

Monday, 7th June 2004

Technical Programme – “Product development”

Time	Room A	Room D	Room B-1	Room B-2
13:30	<p>Session 01-01 <i>Chairman: Dr. P. Pedersen, MAN B&W Diesel A/S, Denmark</i> <i>Co-chairman: M. Ohtsu, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</i></p> <p>Product development Slow speed engines</p> <p>81 The MC/MC-C engines and their development to meet present and future demands, by T. Knudsen, C. Egeberg, O. Grone, N. Kjemtrup, MAN B&W Diesel A/S, Denmark</p> <p>213 Sulzer low speed engines state of the art, by H. Brunner, Wärtsilä Switzerland Ltd., Switzerland</p> <p>224 The UEC engine program and its latest development, by H. Sakabe, K. Sakaguchi, Mitsubishi Heavy Industries, Ltd., Japan</p> <p>60 Experimental evaluation of a steam injected diesel (STID) engine, by Prof. J. Chomiak, Chalmers University of Technology, Sweden, G. Liljenfeldt, H. Nynas, A. Jaervi, H. Särs, Wärtsilä Finland Oy, Finland</p>	<p>Session 01-02 <i>Chairman: Prof. M. Kleimola, Wärtsilä Corporation, Finland</i> <i>Co-chairman: A. Tsunoda, Mitsubishi Heavy Industries, Ltd., Japan</i></p> <p>Product development Medium speed engines (1)</p> <p>123 Development of the Wärtsilä 4-stroke engine range, by J. Kytölä, Wärtsilä Corporation, Finland</p> <p>174 The new MAN B&W L21/31 engine – design, development and experience, by Dr. F. Koch, L. Gruenstedel, MAN B&W Diesel AG, Germany, J. Paronowski, MAN B&W Diesel A/S, Denmark</p> <p>49 Expansion of HYUNDAI’s medium speed diesel engine family, HIMSEN, by J. Kim, O. Kwon, S. Yoo, Hyundai Heavy Industries Co, Ltd., Korea</p> <p>233 Re-design of the DEUTZ diesel engine series TBD 628 applying common rail and variable turbine geometry, by E. Kamleitner, R. Coester, S. Adorf, DEUTZ AG, Germany</p>	<p>Session 15-01 <i>Chairman: V. Duggal, Cummins Engine Company, USA</i> <i>Co-chairman: H. Kondo, DAIHATSU DIESEL MFG. CO. LTD., Japan</i></p> <p>ASME-ICED Engine upgrading</p> <p>249 Maximizing mutiara asset profit by utilizing low pressure gas for dual-fuel system, by E. Arief, VICO Indonesia, Indonesia</p> <p>1 Two-stroke cycle engine port flow analysis, by Prof. K. Chapman, Kansas State University, USA</p> <p>263 Piston ring design for reduced friction in an advanced natural-gas power generation engine, by V. W. Wong, G. Smedley, Dr. T. Tian, Massachusetts Institute of Technology, USA</p> <p>250 CFD modelling of combustion in a large bore two-stroke engine, by Prof. Dr. A. Kirkpatrick, G.-H. Kim, C. Mitchell, Colorado State University, USA</p>	<p>Session 10-01 <i>Chairman: Dr. M. Sato, Central Research Institute of Electric Power Industry (CRIEPI), Japan</i> <i>Co-chairman: Prof. K. Takeishi, Osaka University, Japan</i></p> <p>Product development New design Gas turbines</p> <p>116 Development of new gas turbine for next-generation marine propulsion system (super marine gas turbine), by M. Arai, Technological Research Association of Super Marine Gas Turbine, Japan</p> <p>238 Design and operating experience of Mitsubishi F Class gas turbine for 431MW VR IGCC plant, by T. Komori, Y. Kitauchi, Y. Iwasaki, Y. Iwasaki, Mitsubishi Heavy Industries Ltd., Japan</p> <p>237 Latest operating experience and upgrade program of M701F & M701G gas turbine, by Y. Iwasaki, M. Araki, S. Uchida, S. Shiozaki, Mitsubishi Heavy Industries Ltd., Japan</p>

