravimetical techniques (particulate matter and condensables)
Deadline for harmonized standard: mid 2015
- 2nd stage: development of a standard for continuous measurement (counting, size, mass, etc)
Estimated time to standard: 7 – 12 years

Standardization work for both stages is done in parallel in WG5

Test methods

1st stage: gravimetric method

WG5 proposes 2 methods that can measure particles and condensables:

1. Direct sampling on a heated filter in combination with parallel measurement of OGC with a FID.
2. Dilution of total flow of flue gas. Sampling on a filter in the diluted flue gas

Comparative measurements showed that a good correlation exists between the two methods

Public inquiry has been launched for the WG5 proposal

Test methods

2nd stage: continuous method

➤ What components/fractions **can** be measured?

- Particle count
- Particle size distribution
- Total mass
- Mass distribution
- Chemical composition



➤ What pm components/fractions **should** be measured?

- | | |
|-------|------------|
| - PM | - COC |
| - POA | - Number |
| - SOA | - TC |
| - BC | - Etc, etc |
| - EC | |

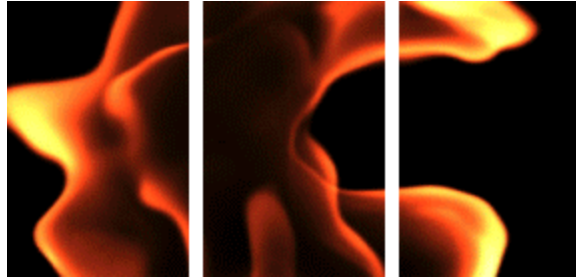


➤ **How** are we going to measure it?

- | | |
|------------|---------------|
| - CPC | - Gravimetric |
| - SMPS | - DMA |
| - Impactor | - Combination |
| - Optical | - Etc, etc |



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Thank you for your attention!