

CH Boilers

Ecodesign and Energy Label



1st Stakeholder meeting (morning session)
CH Boilers

Brussels
23 January 2018



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Agenda

1. Introduction
2. Task 1 – Introduction & Scope
Presentation
Q&A
3. Task 2 – Market
Presentation
Q&A
4. Any other business
 - a) Presentation on C4 boiler replacement in Germany
 - b) any other business

Reconvene at 14:00 for Water heaters

Space- and Water Heaters

Product covered – 7 Ecodesign & 6 Energy labeling Regulations heating appliances



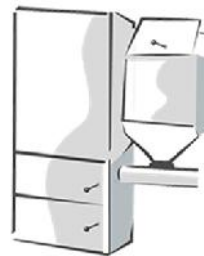
Water heaters
((EU) No 812/2013 & 814/2013)



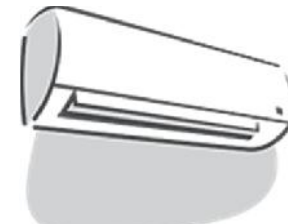
Space heaters (incl. combi)
((EU) No 811/2013 & 813/2013)



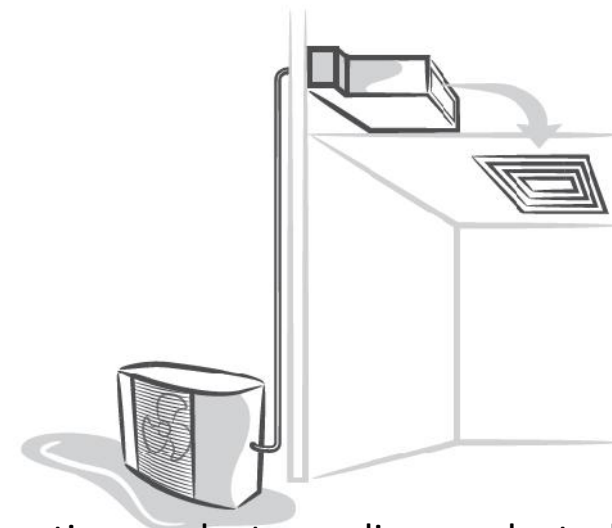
Local space heaters
((EU) No 1185/2015, 1186/2015 &
ED solid fuel local sh 1188/2015)



Solid fuel boilers
((EU) 2015/1187 & 2015/1189)

