

# Technical Session /Poster

The International Symposium on New Refrigerants and Environmental Technology 2016  
December 1– 2, 2016 International Conference Center Kobe

December 1 (Thu) 9:00–18:45

## ■ Keynote speech I

### Challenges for Fluorinated Gases control in Japan

Ministry of Economy, Trade and Industry, Fluoride Gases Management Office,  
Manufacturing Industries Bureau, Director, Atsuhiko Meno

## ■ Keynote speech II

### History of “Kobe Symposium” and Global Issues of the HVAC Industry

The Japan Refrigeration and Air Conditioning Industry Association (JRAIA),  
President, Tetsuji Okada

## ■ Session I – Environmental issues –

1-1

### The Importance of Japanese Leadership in Affordable Super-Efficient Room AC

Institute for Governance & Sustainable Development (IGSD)  
Stephen O. Andersen  
Instituto de Pesquisas Energéticas e Nucleares (IPEN)  
Suely Carvalho

1-4

### Present Situation of Refrigerant Substitution and Progress in Revision of Safety Standard for Refrigerating System in China

Hefei General Machinery Research Institute  
ZHANG mingsheng

1-2

### Transition to Lower GWP Refrigerants – Regulatory, Research and Code Activities

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI)  
Karim Amrane

1-5

### The movement of adoption of new international standard for performance evaluation method on an energy conservation scheme in ASEAN countries

The Japan Refrigeration and Air Conditioning Industry Association (JRAIA)  
Makoto Kaibara

1-3

### The EU F-Gas Regulation & the Gapometer Ways to achieve the phase-down in Europe

European Partnership for Energy and the Environment (EPEE)  
Andrea Voigt

## ■ Session II – Compressors and Lubricants –

2-1

### A Study on High Efficiency Wing-vane Compressor

Mitsubishi Electric Corporation, Raito Kawamura

2-4

### Refrigeration oils and low GWP refrigerants to be studied for various applications of refrigeration and air conditioning devices

Japan Sun Oil Company, Rei Saito

2-2

### Fundamental study on oil mist separation in swirl flow

Panasonic Corporation, Hirofumi Yoshida

2-5

### Evaluation of electric power consumption of refrigeration oil for HFC refrigerant

Idemitsu Kosan Co., Ltd., So Nakajima

2-3

### Development of polyol ester refrigeration oils for HFO refrigerants

JX Nippon Oil & Energy Corporation, Kentaro Yamaguchi

2-6

### Lubricants and New Refrigerants: System Performance Needs

Shreve Chemical Products, Joseph Karnaz

## ■ Session III – Safety of 2L Refrigerants (1) –

3-1

### Safety research and risk assessment of lower flammable refrigerants in JAPAN

The University of Tokyo, Eiji Hihara

3-4

### Hazard evaluation study on the mildly flammable refrigerants

National Institute of Advanced Industrial Science and Technology (AIST),  
Tei Saburi

3-2

### Flammability characteristics of lower Flammability (2L) Refrigerants

National Institute of Advanced Industrial Science and Technology (AIST)  
Kerji Takizawa

3-5

### Physical hazard evaluation of A2L refrigerants assuming rapid leak accident from a VRF system

Tokyo University of Science, Suwa, Tomohiko Imamura

3-3

### Diesel combustion of oil and refrigerant mixture during pump down of air conditioners

The University of Tokyo, Tomohiro Higashi

## ■ Session IV – Safety of 2L Refrigerants(2) –

4-1

Updates of International Standards Regarding A2L Refrigerants

Refrigerants related to International Standards WG, JRAIA, Osami Kataoka

4-2

Relaxation of High Pressure Gas Safety Act and its corresponding JRAIA guidelines and standards about lower flammable refrigerants

Relaxation of regulation WG, JRAIA, Koji Yamashita

4-3

Standards of refrigerant leak detector and alarm for air conditioning and refrigeration equipment

Refrigerant leak detector and alarm WG, JRAIA, Koji Yamashita

4-4

Safety guideline and standard against lower flammable refrigerants leakage of commercial refrigerators

Security standards for commercial refrigerators WG, JRAIA, Yutaka Ishii

4-5

Safety guideline and standard against lower flammable refrigerants leakage of ACs for facilities

Risk Assessment of A2L refrigerant committee, JRAIA, Yasuhiro Naito

4-6

Safety guideline and standard against lower flammable refrigerants leakage of commercial air conditioners