15:00 30 minutes coffee break

Time	Room A	Room D	Room B-1	Room B-2
15:30	<p>Session 01-04 Chairman: Dr. C. Teetz, MTU Friedrichshafen GmbH, Germany Co-chairman: S. Okada, Yanmar Co., Ltd., Japan</p> <p>Product development High speed engines</p>	<p>Session 01-03 Chairman: K. Wojcik, AVL List GmbH, Austria Co-chairman: M. Ueno, Industrial Power Alliance Ltd., Japan</p> <p>Product development Medium speed engines (2)</p>	<p>Session 15-03 Chairman: J. Hedrick, Southwest Research Institute, USA Co-chairman: Prof. Dr. K. Takasaki, Kyushu University, Japan</p> <p>ASME-ICED Simulation</p>	<p>Session 09-01 Chairman: Dr. A. Rippl, MAN B&W Diesel AG, Germany Co-chairman: H. Satoh, Turbo Systems United Co. Ltd., Japan</p> <p>Turbochargers Slow & medium speed engine application</p>
	<p>101 The new DAIHATSU DC-17 4-stroke medium speed diesel engine, by. Y. Miyawaki, Y. Okano, K. Sato, K. Hanamoto, M. Horikawa, N. Shimizu, DAIHATSU DIESEL MFG. CO. LTD., Japan</p> <p>122 The development of 6MG17HX diesel engine and the result in service, by K. Toda, K. Yaguchi, Niigata Power Systems Co., Ltd., Japan</p> <p>130 The new 190 diesel engine from Jinan diesel, by S. Dexter, M. Rasser, AVL List GmbH, Austria, Xu Chuangou, Li Shusheng, Qin Jianping, Wu Qiong Jinan Diesel Engine Co. Ltd., PR China</p> <p>153 KOMATSU New SAA6D140 Heavy Duty Engine with High Pressure Common Rail fuel injection system, by G. Ozawa, T. Yuichi, Industrial Power Alliance Ltd., Japan</p>	<p>27 The development of the General Electric GEVO diesel engine, by P. Flynn, GE Transportation Systems, P. Hupperich, FEV Engine Technology, USA</p> <p>155 Development of 16V20FX and the improvement for an operating pattern in service, by J. Sato, K. Yaguchi, N. Yokoyama, T. Nakanishi, Niigata Power Systems Co., Ltd., Japan</p> <p>201 The new Qishuyan 6,000 hp locomotive engine, by T. Bouché, W. Kling, AVL List GmbH, Austria, Chen Du, Teng Lei Chang, Qishuyan Locomotive and Rolling Stock Works, PR China</p> <p>78 Introduction of MAN B&W RK280 engine “Predictive engineering from concept to production”, by Dr. A. Al-Sened, MAN B&W Diesel Ltd., UK</p>	<p>134 Simulation of a spark-ignition engine with 1-D unsteady flows in pipe systems, by D. Chalet, Prof. P. Chesse, Prof. X. Tazua, Prof. J.-F. Hetet, Ecole Centrale de Nantes, France</p> <p>262 Development of a CFD model to investigate the effect of compression ratio on the CNG-diesel engine performance, by Dr. T. Yusaf, College of Engineering, UNITEN, Malaysia</p> <p>267 A practical philosophy for the application of modern simulation techniques to engine design and development, by M. Tussing, Southwest Research Institute, USA</p> <p>190 Understanding of intake air boost parameters and turbocharged diesel engine performance and emissions, by Dr. G. Chen, Gannon University, USA</p>	<p>Short presentation of CIMAC WG 13 “Turbocharger Efficiency”</p> <p>273 New generation of large turbochargers, by, K. Shiraishi, K. Imakiire, S. Ibaraki, Mitsubishi Heavy Industries Ltd., Japan</p> <p>133 Meeting the requirements of modern diesel & gas engines: the new TPL-C turbocharger generation, by Dr. D. Wunderwald, Dr. K. Heinrich, ABB Turbo Systems Ltd, Switzerland</p> <p>84 Low noise turbochargers, by R. Girsberger, Dr. H.-J. Feld, G. Kudernatsch, C. Rofka, C. Lindblom, ABB Turbo Systems Ltd, Switzerland</p> <p>128 Requirements and results of the first TCA applications, by Dr. H. Schmuttermair, MAN B&W Diesel AG, Germany, N. Kjemtrup, MAN B&W Diesel A/S, Denmark</p>
17:00	End of technical sessions for Monday			
18:00	Welcome reception in the garden of the Conference Hall (in the case of rain: Banquet Hall “Sakura” & “Swan”)			

