

European normative and regulative context for Gas Heat Pumps



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About ADEME

- **The French Environment and Energy Management Agency (ADEME) is a public agency under the joint authority of the**
 - Ministry for Ecology, Sustainable Development, Transport and Housing
 - Ministry for Economy, Finance and Industry
- **In charge of the implementation of public policy in the areas of the environment, energy and sustainable development**
- **Intervention areas : waste management, soil conservation, energy efficiency and renewable energy, air quality and noise abatement**

GHP in ErP Directive – Ecodesign Lot 1 : central hydronic appliances (based on latest available documents – March 2011)

<i>Main requirements of the Ecodesign Lot 1 : Central hydronic appliances</i>	<i>GHP status</i>
Scope : Hydronic heating <u>appliances</u> with $4 \text{ kW} < P < 400\text{kW}$	Sorption and engine driven GHP using water included
Definition of GHP	Need to be clarified (boiler or HP ?)
Requirements on the « seasonal space heating energy efficiency »	Opportunity to demonstrate the stability of performances over the year.
Seasonal performances calculation method based on the EHP (prEN14825 and EN14511)	Not adapted for GHP – A specific method is required.
Modulation on the GWP of the fluid (15% lower requirements if GWP < 150)	Can be an advantage for GHP using natural fluid
NOx emissions limits (if GHP considered as boilers)	May be problematic for Gas engine driven HP
Noise level requirements	Opportunity

GHP in ErP Directive – Labelling Lot 1 central hydronic appliances (based on latest available documents – March 2011)

<i>Main requirements of the Ecolabelling Lot 1 : Central hydronic appliances</i>	<i>GHP status</i>
Scales proposed : After 1st year : from A+ down to G After 3rd year : from A++ down to F Later : A+++ down to D	Opportunity for GHP. GHP labelled A++ to A+++
Display of the seasonal space heating energy efficiency in primary energy	Fair comparison
Additional display of SCOP (for EHP) in final energy	May be confusing for final customer
Installer label	For combination of HP and boiler

But, documents are in constant evolution.

New releases for lots 1 and 2 are scheduled for the very beginning of 2012

GHP in ErP Directive – GHP are included in other lots

- **Lot n° 2 : Water heaters and hot water storage tanks**
 - Have to check coherence with lot n°1 for “combi” appliances
- **Lot n°6 : Air conditioning and ventilation systems**
 - Scope : Cooling appliances using water or air as transfer medium for cooling
 - Sorption and gas engine driven HP in cooling mode are included
- **Lot n°21 : Hot air central heating products**
 - Scope : Heating appliances using exclusively air as transfer medium for heating
 - Direct expansion engine driven HP are included