Security standards for commercial air conditioners WG, JRAIA, Ikuji Ishii

## December 2 (Fri) 9:00–18:15

## ■ Session V – Energy Conservation(1) –

5-1

Battery connected DC hybrid air conditioner system

Sharp Corporation, Masaharu Watanabe

5-2

Energy-saving of VRF systems

Hitachi-Johnson Controls Air Conditioning, Inc., Shuuhei Tada

5-3

Development of high efficiency VRV systems

Daikin Industries Co.,Ltd., Takuya Kotani

5-4

Development of high efficiency fan system for outdoor unit of air-conditioner

Hitachi. Ltd., Taku Iwase

5-5

Development of Ultra – High – Efficiency GHP XAIR II

Osaka Gas Co., Ltd., Takashi Miyakoshi

## ■ Session VI – Energy Conservation(2) –

6-1

Development of air-cooled heat pump chiller "DT-R"

Mitsubishi Electric Corporation, Masahiro Ito

6-2

High efficiency and compact centrifugal chiller

Mitsubishi Heavy Industries Thermal Systems, Ltd., Jun Miyamoto

6-3

Development of CO<sub>2</sub>-CO<sub>2</sub> cascade refrigeration system for CVS

Sanden Environmental Products Corporation, Yukio Yamaguchi

6-4

Performance of Low GWP Refrigerants Used in VRF

Hitachi-Johnson Controls Air Conditioning, Inc., Koji Naito

6-5

低 HFO-1336mzz(E) as a Low GWP Working Fluid for Heating and Power from Low Temperature Heat: Thermodynamic and Transport Properties

The Chemours L.L.C. Konstantinos Kontomaris

## ■ Session VII – New Refrigerants and Their System(1) –

7-1

Low GWP refrigerants for Chiller, Refrigeration and VRF: Thermodynamic and Transport Properties

The Chemours L.L.C., Joshua Hughes

7-2

Low Environmental Impact Refrigerants for AC and Chiller Applications

Honeywell International Inc, Samuel F. Yana Motta

7-3

Next Generation Low-GWP Refrigerants "AMOLEA®"

Asahi Glass Co.,Ltd., Masato Fukushima

7-4

Lowering GWP of refrigerants for residential AC and commercial AC

Arkema (China) Investment Co., Ltd., Laurent Abbas

7-5

Steps Toward The Practical Use of Lower GWP Refrigerants for Refrigeration

Daikin Industries Co.,Ltd., Takashi Shibamura

## ■ Session VIII – New Refrigerants and Their System(2) –

8-1

Fundamental research on next generation refrigerants for air conditioning systems – assessment of thermophysical properties, heat transfer characteristics and cycle performance –

1)Shigeru Koyama 1)Yukihiro Higashi 2)Akio Miyara 3)Ryo Akasaka  
1)Kyushu University/ 2) Saga University/ 3) Kyushu Sangyo University

8-2

Experimental evaluation for thermodynamic properties for low-GWP refrigerant HFO 1123

National Institute of Advanced Industrial Science and Technology (AIST)  
Y. Kayukawa /Y. Kano /Y. Fujita/ R. Akasaka

8-3

Low GWP refrigerant for industrial high temperature water circulation type heat pump

Toshiba Carrier Corporation, Tsukasa Takayama

8-4

Centrifugal chiller using –1233zd (E)

Mitsubishi Heavy Industries Thermal Systems, Ltd., Naoya Miyohi

8-5

Next generation refrigerants for Chillers

Trane, Inc. (Climate Solutions, Ingersoll Rand), Steve Kujak

## ■ Session IX – New Refrigerants and Their System(3) –

9-1

Alternative Refrigerant Evaluation for High-Ambient Temperature Environments

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI),  
Karim Amrane, Xudong Wang

9-2

Unified Refrigeration Cycle Evaluation Simulator with Various Refrigerants

Waseda University, Kiyoshi Saito

9-3

Investigation of Appropriateness of Next Generation Refrigerant for Air-conditioners

Daikin Industries Co.,Ltd., Tomoyuki Haikawa/ Tomoatsu Minamida/  
Shigeharu Taira

9-4

Development of air-conditioner using low GWP refrigerants

Mitsubishi Electric Corporation, Takumi nishiyama

## Special Poster session ※B1F Lobby

### ■ A2L Risk Assessment

1

Summary of risk assessment for lower flammable refrigerants

Risk assessment of A2L Refrigerant committee, JRAIA

2

Risk assessment for residential air-conditioner using lower flammable refrigerants

Mini-split risk assessment SWG(1),JRAIA

3

Risk assessment for Commercial Package air-conditioner using lower flammable refrigerants