Tuesday, 8th June 2004

Technical Programme – “Fundamental engineering”

Time	Room A	Room D	Room B-1	Room B-2
08:30	<p>Session 04-01 <i>Chairman: G. Fleischhack, OSC - Old Socks Consult, Germany</i> <i>Co-chairman: Prof. K. Iwamoto, Tokyo University of Mercantile Marine, Japan</i></p> <p>Tribology of engine components</p> <p>105 Tribology in big medium speed engine, by P. Tonon, Wärtsilä Italia S.p.A., Italy, H. Nurmi, K. Juoperi, Wärtsilä Finland Oy, Finland</p> <p>243 Study on scuffing and piston deposits – hardness of inorganic compound's deposits, by H. Nagamatsu, J. Tajima, Chevron Oronite Japan Ltd., I. Takasu, Diesel United Ltd., S. Yoshiyuki, Ishikawajima-Harima Heavy Ind. Co., Ltd., Japan</p> <p>135 Lube oil filtration as a full-liner concept, by R. Lennartz, Boll & Kirch Filterbau GmbH, Germany</p> <p>96 Development of laboratory evaluation method for detergency on piston undercrowns, by N. Arimoto, Dr. S. Shirahama, Nippon Oil Corporation, Japan</p>	<p>Session 05-01 <i>Chairman: N. Mikulicic, Wärtsilä Switzerland Ltd., Switzerland</i> <i>Co-chairman: Y. Itoh, Niigata Power Systems Co., Ltd., Japan</i></p> <p>Components Piston & rings</p> <p>209 Piston rings for large bore engines, by F. Cantow, Federal-Mogul Burscheid GmbH, Germany</p> <p>79 High performance piston rings for two-stroke marine engines, by T. Sjogren, P. Wigren, F. Vilhelmsson, P. Vomacka, Daros Piston Rings AB, Sweden</p> <p>35 Field experience with the MAHLE ferrocomp piston, by R. Schmidt, S. Lipp, MAHLE GmbH, Germany</p> <p>239 Monitoring of cylinder liner and piston ring on low-speed diesel engines, by T. Yamada, T. Yamada, Ishikawajima-Harima Heavy Ind. Co., Ltd., M. Kawabata, Diesel United Ltd., Japan</p>	<p>Session 05-03 <i>Chairman: Dr. E. Boletis, Woodward International Inc., UK</i> <i>Co-chairman: I. Takasu, Diesel United Ltd., Japan</i></p> <p>Components - Fuel injection systems (1)</p> <p>114 Experience and development of world's first common-rail injection system for heavy-fuel operated medium-speed diesel engines, by R. Ollus, D. Paro, Wärtsilä Finland Oy, Finland</p> <p>136 New concept of HFO common rail injection system for MAN B&W MS-diesel engines, by C. Vogel, Dr. G. Wachtmeister, L. Maier, S. Haas, A. Marzinek, MAN B&W Diesel AG, Germany</p> <p>117 Common rail system for large diesel engines, by J. Hlousek, Robert Bosch AG, Austria</p> <p>104 A new family of common rail fuel pumps for the high- and medium-speed market, by E. Boletis, F. Prautzsch, E. Walsh, Woodward Diesel Systems, UK</p>	<p>Session 05-05 <i>Chairman: H. Niven, Ricardo Consulting UK Ltd., UK</i> <i>Co-chairman: Prof. K. Wakabayashi, Kokushikan University, Japan</i></p> <p>Components Noise & vibration</p> <p>69 Vibration monitoring for fault diagnosis of cylinders in marine diesel engine, by S. Sasaki, T. Hashimoto, Nippon Kaiji Kyokai (ClassNK), Japan</p> <p>165 A study on design parameters related to the flexible vibration modes of resiliently mounted diesel generating set, by J.-G. Park, K.-T. Yoo, STX Corporation, Korea</p> <p>172 Development of spray-coated cylinder liner for diesel engine, by S. Miyake, T. Goto, Mitsui Engineering & Shipbuilding Co., Ltd., Japan, S. Jakobsen, MAN B&W Diesel A/S, Denmark</p> <p>44 A study on precise stress analysis of diesel engine components, by Wu Hong, Wang Feng, Gan Haiyan, Shanghai Marine Diesel Engine Research Institute, Wu Changhua, Dalian University of Technology, PR China</p>