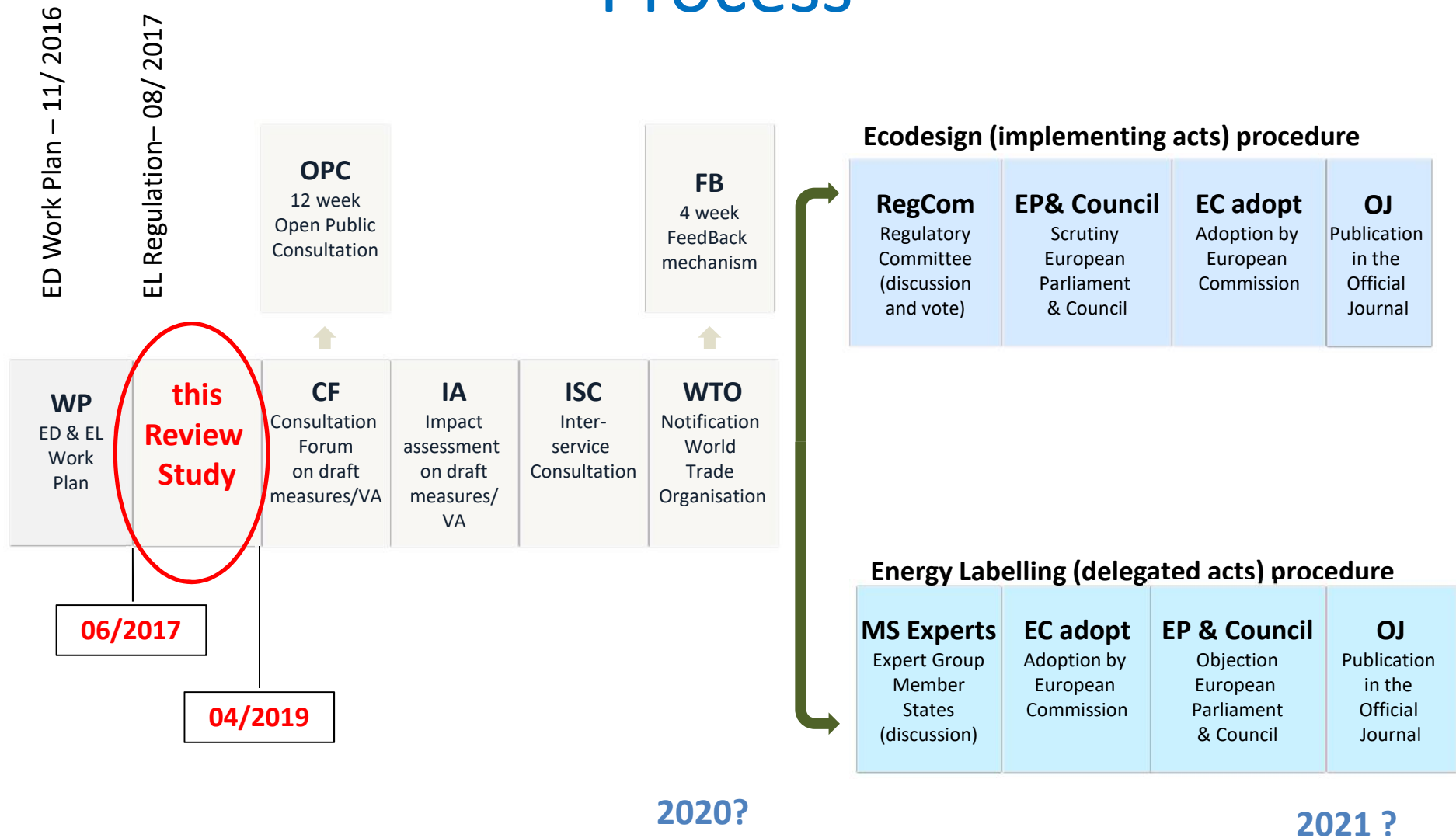


Air conditioners & comfort fans
((EU) No 626/2011 & 206/2012)



Air heating products, cooling products, high
temperature process chillers & fan coils
((EU) 2016/2281)

Process



Timeline study

The study started in June 2017 and is expected to finish in 2019. The list below gives an indicative timeline for the coming tasks. The timeline is subject to change and may be updated during the course of the study.

Date

Action

June 2017

Launch of study

July 2017

Launch of study website

December 2017

Interim report (Task 1-2)

January 2018

Stakeholder meeting 1

September 2018

Draft final report (Task 1 – 6 or 7)