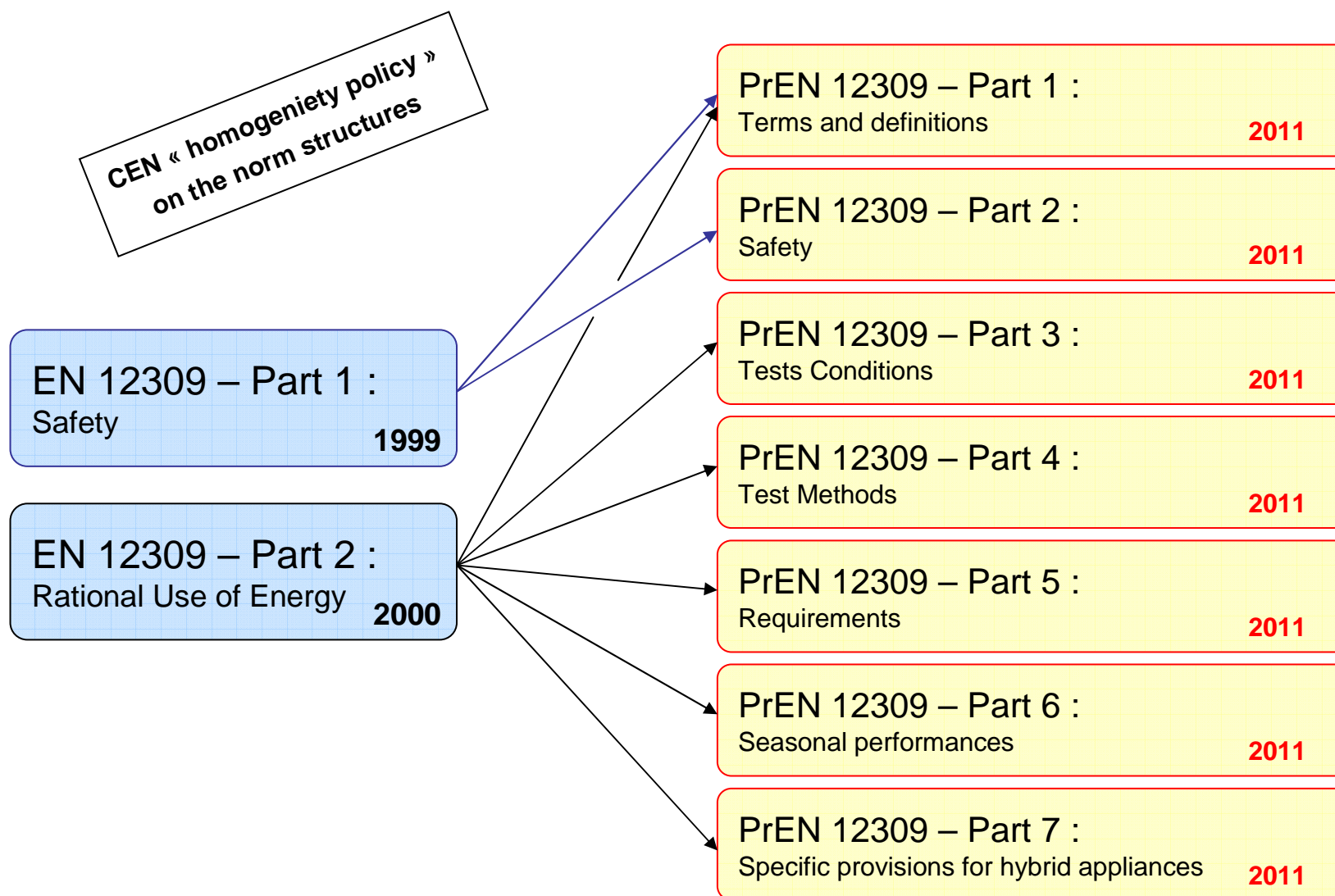
Structure of the CEN TC 299

- **CEN TC 299 : Gas-fired sorption appliances, indirect fired sorption appliances, gas-fired endothermic engine heat pumps and domestic gas-fired washing and drying appliances**
 - Secretary : Italy (UNI)
 - President : Italy (M. De Paoli)
- **Working group n°1 : Gas fired washing and drying appliances**
- **Working group n°2 : Gas fired sorption appliances**
 - Convenor (N. Doré – France)
 - In charge of the revision of the EN 12309 norm.
- **Working group n° 3 : GAs fired endothermic engine heat pumps**
 - Convenor (JA Germain – France)
 - In charge of the creation of the norm dedicated to engine driven heat pumps

Activities of the CEN TC299 WG2 in 2011

- **The current situation :**
 - EN 12309-1:1999 : Gas-fired absorption and adsorption air-conditioning and/or heat pump appliances with a net heat input not exceeding 70 kW - **Part 1 : Safety**
 - EN 12309-2:2000 : Gas-fired absorption and adsorption air-conditioning and/or heat pump appliances with a net heat input not exceeding 70 kW - **Part 2 : Rational Use of Energy.**
- **Mandates from CEN to adress :**
 - Energy Related Products Directive (2009/125/EC) (even if M495 will not be necessary applied)
 - Gas Appliance Directive (2009/142/EC)
 - Construction Building Directive (89/106/EEC) under mandate M105 (to be confirmed)
- **The new set of norms have to :**
 - Consider the electrical consumption of the GHP (PER -Primary Energy Ratio- instead of GUE – Gas Utilization Efficiency-)
 - Define of the part loads conditions and test protocols to measure them
 - Propose a calculation method of seasonal performances of GHP