10:00 30 minutes coffee break

Time	Room A	Room D	Room B-1	Room B-2
10:30	<p>Session 04-02 Chairman: <i>K. Lim, BP Marine Ltd., UK</i> Co-chairman: <i>H. Tanaka, Hitachi Zosen Diesel & Engineering Co., Ltd., Japan</i></p> <p>Tribology Wear reduction</p> <p>139 Field experience of 2-stroke large bore diesel engines burning fuel oil with lower sulphur content, by J. Thomsen, A.P. Møller, Denmark, S. Barrow, Wärtsilä Singapore Pte. Ltd., Singapore, M. Amoser, Wärtsilä Switzerland Ltd., Switzerland, V. Carey, K. Crouthamel, ExxonMobil Research & Engineering Co., USA,</p> <p>73 Lubrication of Medium Speed Engines with very low lube oil consumption, problems and solutions, by Dr. A. Dunn, P. Dowding, Infineum UK Ltd., UK</p> <p>22 Cylinder liner lacquering in distillate-fuelled medium speed engines and the development of an advanced anti-lacquer lubricant, by J. Barnes, P. Berentsen, Shell Global Solutions, Germany, J. Hammett, Shell Marine Products Ltd., UK</p> <p>58 Study on possibility for monitoring of marine diesel engine wear condition, by T. Hashimoto, S. Sasaki, Nippon Kaiji Kyokai (ClassNK), Japan</p>	<p>Session 05-02 Chairman: <i>Dr. F. Koch, MAN B&W Diesel AG, Germany</i> Co-chairman: <i>H. Kondo, DAIHATSU DIESEL MFG. CO. LTD., Japan</i></p> <p>Components bearings</p> <p>Short presentation of CIMAC WG 14 “Unified Rules for Vibration Analysis and Measurement”</p> <p>51 Development of a new tin based overlay for medium speed diesel engines, by H. Tsuji, Y. Tomita, N. Kawakami, Daido Metal Co., Ltd., Japan, I. Kerr, J. Harrison, Daido Industrial Bearings Europe Ltd., UK</p> <p>89 Improved load-carrying capacity of crosshead bearings by incorporating taper geometry in oil grooves, by Prof. Dr. T. Kitahara, Kyushu University, D. Nakahara, Daido Metal Co., Ltd., Japan, N. Nojgaard, MAN B&W Diesel A/S, Denmark</p> <p>111 Bearing cavitation analysis and prevention, by C. Forstner, MIBA Gleitlager GmbH, Austria, F. Struwe, Caterpillar Inc., USA</p> <p>48 A study on flexible hulls, flexible engines, crank shaft deflections and engine bearing loads for VLCC propulsion machinery, by G. Dahler, E. Brodin, B. Vartdal, DNV, Norway, H. Christensen, S. Jakobsen, MAN B&W Diesel A/S, Denmark, Y.-K. Ok, J.-H. Heo, K.-R. Park, Daewoo Shipbuilding & Marine Engineering Co., Ltd., Korea</p>	<p>Session 05-04 Chairman: <i>M. Rasser, AVL List GmbH, Austria</i> Co-chairman: <i>H. Sakurai, Kawasaki Heavy Industries Ltd., Japan</i></p> <p>Components - Fuel injection systems (2) / Crankshaft</p> <p>Short presentation of CIMAC WG 4 “Crankshaft Rules”</p> <p>75 Development of high strenght cast steel for semi-built up type crankshaft, and stress measurement and evaluation of crankshaft of low speed diesel engine, by Y. Hanawa, Y. Kagawa, H. Mori, T. Hamada, Kobe Steel Ltd., S. Kajihara, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</p> <p>13 Some classification aspects on crankshafts, by E. Sandberg, DNV AS, Norway</p> <p>113 Development of New Common Rail Fuel Injection System for the Latest Developed MHI MARK-30B Engine, by S. Namekawa, R. Nakano, H. Ishida, Mitsubishi Heavy Industries Ltd., Japan</p> <p>80 From high speed diesel to medium speed HFO engines – L’Orange platform based common rail pumps fulfill future demands, by Dr. R. Jorach, H. Schneider, Dr. A. Kerckhoff, O. Altmann, L’Orange GmbH, Germany</p>	<p>Session 10-02 Chairman: <i>Prof. K. Takeishi, Osaka University., Japan</i> Co-chairman: <i>T. Tsuchiya, Tokyo Electric Power Company, Japan</i></p> <p>Product development Micro gas turbines</p> <p>218 Performance improvement of recuperated and unrecuperated microturbines using wave rotor machines, by P. Akbari, Prof. N. Mueller, Michigan State University, Prof. R. Nalim, Purdue School of Engineering and Technology, USA</p> <p>245 Plate fin type recuperator development for micro gas turbines, by K. Nakano, T. Yamazaki, S. Sakuma, Toyo Radiator Co., Ltd., Japan</p> <p>52 The development of 300kW class high efficiency, ultra low emission micro gas turbine RGT3R, by R. Shibata, Y. Nakayama, K. Kobayashi, M. Koyama, H. Fujiwara, Niigata Power Systems Co., Ltd., Japan</p> <p>167 The introduction of the microturbine co-generation systems and the actual performances getting from the remote communication system, by U. Inoue, K. Matsuda, Takuma Co., Ltd., Japan</p>
12:00	Lunch break			

