Consultancy for renewable energy in the built environment

Contents:
✓ Eco design and Energy labelling
✓ Legionella issue
✓ Liaison’s EPBD business

Updates and current status

Gerard van Amerongen (vAConsult)
Introduction

- Presentation along the lines of relevant current affairs
  - Along the way, references to SCF projects
- Complex issues!
  - Limited time => only outline of issues at hand.

- Related to SCF projects:
  - Legio 2010 & Leg-12
  - EPBD-12
  - Liaison project (2012): TC 164 / 228 / 371
  - Elab-12

- Proposed SCF projects (waiting approval by SKNG):
  - Ecodes-12
  - CENmandates-12
  - Liaison project (2013): TC 164 / 228 / 371
Eco design

Current status and CEN mandate 495
Eco design & energy labelling

- Regulations were adopted by commission (18/2/2013)
  - Space heaters / water heaters / combi’s / heat storage
  - After further processing, into force > ½ 2015
  - Two years to prepare!

- The results for solar thermal are:
  - Lot 1 – space heating and combi-devices
    - Package label: space heater & solar device (+ other add-on’s)
    - Package label: combi device & solar device (+ other add-on’s)
  - Lot 2 – water heating and heat storage tanks
    - Product label: solar water heaters
    - Package label: water heater & solar device
    - Product label: heat storage tank
Energy labels in Lot 1

- Package label for 4 types of assemblies for space heating:

<table>
<thead>
<tr>
<th>Feature</th>
<th>Boiler s</th>
<th>Cogeneration</th>
<th>Heat pumps</th>
<th>Heat pumps LT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature control</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supplementary boiler</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Solar device</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Supplementary heat pump</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) - 2) + indication of eff. for colder / warmer climate

- Label classes: G to A+++ (best condensing boiler ≤ ‘A’)

- Package label for combi systems
  - Effectively the above label & the water heater label

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Energy labels in Lot 2

- Product label: - solar water heater -  (classes: G to A)
  - “Integrated” device of solar and heater
  - E.g. tank with electrical heater
  - Method has problems!
- Package label: water heater + solar device  
  (classes: G to A+++)
  - Solar device is the only option!
- Product label: heat storage tank  (classes: G to A)
  - Based on heat losses
  - Currently in solar thermal: class ‘C’
  - Effect for solar thermal: only tanks ≥ ‘G’
What has been achieved:
- Package label mechanism (first time in Eco design labelling)
- Class ‘A’ is the best conventional
- Methods according to our standards
- Level playing field for all technologies
  - (almost, not for LT heat pumps)

What has not been achieved:
- Accurate method for space heating
- Product label solar water heaters is not correct
  - Some work to do…

Let’s see how it works out!
Eco design – next steps

- Transitional documents replacements by harmonized standards:
  - Documents describing details of methods and ref.; s to standards.
  - CEN Mandate 495 to harmonize standards (EN 1297 5/6/7 & EN 15316-4-3, B)
  - Be ready when regulation is published
  - SCF proposal vAConsult: (CENmandate-12) To be accepted by SKNG

- Disseminating knowledge
  - Illustrative Excel model & PHP model (SCF-Elab-12)
    - Accepted previous SCF call, with remarks
  - Document & workshop for introduction (SCF EcoDes-12)
    - To be accepted by SKNG

- Cooperation with ESTIF
  - More work needs to be done (IEEE program)
How it works...

- Technical documentation
  - Describing tests and results

- Fiches
  - Summarizing relevant data from TD in terms to be able to build a label
    - Product fiches
    - Package fiches

- Labels
  - Result that is communicated to the consumer
    - Product labels
    - Package labels
**Illustrative Excel model (example)**

Step 1 (to do): Select components of the package
Step 2 (informational): Values extracted from selected fiches

### Water heater:

| Best available [L] | 80 | L | 11.655 |

### Solar device:

| SHW 50% [L] | 1400 | L | 150 |

**Declared load profile:**

<table>
<thead>
<tr>
<th>Qref [kWh/d]</th>
<th>L</th>
</tr>
</thead>
</table>

**Qonsol [kWh/a]:**

| 1400 |

**Load profile:**

| L |

**Qaux [kWh/a]:**

| 150 |

**Water heating energy efficiency of water heater**

| T [%] | 80 |

**Temperature profile:**

| L |

**Solar contribution**

From fiche of solar device

| SHW 50% [L] | 1400 | L | 150 |

**Q_aux [kWh/a]:**

| 150 |

**Load profile:**

| L |

**Water heating energy efficiency of package under average climate**

| T [%] | 143 |

**Water heating energy efficiency under colder and warmer climate conditions**

- **Colder:** $143 - 0.2 \times 63 = 130%$
- **Warmer:** $143 + 0.4 \times 63 = 168%$

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**Figure 1:** Fiche for a package of water heater and solar device indicating the water heating energy efficiency of the package offered.