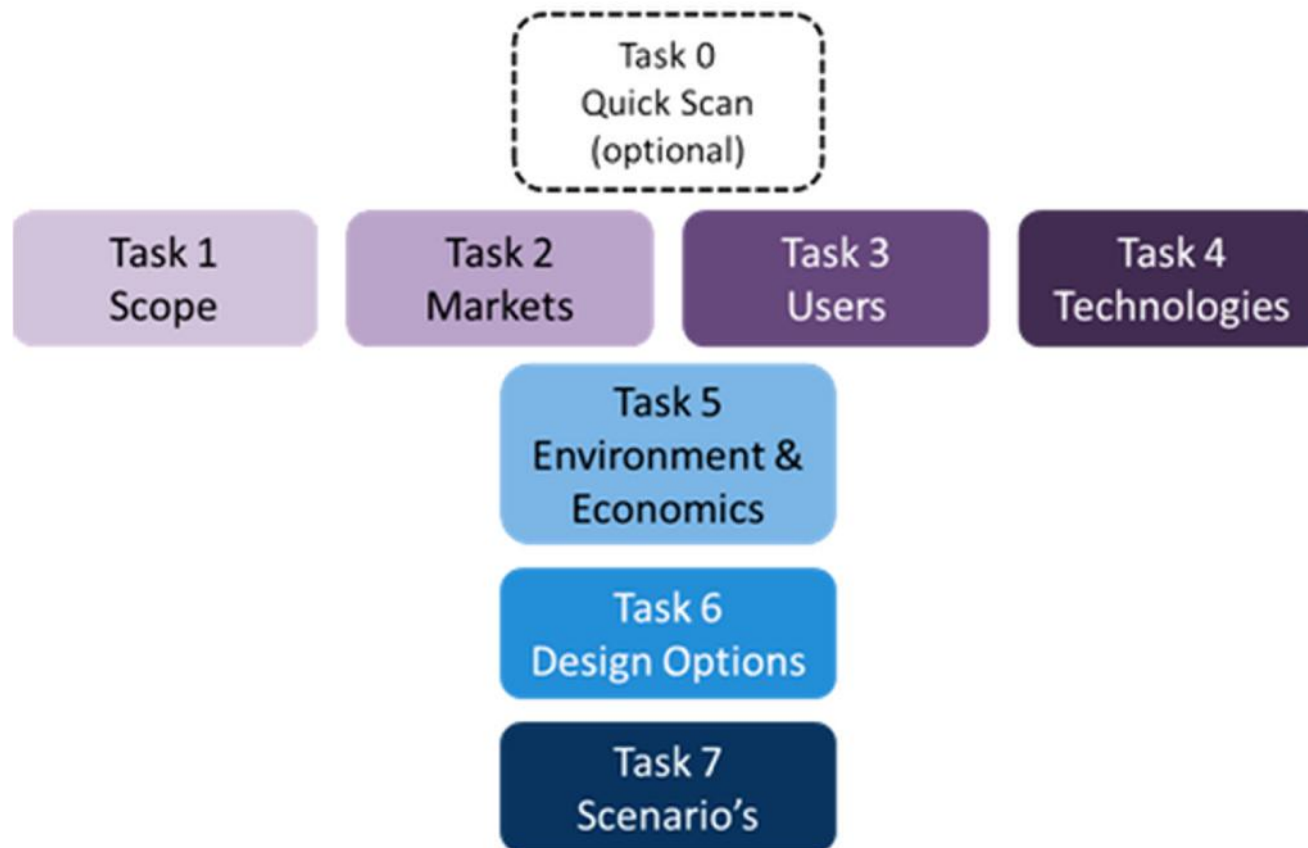
November 2018

Stakeholder meeting 2

January 2019

(Draft) Final report (Task 1 – 7)

Methodology



Interim report

Task 1 – Scope:

Interim report

Definition of scope

Test standards (ESO's)

Legislation at EU, MS and extra-EU (including MSAs)

Task 2 – Markets:

Stock, sales, actors

Volumes and prices

Reference years (1990) 2004 – 2014(2016) - 2030

Task 3 – Users (product demand side);

Task 4 – Technologies (product supply side, includes both BAT and BNAT);

Task 5 – Environment & Economics (Base case LCA & LCC);

Task 6 – Design options;

Task 7 – Scenarios (Policy, scenario, impact and sensitivity analysis).

Chapter 1 – Introduction

Chapter 1:

1. Study goals
2. Methodology (MEErP structure)
3. Evaluation / REFIT

Study goals CH Boilers

Ecodesign: New req. for GHG refrigerants, CO, HC and PM?
Stricter req. for energy (boilers), sound, and NOx?
Specific req. for biomass-based gaseous/liquid fuels ?
PEF ? (affects efficiency 'electric' vis-a-vis 'fuel fired')
3rd Party certification?

Labelling: Market shares?
Package label?
Other than standard heating seasons for HP?
Include passive flue heat recovery devices in scope of labelling?

Additional: Evaluate impact of legislation (REFIT)
Assessment on resource efficiency ("circular economy")
Technology roadmap

Chapter 2 – Study scope

Initial scope of study = Scope of Regulations

PFHRD in Labelling scope?