Time	Room A	Room D	Room B-1	Room B-2
13:30	<p>Session 04-03 <i>Chairman: Dr. A. Dunn, Infineum UK Ltd., UK</i> <i>Co-chairman: O. Hanashima, Shell Japan Ltd., Japan</i></p> <p>Tribology Lubricants (1)</p> <p>Short presentation of CIMAC WG 8 "Marine Lubricants"</p> <p>6 CIMAC and marine lubricants – 16 years of "working in a group", by G. Fleischhack, O.S.C., Germany, J.-F. Chapuy, S.E.M.T. Pielstick, France</p> <p>115 TPEO formulating challenges for increased oil change intervals, by M. Verlinde, M. Boons, Chevron Oronite Technology b.v., Netherlands</p> <p>37 Lowering lube oil costs and improving performance through use of marine emulsion lubricants in 2 stroke crosshead engines, by Dr. S. Cook, A. Mayhew, Lubrizol Ltd., UK</p> <p>129 Development of marine diesel cylinder oils, by T. Garner, Infineum UK Ltd., UK, L. Voss, K. Marek, Hapag-Lloyd Container Linie GmbH, Germany, K. Aabo, MAN B&W Diesel A/S, Denmark</p> <p>12 Test methods to assess blackening in trunk piston engine lubricants and their in-service validation, by Dr. S. Ramakumar, N. Aggarwal, Dr. V. Chhatwal, Dr. A. Rao, B. Tyagi, A. Mehta, N. Raje, Indian Oil Corporation Ltd., C. Kariappa, Mangalore Chemicals & Fertilizers Ltd., India</p>	<p>Session 08-01 <i>Chairman: Prof. S. Pischinger, FEV Motorentchnik GmbH, Germany</i> <i>Co-chairman: S. Goto, Niigata Power Systems Co., Ltd., Japan</i></p> <p>Gas engines New machines (1)</p> <p>Short presentation of CIMAC WG 12 "Gaseous fuels - Trace component analysis"</p> <p>197 Miller cycle – efficiency potentials for gas engines, by Dr. G. Herdin, F. Gruber, J. Klausner, GE Jenbacher AG, Austria, S. Matsumura, S. Kudo, Dr. M. Ippommatsu, Osaka Gas Co., Ltd., Japan</p> <p>120 Further development of advanced gas engine KU30GA (MACH-30G), by A. Tsunoda, T. Yamamoto, Mitsubishi Heavy Industries Ltd., S. Yasueda, GDEC, Japan, S. Dexter, AVL List GmbH, Austria</p> <p>71 Bergen gas engine developments, by L. Nerheim, Dr. R. Nordrik, Rolls-Royce Marine A.S. Engines-Bergen, Norway</p> <p>98 Development of a 350kW high-efficiency (over 43%) lean burn gas engine for co-generation systems, by K. Okamoto, D. Mori, Tokyo Gas Co., Ltd., T. Nakazono, T. Takemoto, Yanmar Co., Ltd., Dr. M. Kamata, University of Tokyo, Japan</p>	<p>Session 02-01 <i>Chairman: C.-E. Rösgren, Wärtsilä Corporation, Finland</i> <i>Co-chairman: K. Sawada, Hitachi Zosen Diesel & Engineering Co., Ltd, Japan</i></p> <p>Fundamental engineering Engine dynamics and mechanical stresses</p> <p>32 Design and first operating experiences with extreme value research engine EVE, by Prof. R. Turunen, I. Kallio, A. Leino, P. Rantanen, M. Suokas, O. Ranta, K. Karila, Helsinki University of Technology, J. Aaltonen, Tampere University of Technology, G. Liljenfeldt, Wärtsilä Finland Oy, Finland</p> <p>152 The investigation of the thermal behavior for the high speed diesel engine cylinder head, by A. Iga, Y. Kuroda, Yanmar Co., Ltd., Japan</p> <p>91 New thin-film sensors for engine bearings, by Prof. Dr. T. Someya, University of Tokyo, Prof. Dr. Y. Mihara, Musashi Institute of Technology, Japan</p>	<p>Session 09-02 <i>Chairman: Dr. P. Spengler, ABB Turbo Systems Ltd., Switzerland</i> <i>Co-chairman: K. Shiraishi, Mitsubishi Heavy Industries Ltd., Japan</i></p> <p>Turbochargers Medium & high speed engine applications</p> <p>34 TPS-F: a new series of small turbochargers for highest pressure ratios, by H. Born, M. Meier, C. Roduner, ABB Turbo Systems Ltd., Switzerland</p> <p>156 Dynamic stress design issues of radial turbine wheels for compact turbochargers, by K. Buchmann, C. Hill, Kompressorenbau Bannewitz GmbH, B. Irwanto, Technische Universität Dresden, Germany</p> <p>102 The continued development of Napier 7 series turbochargers, by D. Amos, Demag Delaval Industrial Turbomachinery – Napier Turbochargers, UK</p> <p>109 MAN B&W new turbocharger generation TCR-product development and first test results, by S. Kneip, A. Bornhorn, MAN B&W Diesel AG, Germany</p>