Structure of the new set of norms



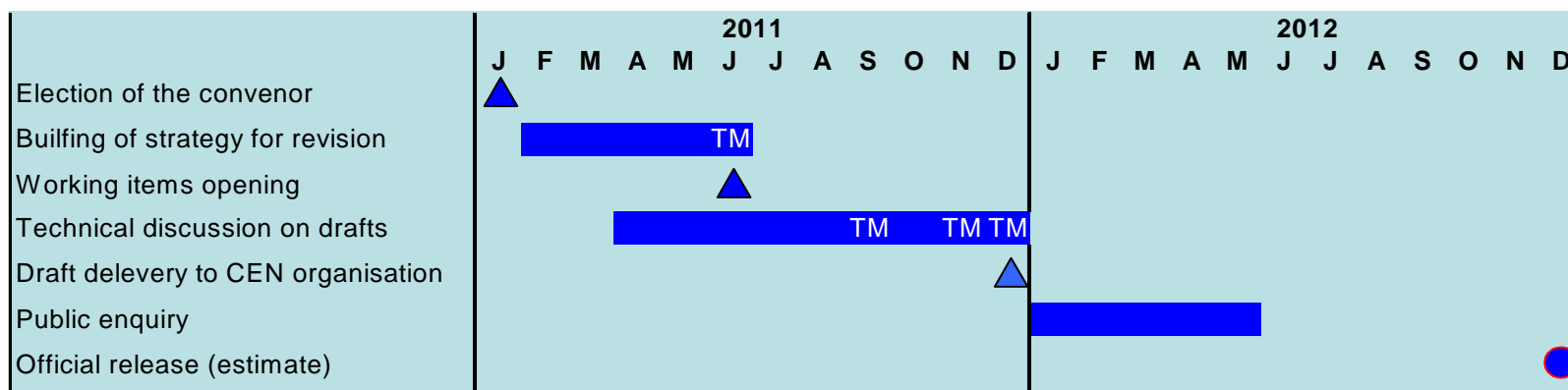
Working program and deadlines

- **Activation of 7 “working items” in June 2011**
- **7 drafts documents will be sent to CEN Secretary the 16th of December 2011**
- **Public Enquiry launched at the very beginning of January 2012 for 5 months**
- **Activities of WG2 for 2012 :**

Activation of 2 “preliminary working items” :

- Activation of Part 8 : “Environmental aspects” to adress the Resolution BT 27/2008 taken at the 64th BT meeting
- Activation of Part 9 : “Domestic Hot Water” -> will be handle by TC109 WG4 “Hot water production of central heating boilers for domestic uses”

Continuous improvements on the release drafts at the end of 2011



TM : Technical meetings

GHP and the Res Directive

- **The directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources includes the GHP**
 - Considers renewable energy from all kind of HP included : **aerothermal, geothermal and hydrothermal** driven by electricity or any other energy (fossil fuel) that fulfil the minimum requirements of **eco-labelling established by Decision 2007/742/EC of 9 November 2007**.
 - For heating and cooling.
 - “Only heat pumps with an output that significantly exceeds the primary energy needed to drive it should be taken into account”

- **Annex 7 proposes a formula to compute the Res Part (ERES) unadapted to GHP**

$$\text{ERES} = \text{Qusable} * (1 - 1/\text{SPF})$$

Qusable = the estimated total usable heat delivered by heat pumps fulfilling the criteria referred to in Article 5(4), implemented as follows: Only heat pumps for which $\text{SPF} > 1,15 * 1/\eta$ shall be taken into account, (**basically : $\text{SPF} > 2.9$**)

SPF = the estimated average seasonal performance factor for those heat pumps,

η is the ratio between total gross production of electricity and the primary energy consumption for electricity production and shall be calculated as an EU average based on Eurostat data)

- **Discussion are in progress**

GHP and Ecolabel / Green Public Procurement

- **Eco-labelling established by Decision 2007/742/EC of 9 November 2007 :**
 - Mainly energy efficiency requirements (COP and EER expressed in PER) for all types of HP, with criteria for quality in the production process.
 - Certification label with voluntary application,
 - Not widely used, theoretically expired in November 2010, but prolongation until march 2013.
- **Discussions in progress for new Ecolabel**
 - Very enlarged scope (all heating appliances : boilers, EHP, GHP, joule Effect, cogeneration, biomass)
 - Energetic and environmental criteria (14 criterias, ex : TEWI, NO_x, CO, PM, noise, hazardous substances...)
- **The Green Public Procurement :**
 - A process whereby public authorities seek to procure goods, services and works with a reduced environmental impact
 - Will systematically require “ecolabelled” appliances in their public purchase

Conclusions

- **GHP are now very well identified at the european level**
- **Although, assimilation between EHP and GHP remains almost systematic**
- **Maintain constant efforts to build the necessary normative and regulative tools**

THANKS FOR YOUR ATTENTION