Passive

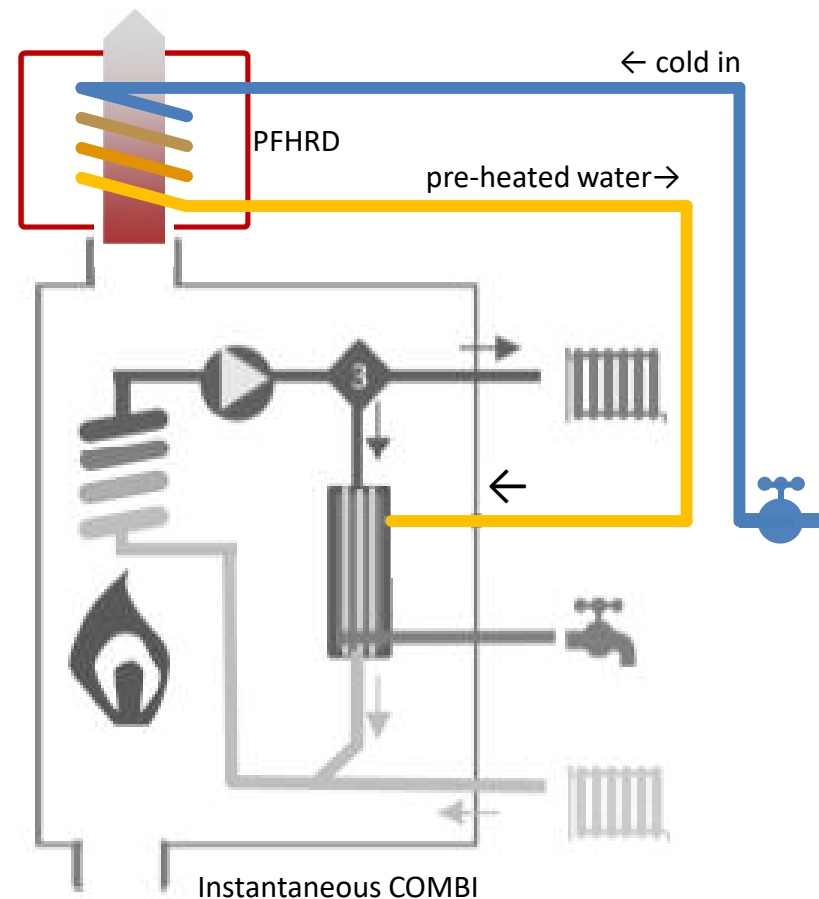
Flue

Heat

Recovery

Device

integrated or 'add-on' (package label)



Chapter 3 – Policies & measures

Generic policies and measures

1. Ecodesign & labelling (see next slides)
2. EED -> **PEF** discussion
3. EPBD -> MS measures
4. RES -> heat pump savings
5. RoHS -> applies to CH boilers
6. REACH
7. WEEE -> depends on MS if CH boilers covered or not

Chapter 3 – Policies & measures (2)

Generic policies and measures (c'd)

- 8. EU Ecolabel
- 9. F-Gas -> quota has impact on refrigerants
- 10. GAR -> gas quality / settings can affect performance
- 11. LVD, EMC, PED, MD, CPR, PD (packaging), DWD (drinking water)

Chapter 3 – Policies & measures (3)

Specific policies and measures

1. BED + Ecodesign -> 3rd party certification
2. Labelling -> Package label
3. Transitional methods ->
 - a) cogeneration calculation ("summation" of electricity production)
 - b) calculation storage volume
4. FAQ document 2015 (& 2017 draft update)

CH Boiler 3rd party certification

Remnant of BED 92/42/EEC – for fuel boilers only

Other boilers Regulation EU (No) 813/2013 – self certification

CH Boiler Package label

1. Is used by manufacturers (systems), but not popular with installers:

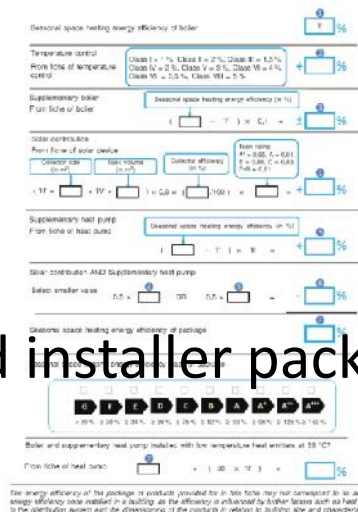
- does not fit typical installer work ('quickly replace faulty boiler', of known brands)
- complex, additional work
- no enforcement by authorities