15:00 30 minutes coffee break

Time	Room A	Room D	Room B-1	Room B-2
15:30	<p>Session 04-04 <i>Chairman: J.-F. Chapuy, S.E.M.T. Pielstick, France</i> <i>Co-chairman: H. Murai, Exxon Mobil Marine Lubricants, Japan</i></p> <p>Tribology lubricants (2)</p> <p>132 Marine cylinder oils – Market trends creating formulating challenges, by D. Vrolijk, G. Polhaar, Chevron Oronite Technology b.v., Netherlands</p> <p>131 An insight into advanced cylinder lubrication issues; by J. Dragsted, A.P. Møller, K. Aabo, MAN B&W Diesel A/S, Denmark, K. Lim, BP Marine Limited, UK</p> <p>124 Innovator-4C, the cutting edge MAN B&W 5L16/24 test engine dedicated for validating novel marine lubricants from TOTAL Lubmarine, by D. Lancon, TotalFinaElf, France, J. Christensen, MAN B&W Diesel A/S, Denmark</p> <p>21 Oil stress investigations in Shell's medium speed laboratory engine, by J. Barnes, J. Hengeveld, T. Schasfoort, R. Scheele, Shell Global Solutions, Germany, S. Foster, Shell International Petroleum Company, UK</p>	<p>Session 08-03 <i>Chairman: Dr. P. Hupperich, FEV Engine Technology, Inc., USA</i> <i>Co-chairman: S. Yasueda, CGDEC - Gas & Diesel Engine Consultant, Japan</i></p> <p>Gas engines New machines (2)</p> <p>146 Result in service operation of 1.3MW micro-pilot gas engine, and its future development, by S. Takahashi, S. Goto, S. Nakayama, Y. Nishi, Niigata Power Systems Co., Ltd., Japan</p> <p>163 Status and potentials of the gas engines, by I. Nylund, Wärtsilä Finland Oy, Finland</p> <p>36 Development of High Efficiency Gas Engine Improvement of Knocking Limit by Optimized Engine System, by T. Takemoto, K. Nishida, K. Hirose, T. Nakazono, Yanmar Co., Ltd., S. Morimoto, K. Okamoto, TOKYO GAS CO., LTD, Japan</p> <p>199 Development of the lean burn Miller cycle gas engine, by K. Tanaka, H. Shimoda, T. Noguchi, Mitsubishi Heavy Industries Ltd., Y. Goda, Y. Matsushita, N. Tsuji, Osaka Gas Co., Ltd., Japan</p>	<p>Session 02-02 <i>Chairman: Prof. Dr. G. Merker, Hannover University, Germany</i> <i>Co-chairman: K. Nishida, University of Hiroshima, Japan</i></p> <p>Fundamental engineering Fluid dynamics & spray</p> <p>7 Modelling of primary and secondary break-up processes in high pressure diesel sprays, by Dr. C. Baumgarten, H. Lettmann, G. Merker, University of Hannover, Germany</p> <p>211 Progress in computational fluid dynamics (CFD) applications for large diesel engine development, by Dr. G. Weisser, R. Schulz, Wärtsilä Switzerland Ltd., Y. Wright, Prof. K. Boulouchos, Swiss Federal Institute of Technology (ETH) Zürich, Switzerland</p> <p>208 Development of combustion system in low speed two-stroke diesel engine using CFD, by Y. Imamori, H. Endo, K. Sakaguchi, J. Yanagi, Mitsubishi Heavy Industries Ltd., Japan</p> <p>66 An evolutionary approach to the design of internal combustion engines, by Dr. T. Donateo, A. de Risi, Prof. D. Laforgia, University of Lecce, Italy</p>	