**Figure 5:** For preferential boiler combination heaters and preferential heat pump combination heaters, element of the fiche for a package of combination heater, temperature control and solar device indicating the water heating energy efficiency of the package offered.

- **T**: the water heating energy efficiency of the water heater
- **T'**: $(220 \cdot Q_{\text{ref}})/Q_{\text{onsol}}$
- **T'': $(Q_{\text{aux}} \cdot 2.5)/(220 \cdot Q_{\text{ref}})$

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**Legend:**

- Class: A+, A++, A+++
- M: $\geq 27\%$ to $\geq 163\%$
- L: $\geq 27\%$ to $\geq 188\%$
- X: $\geq 28\%$ to $\geq 213\%$
- XX: $\geq 28\%$ to $\geq 220\%$

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**vA Consult**

**Date:** 28-02-2013

**Completeemts of SCF**

**Eco design**

**Version:** V 3.0

**Part:** Water heaters (lot 2) & Space heaters (lot 1)

**Document ref.:** Lot 2: Annex IV, par. 4, fig. 1, Lot 1: Annex IV, par. 6, fig. 6

**Label:** Package water heaters and solar device

**Package combination heater (water heater part)**

**Package fiche to be printed**

**Do not edit!**

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Legionella

Solar water heaters
Legionella (part 1)

- SCF project: ‘Legio 2010’
  - Code of Practice Legionella and solar water heaters
    - Building on the TC164 WG2 Technical report
  - Recommendations on solar water heaters to minimize risk on Legionella hazard
  - Some values needed to be added by second SCF Legio-12
Legionella (part 2)

- SCF project: ‘Legio-12’
  - Model calculations aimed on Legionella behaviour in solar water heater (preheater and solar-only)
    - Model of solar water heater + Legionella behaviour
    - Limits to maximum concentration Legionella
  - Much knowledge gained on the issue
    - Dynamic process + / -
    - Design criteria supported
    - Rules on application
  - (draft) report ready
    - Results literature study
    - Results on calculations
Legionella and TC’s

- **TC312:**
  - Results of both studies has been presented
    - New work item to make it a CEN TR (Jan 2013 meeting)
    - Discuss it with TC164 – WG2 (April 2013 meeting)

- **TC164 WG2 (SCF TC164-2010):**
  - Last meeting: WG 2 accepted to discuss Code of Practice

Further business:
- Discuss reports during April 2013 meeting TC164 WG2
- Preparations to revise EN 806 1 & 2
- Both for SCF ‘Lias TC164-12’, to be accepted by SKNG
Consultancy for renewable energy in the built environment

EPBD business

CEN mandate 480
EPBD TC228 & TC371

- Main focus on CEN mandate 480
- Work is structured according to:
  - TC 371 overall system performance
    - Horizontal coordination
  - TC 228 system standards
    - Systems applied in buildings
      - Current: EN15316-4-3
    - TC 312 product standards
      - Product performance
      - Current: EN 12975 /6 /7
  - Secondary issue: mandate 495
    - Harmonization of Eco design
    - EN 15316-4-3
Liaison tasks

- Preparation work for mandates 480 & 495
  - Up to now:
    - Attending workshops in preparation of mandates
    - Representing TC312 interests
  - Further work in this context: SCF proposal CenMandes12
    - To be accepted by SKNG
    - Limited to adding expertise (no secretary tasks)

- TC 371 current status
  - Documents drafted
    - How standards are incorporated & and which standards relevant
    - Basic principles of calculation
    - To be evaluated by liaison officer
Liaison tasks

- TC 228 current status
  - Start work now (after results of TC 371)
  - Revision of EN 5316-4-3 added to the work program
  - Liaison task: introduce revision of EN 15316-4-3
Revision of EN15316-4-3

SCF EPBD-12
Proposals for revision of EN15316-4-3

- Report drafted, with proposals inline with SOLCAL method Ecodesign
  - Improvements based on latest revisions on Fchart method
  - Added: calculation of non-solar heat needed
  - Added: correction for heat storage losses + evaluation
    - Formula (almost) as in Eco design
    - Added correction for decrease output
  - Added: correction of auxiliary heater efficiency
- Offer to EN15316-4-3