2. Other issues:

- unequal treatment identical ex-factory and installer packages

3. Alternative:

- more versatile product label (avoid double labels)



CH Boiler cogeneration efficiency (1)

1. Transitional method

$$\eta_s = \eta_{son} + 2.5 * \eta_{el,CHP100+Sup0}$$

$$\frac{Q_{heat\ out}}{Q_{prim\ in\ total}} + \frac{Q_{prim\ in\ for\ electricity}}{Q_{prim\ in\ total}}$$

2. EN 50465

$$\eta_s = \frac{\eta_{thermal}}{1 - 2.5 * \eta_{electrical}}$$

$$\frac{Q_{total\ out} - Q_{electricity\ out}}{Q_{prim\ in\ total} - Q_{prim\ in\ for\ electricity}}$$

CH Boiler cogeneration efficiency (2)

Cogeneration		Energy OUT	Electric heat pump			
Energy IN → (Prim. = Final)	Conversion →		← Conversion	← Final Energy IN	← Conversion	← Prim. Energy IN
22857 kWh_fuel	70% thermal	→ 16000 kWh_heat ←	SCOP 350%	4571 kWh_elec	40%	11429 kWh_fuel
	20% electric	→ 4571 kWh_elec ←	elec. 40%	←	←	11429 kWh_fuel
						22857 kWh-fuel
TM2014sh $70\% + (2.5 \cdot 20\%) = 120\%$ EN 50465 $70\% / (1 - 2.5 \cdot 20\%) = \underline{140\%}$		Efficiencies	$350\% / 2.5 = \underline{140\%}$			

Cogeneration

$$\text{TM2014sh } 70\% + (2.5 \cdot 20\%) = 120\%$$

$$\text{EN 50465 } 70\% / (1 - 2.5 \cdot 20\%) = \underline{140\%}$$

Heat pump

$$350\% / 2.5 = \underline{140\%}$$

Chapter 3 – Policies & measures (4)

Member State (incl. EEA) policies and measures (c'd)

- DE: mandatory boiler replacement – cannot be enforced
- NO: no mineral oil for heating buildings from 2020
- Noise levels (HPs mainly, cogeneration?)
- Subsidies/tax benefits etc. (France, NL...)
- [to add?]

Chapter 3 – Policies & measures (5)

Market Surveillance

- EEPliant, ECOtest
- other...
- [to add?]

Labels and voluntary certification

- Heat pumps: Eurovent-Cert., Heat pump Keymark, NF, EHPA
- Fuel boilers: Gaskeur, USA Energy Star
- Solar: Solar Keymark

Chapter 3 – Policies & measures (6)

Extra EU / third country policies and measures

- China?
- USA/Canada – AFUE?
- Japan?
- [to add?]

Chapter 3 – Test Standards (1)

1. Gas fuel boilers
2. Oil fuel boilers
3. Other fuel boilers (solid)
4. Electric boilers
5. Electric heat pumps
6. Fuel fired heat pumps
7. micro CHP
8. Solar devices
9. Building/system level

Chapter 3 – Test Standards (2)

1. Combination boilers (gas, oil, electric, HP)
2. Emissions
 - NO_x
 - CO: CEN/TC109 WG1 opinion
3. Auxiliary power
4. Sound power
5. Tolerances

Chapter 3 – Test Standards (3) / Hybrids

Draft Hybrids prEN 15502-2-Y_three main key elements_01 2018 [not in draft reports]

CEN/TC109/WG1-ADH hybrid
Current hybrid normative environment

- Current status : **Main Scope of new standard for hybrid**
► Integrated hybrid products are available on the market but not included as 'standalone' product level into the ErP