Mini-split risk assessment SWG(2),JRAIA

4

Risk assessment for VRF system using lower flammable refrigerants

VRF system risk assessment SWG,JRAIA

5

Risk assessment for GHP using lower flammable refrigerants

GHP risk assessment SWG, JRAIA

6

Risk assessment for Chiller using lower flammable refrigerants

Chiller risk assessment SWG, JRAIA

7

Risk assessment for ACs for facilities using lower flammable refrigerants

AC for facilities risk assessment SWG, JRAIA

8

Risk assessment for Commercial Refrigerator using lower flammable refrigerants

Commercial refrigerator risk assessment SWG, JRAIA

### ■ JRA 4068 – Refrigerant leak detector and alarm for air conditioning and refrigeration equipment –

1

Refrigerant Leak Monitor “Mihari” corresponding JRA 4068

Asada Corporation

2

Type LDY refrigerant gas leak detector

Fujikoki Corporation

3

Semiconductor gas sensor and module for refrigerant leak detector

Figaro Engineering Inc.

4

Freon Detection & Alarm System

New Cosmos Electric Co., Ltd.

5

Gas detector for nature and new refrigerant

ICHINEN JIKCO CO.,LTD.

- |           |   |           |  |
|-----------|---|-----------|--|
| <b>1</b>  | Development project for refrigerants with low GWP in air conditioning systems<br>New Energy and Industrial Technology Development Organization (NEDO) | <b>12</b> | Multi-power source transport refrigeration unit corresponding to environmental issues<br>Mitsubishi Heavy Industries Thermal Systems, Ltd.   |
| <b>2</b>  | Refrigerant management system (Processing center)<br>Japan Refrigerants Environment Conservation Organization (JRECO)                                 | <b>13</b> | Air control technology of the room air-conditioner to balance the comfort with the energy-saving<br>Hitachi-Johnson Controls Air Conditioning, Inc.                                  |
| <b>3</b>  | Education of the prevention of refrigerant leak technology improvement<br>Japan Association of Refrigeration and Air-Conditioning Contractors (JARAC) | <b>14</b> | Development of micro channel heat exchanger for heat pump air-conditioner<br>Daikin Industries Co., Ltd.   |
| <b>4</b>  | The latest method of minimal leakage detecting and prevention<br>Asada Corporation  | <b>15</b> | 'Innovative Smart Channels'™ Heat Exchanger (ISC Heat Exchanger)<br>Fujitsu General Laboratories Ltd.  |
| <b>5</b>  | Automotive A/C service tools for R1234yf<br>Dengen co., Ltd.  | <b>16</b> | Condensation heat transfer and pressure drop of azeotropic mixture refrigerant R32/R1270 inside horizontal small-diameter tubes<br>Tokyo University of Marine Science and Technology |
| <b>6</b>  | Service tool for A2L refrigerant & leak detector for natural refrigerant (Portable/Stationary/Built-in)<br>Icinen Tasco Co., Ltd.                     | <b>17</b> | Oil effects on flow boiling heat transfer of refrigerant in an oval horizontal tube<br>Fukuoka University  |
| <b>7</b>  | New mechanistic single manifold gauge / Freon Leak reduction type couplings<br>Pro-Step Co., Ltd.   | <b>18</b> | Reliability of Compressor using Improved Miscibility Refrigeration oil for R32 Refrigerant<br>Daikin Industries Co., Ltd.  |
| <b>8</b>  | Revolutionary new developed product powered by both axes compressor for variable refrigerant recycling<br>Pro-Step Co., Ltd. / MK SEIKO CO., Ltd.     | <b>19</b> | Effect of refrigerant oil on critical flow rate characteristics of CO <sub>2</sub> through an orifice<br>Kobe University/ Fuji Electric Co., Ltd.                                    |
| <b>9</b>  | Study on application of R404A alternative refrigerant to reefer refrigeration system<br>Denso Corporation   | <b>20</b> | Measurement of viscosity and thermal conductivity of R1336mzz(Z)<br>Saga University  |
| <b>10</b> | Desiccant humidity unit using the CO <sub>2</sub> heat pump<br>Mayekawa Mfg. Co., Ltd.  | <b>21</b> | The newest fluorocarbon leak measure and recovery of fluorocarbon, revival and destruction<br>FUSO co., Ltd.   |
| <b>11</b> | Development of low temperature water driven double lift cycle absorption chiller<br>Hitachi-Johnson Controls Air Conditioning, Inc.                   | <b>22</b> | Warning !! Don't use undesignated refrigerants !!<br>JRAIA Safety Policy Subcommittee  |