



**European Workshop – Technology Transfer
Dissemination, knowledge, know-how & implementation**

Best available technologies & future fast progress of Micro-CHP in conjunction with Renewable Energy

Programme

(Draft - Final)

Minor changes can occur

Time and Place; April the 6.th, 2006, 09.00 – 17.30 at ECN, Petten, NL

Introduction: 09.00 – 09.15:

Mr. Ivo Opstelten (on behalf of Gerrit Jan Schaeffer), ECN: The importance of Micro CHP as a stepping stone towards a distributed sustainable energy system

Topic 1: 09.15 – 10.30: Instruments, methods, financing for Micro-CHP technology transfer

- 9.15 – 9.35: **EC supportive action for MicroCHP**, Andreas Heinz, DG TREN, EC;
- 9.35 – 9.55 Speaker: Mr. G. Wagener-Lohse, FEE; WP 6;
- 9.55 – 10.15: Dutch utility has a proposal called “virtual storage” that might inspire people, Henri Giessen, Essent;
- 10.15 – 10.25: Workshop discussion;

Scientific panel topic one: FEE & 2 members of WP 6 Micro-CHP members.

Coffee break: 10.25 – 10.40

Topic 2: 10.40 – 16.00: Best available technologies, outstanding projects, most promising near market TECHNICAL research results from MICRO-CHP-poly generation technologies.

Focusing on technologies for RES-micro-CHP's;

Some of the most promising near market of technologies, all the technologies preferred to work with biomass/biofuels or other RES, or planning to do so in the near future:

Stirling Engines:

- 10.40 – 11.00: **Stirling Engine** – Jan Mueller (ISET), from a German perspective;
- 11.00 – 11.20: **Stirling Engine** – Ger Beckers, ENATEC;
- 11.20 – 11.35 **Stirling Engine panel**; workshop discussion, status, outlook, implementation steps, marked penetration, conclusion.

Fuel Cells:

- 11.35 – 11.55: **Green Fuel cells - gasification of biomass for fuel cells -** Mads B. Nielsen, FORCE Technology;
- 11.55 – 12.15: **Energy Management System for Fuel Cells** – Jari Hiltunen, GAIA;
- 12.15 – 12.35: **Fuel Cells – Inhouse 4000 (R)** – Schalt- und Regeltechnik GmbH, Berlin, and Riesaer Brennstoffzellentechnik GmbH, Riesa;

Lunch break: 12.35 – 13.30

- 13.30 – 13.50: **Fuel Cells** - Per Balslev - Danfoss Fuel Cell consortia demonstration project, from a Danish perspective;
- 13.50 - 14.05: **Fuel Cell panel**; workshop discussion, status, outlook, implementation steps, marked penetration, conclusion;

Various Micro CHP technologies:

- 14.05 - 14.25: Jan-Willem Turkstra - Gasunie, NL, Introduction of the Smart Power System concept;
- 14.25 – 14.45: **Combustion engine** – reporting on introducing a micro-CHP engine in domestic and commercial application, SenerTec GmbH, Schweinfurt;
- 14.45 – 15.05: **Micro-turbines** – Jan Mueller (ISET), state of the art and perspectives;
- 15.05 – 15.25: **Steam-linear-power-engine – report on field tests of “lion Powerblock”** – Renergiepartner GmbH, Berlin, GASAG, Berlin, and OTAG GmbH & Co. KG, Olsberg;
- 15.25 – 15.45: **Fast pyrolysis of biomass** - Prof. Bridgwater/ Elma Gyftopoulou, Aston University Birmingham;
- 15.45 – 16.05: **ORC-power** - The key for the operation of small power plants - Hartmut Kiehne, Adoratec GmbH, Kiel-Office

Coffebreak 16.05 – 16.20

A scientific panel follows each technology for reporting for the final workshop summary and report.

Topic 3: 16.20 – 17.00: Demand-driven decentralized energy supply using Micro-CHP, micro poly-generation systems powered by renewable energy carriers.

- 16.20 – 16.40: **End-user attitudes towards micro CHP** - Yannis Vougiouklakis, CRES- Centre for Renewable Energy Sources;
- 16.40 – 17.00: **Integrating Micro CHP into a distributed energy system with the PowerMatcher concept.** Maarten Hommelberg, ECN;

Topic 4: 17.00 -17.30 Final discussion and summing up of the workshop “Potentials of Micro-CHP systems, needs and demands in the overall European Renewable Energy Strategy and sustainable living strategy, beyond the Kyoto protocol goals”

- 17.00 – 17.15: **Predicted Bioenergy potentials EU-25 & Worldwide** – an appetizer for the Potentials of Micro-CHP Renewable energy based, by Jens Bo Holm-Nielsen, Aalborg University, Denmark.
- 17.15 – 17.30: Final discussion and conclusion of the fast progress of the Micro-CHP technologies into the markets, actions next!

List of participants, Energy research Centre of the Netherlands, Petten, the Netherlands, April the 6th, 2006.

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