Aspects for hybrids	Gas boiler	Heat pump	Hybrid "heat pump+XX"
Safety	EN15502-2-1	EN 378	No specific standard
Central heating efficiency	EN15502-2-1	EN 14285 +EN 14511	PrEN14825 (#7 test point) +EN15502-2 +EN14511 "heat pump plus secondary generator"
Max flow temperature	80°C	65°C	65°C Renovation?
DHW consumption / efficiency	EN13203-2	EN 16147	prEN13203-5 "gas-fired combined with electrical heat pump"

Safety: gas and refrigerant in single product

CH efficiency: simplified method if nominal output CH boilers vs elec.power HP > 2

Max. flow temp.: able to reach 80°C; share renewable energy is adapted

Chapter 3 – Test Standards (4) / Hybrids

prEN 15502-2-Y:2018 (E) [not in draft reports]

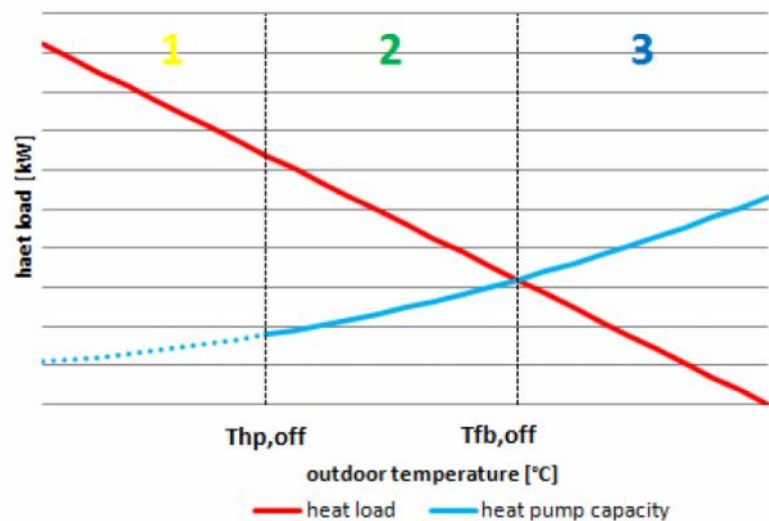


Figure 2 – Heating hours of climatic season

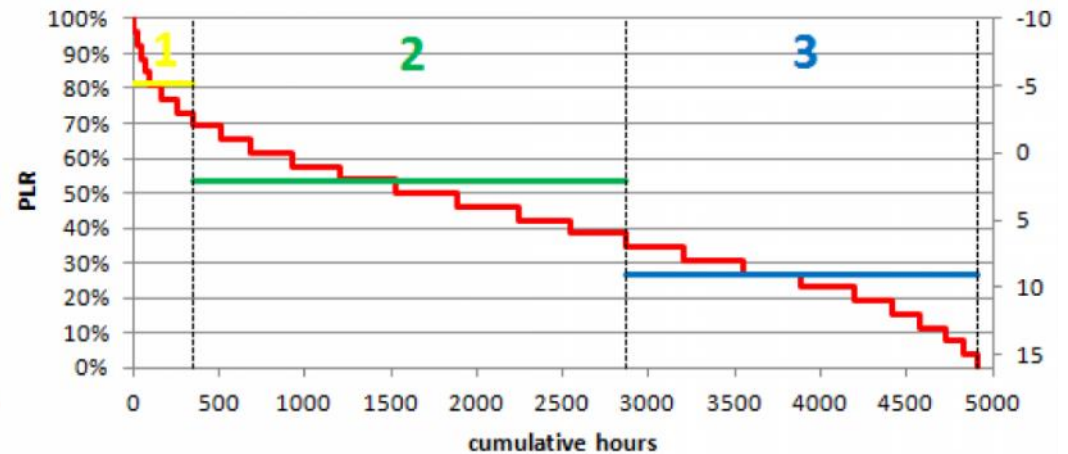


Figure 3 – Cumulative heating hours of climatic season

[start presentation Task 2 – Market]

Any other business

1. Presentation on C4 boiler replacement in Germany
2. a.o.b.
3. End of meeting

Recoverne at 14:00 for Water heater session

Project websites

for information and registration

www.ecoboiler-review.eu

www.ecohotwater-review.eu

Contacts study team:

r.kemna@vhk.nl

m.van.elburg@vhk.nl