<p>Session 02-03 <i>Chairman: A. Ludu, AVL List GmbH, Austria</i> <i>Co-chairman: Dr. M. Kawakami, Niigata Engineering Co., Ltd., Japan</i></p> <p>Fundamental engineering Thermodynamics</p> <p>43 Performance and combustion analysis of high-speed diesel engine in fast ferry under normal service condition, by M. Takai, S. Tsukahara, National Maritime Research Institute, Japan</p> <p>248 Estimation of convection and radiation heat losses from a diesel engine's external surface using infrared thermography, by Prof. J. Luna-Abad, Prof. J. Martinez-Garcia, J. Hernandez-Grau, F. Alhama-Lopez, Technical University of Cartagena, M. Alarcon-Garcia, University of Murcia, J. Bernal-Soto, IZAR Propulsion and Energy, Spain</p> <p>232 Design and layout of the new DEUTZ TCD 2016 V16 common rail engine, by E. Kamleitner, M. Medenbach, M. Rapp, Dr. E. Bignion, DEUTZ AG, Germany</p>

Poster session (located in the exhibition area)

Presentation during the breaks of the technical session

- 67 New additive technology for extending the life of gas engine oils,**
by T. Okawa, K. Yagishita, Nippon Oil Corporation, Japan
- 74 No need of additives in a new system for semi-permanent use of lubricating oil without oil renewal,**
by M. Sumimoto, I. Kimura, Sumimoto Scientific Institute, Prof. Dr. T. Azuma, Teikyo University, Japan
- 137 Explosion relief valves for combustion engines to protect people and equipment in the event of an explosion,**
by J. Besau, Hoerbiger Ventilwerke GmbH, Austria
- 5 An investigation into an intensified combustion technology on a DI diesel engine,**
by Dr. P. Zhou, H. Li, University of Strathclyde, UK, Prof. Xu Feng, Dalian University of Technology, PR China
- 99 The application of the waste oil as a bio-fuel in a high-speed diesel engine,**
by S. Matsuzaki, KOBE University of Mercantile Marine, Japan
- 63 Development of NOx reduction system for marine diesel engines by SCR using liquid hydrocarbon distilled from fuel oil as reductant,** by Y. Tokunaga, G. Kiyotaki, Kawasaki Heavy Industries Ltd., Japan
- 162 Effect of hot EGR on combustion and emission characteristics in a diesel type alcohol engine,**
by Dr. H. Saitoh, Prof. Dr. M. Tateishi, K. Uchida, Sojo University, Japan
- 247 Practical application of Technical NOx Code for IMO certification and influences of adjustments on emissions from a medium-speed engine group,** by Prof. J. Martinez-Garcia, J. Hernandez-Grau, J. Perez-Garcia, M. Pagan-Regadera, Technical University of Cartagena, J. Bernal-Soto, IZAR Propulsion and Energy, Spain
- 47 Injection strategies under the influence of pressure modulation and free rate shaping in modern DI-diesel engines,**
by J. Seebode, Prof. Dr. G. Merker, H. Lettmann, University of Hannover, Germany
- 147 Emissions amounts of NOx and SOx from ships, their contribution to the atmospheric conditions in Japan,**
by S. Hanayama, Japan NUS Co., Ltd., Japan

