Workshop Title: Heating and Power From Low Temperature Heat

Participants:

Name	Chair/Speaker	Affiliation
Konstantinos Kontomaris	Chair	DuPont
Konstantinos Kontomaris	Speaker	DuPont
Joseph Karnaz	Speaker	CPI Fluid Engineering
Osao Kido	Speaker	Panasonic
Harald Nes Rislå	Speaker	Viking Development Group
Thomas Fleckl	Speaker	Austrian Institute of Technology
Choyu Watanabe	Speaker	Chubu Electric Power Co.

Abstract:

・Objective

To examine the potential of emerging Organic Rankine Cycle (ORC) and High Temperature Heat Pump (HTHP) technologies to provide power and heating from low temperature heat with reduced cost and environmental impact.

・Background

Increasing awareness of the environmental impacts associated with the extraction and combustion of fossil fuels and the continuing uncertainty of fossil fuel supplies and prices are motivating a renewed interest in the utilization of abundantly available low temperature heat (e.g. waste heat from industrial or commercial processes, geothermal heat, etc.). Conversion of heat to mechanical (or electrical) power through ORCs and elevation of the temperature of available heat through HTHPs to meet heating requirements are two promising approaches. They both require the use of working fluids. The emerging availability of a new class of working fluids, based on Hydro-Fluoro-Olefins (HFOs), with GWPs sufficiently low so as to minimize business risk from increasingly restrictive climate protection regulations around the globe and with performance sufficiently high so as to minimize payback time is now motivating substantial ORC and HTHP research and development investments.

・Presentations

"Low GWP working fluids for low temperature heat utilization"

(Konstantinos Kontomaris, Ph.D., Global Technology Leader-Working Fluids, DuPont Fluorochemicals, Wilmington, Delaware, USA);

“Lubricants for high temperature heat pump and organic Rankine cycle applications”
(Joseph Karnaz, Global Technology Leader, CPI Fluid Engineering, Midland, Michigan, USA);

“Studies on compact organic Rankine cycles for waste heat recovery”
(Osao Kido, Ph.D., Chief Engineer, Air Conditioning and Cold Chain Development Center Appliances, Panasonic Corp., Osaka, JAPAN);

“Power from low temperature heat using more environmentally sustainable working fluids”
(Mr. Harald Nes Rislå, R&D Director, Viking Development Group, Kristiansand, NORWAY);

“Measured performance of a high temperature heat pump with HFO-1336mzz(Z) as the working fluid”
(Thomas Fleckl, Ph.D., Thematic Coordinator-Renewable Heating & Cooling, Austrian Institute of Technology, Vienna, AUSTRIA);

“High temperature heat pumps using low GWP refrigerants”
(Choyu Watanabe, Ph.D., Chief Managing Research Engineer, Chubu Electric Power Co., Nagoya, JAPAN);

Contact information:

1. Name: Konstantinos (Kostas) Kontomaris
2. Affiliation/Organization name: DuPont Fluorochemicals
3. Address: Chestnut Run Plaza, P.O. Box 2915, Wilmington, Delaware 19805, USA
4. E-mail address: Konstantinos.Kontomaris@dupont.com