



IIR Working Party

Life Cycle Climate Performance Evaluation

Meeting Minute

Third Meeting at TU Delft, Netherlands on June 18, 2013

1. LCCP WP Overview by Yunho Hwang

- Yunho gave overview of LCCP WP Timescale, Plan, Deliverables, WP Website

2. Presentations:

2.1 Refrigerant / sector advice matrix NVKL by Coen van der Sande

- The Dutch Association of Contractors and Suppliers of Refrigeration and HVAC Applications (NVKL) formed their working party KANS (Knowledge Centre for Applications of Natural Substances)
- KANS made their advice to the NVKL members for what concerns which refrigerant to apply in the main sectors of the refrigeration industry (supermarket, fruit and vegetables, industry).

2.2 Life Cycle Performance of Refrigeration Systems in the Dutch Supermarket Sector by Carlos Infante Ferreira

- The phase out of R22 and constraints on emissions of F-gases requires that installers and users of refrigeration plants decide about which refrigerant to use in new plants.
- In this work, the authors considered 12 possible alternatives for installations in the Dutch supermarket sector and compare them from the point of view of life cycle performance, including economic aspects.

2.3 Life Cycle Performance of Refrigeration Systems in the Dutch Food and Beverage Sector by Menno van der Hoff

- In this work, the authors considered 12 possible alternatives for installations in the Dutch food and beverages sector and compare them from the point of view of life cycle performance, including economic aspects.

3. Discussions on Future Works

3.1 Review of Emission Factors

Currently, we are collecting references for following emission factors from each region and looking for help.

- **System Types:**
- **System Lifetime:**
- **Refrigerant**
- **GWP Values**



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- **Weather Data**
- **Utility Emission Rates**
- **Load Profile**
- **Regular Direct Emissions**
- **Indirect Emissions**

3.2 Current and Future Tasks:

There are following five tasks.

- Task 1: Collect information on direct and indirect emissions of working fluids for various applications from individual countries and from the current IIR's WP on Mitigation of Direct Emissions of GHGs
- Task 2: Establish the LCCP evaluation methodology applicable for refrigeration and air conditioning systems
- Task 3: Evaluate how different assumptions selected by a user of these methodologies and improvement options can affect the result of the assessment
- Task 4: Assemble such information and disseminate it amongst members of the WP and all IIR member states
- Task 5: Write a booklet on the LCCP evaluation methodology developed available to members of the WP and all IIR members and to be available to non-members via Fridoc

Omar Abdelaziz and Brian from Oak Ridge National Laboratory, US volunteered for Tasks 2 and 5. We are looking for more volunteers for each task.

3.3 Discussion:

- Pega Hrnjak suggested that it should be good to organize discussions and debates between people with different views and experiences to harmonize the LCCP evaluation approach. In addition when discussion some inputs (like energy cost and similar) he suggested to show the sensitivity to various parameters and contributions of direct vs. indirect CO₂ emissions.
- Geert Doornbos suggested moving forward the LCCP WP efforts to establish LCCP standard, which is as simple as possible.

4. Next Meetings

Our next meeting is suggested in conjunction with ASHRAE 2014 Winter Meeting in January 2014.

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