17:00 End of technical session for Tuesday

18:30 ABB evening

Wednesday, 9th June 2004

Technical Programme – “Users ”

Time	Room A	Room D	Room B-1	Room B-2
08:30	<p>Session 07-01 <i>Chairman: J. Dragsted, A.P. Møller A/S, Denmark</i> <i>Co-chairman: N. Ohno, N.Y.K. Line Ltd., Japan</i></p> <p>Users aspects Users view points</p>	<p>Session 06-01 <i>Chairman: K. Heim, Wärtsilä Switzerland Ltd., Switzerland</i> <i>Co-chairman: T. Tanaka, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</i></p> <p>System integration Intelligent engine</p>	<p>Session 14-01 <i>Chairman: H. Pleimling, FEV Motorentchnik GmbH, Germany</i> <i>Co-chairman: T. Mimaki, Central Research Institute of Electric Power Industry (CRIEPI), Japan</i></p> <p>Integrated systems Cogeneration</p>	<p>Session 13-01 <i>Chairman: T. Tsuchiya, Tokyo Electric Power Company, Japan</i> <i>Co-chairman: T. Honma, Ishikawajima-Harima Heavy Industries Co., Ltd., Japan</i></p> <p>Users aspects User view points and gas turbine operation</p>
	<p>Short presentation of CIMAC WG 10 “Users”</p> <p>93 Engine users views of poor quality parts from engine builder-appointed subcontractors, by K. Wilson, Keith Wilson & Associates, UK, J. Dragsted, A.P. Møller, Denmark</p> <p>40 Development of standards for marine engines – prescriptive to performance based, by N. Rattenbury, Lloyd’s Register, UK</p> <p>53 Users feedback regarding the reliability of the ship large-bore low-speed diesel main engine, by M. Kobayashi, Y. Togo, Y. Kurose, M. Kobayashi, Mitsui O.S.K. Lines, Japan</p>	<p>Short presentation of CIMAC WG 15 “Electronics and Software Systems”</p> <p>82 The electronically controlled ME/ME-C series will lead the two-stroke diesel engine concept into the future, by C. Egeberg, T. Knudsen, P. Sorensen, MAN B&W Diesel A/S, Denmark</p> <p>221 Development of electronically controlled engine “Mitsubishi UEC Eco-engine”, by K. Sakaguchi, M. Sugihara, Mitsubishi Heavy Industries, Ltd., Japan</p> <p>216 Evolution of the Sulzer RT-flex common rail system, by R. Demmerle, K. Heim, Wärtsilä Switzerland Ltd., Switzerland</p> <p>271 Shipboard NO_x emissions estimation using an online process-model-based virtual measuring instrument, by Prof. N. Kyrtatos, E. Tzanos, N. Xiros, C. Papadopoulos, NTUA Technical University of Athens, Greece, Dr. E. Ulrich, Germanischer Lloyd AG, K. Marek, R. Duge, Hapag-Lloyd Container Linie GmbH, Germany</p>	<p>235 Study on combined system of pressurized fluidized incinerator and gas turbine or turbocharger, by M. Tsukamoto, Ishikawajima-Harima Heavy Industries Co., Ltd., Japan</p> <p>61 The development of the reciprocating Joule cycle engine for micro combined heat and power applications, by Dr. M. Bell, R. Allen, University of Plymouth, UK</p> <p>236 Study on high efficiency closed cycle gas turbine system corresponding to CO₂ recovery, by E. Koda, T. Takahashi, Central Research Institute of Electric Power Industry, K. Uematsu, Mitsubishi Heavy Industries, Ltd., K. Yamashita, Toshiba Corporation, Japan</p> <p>242 Application of 6MW class gas turbine co-generation system to city area, by K. Ishii, Ishikawajima-Harima Heavy Industries Co., Ltd., Japan</p>	<p>195 Development of platform-free user support system for gas turbine hot gas path parts maintenance management, by T. Fujioka, T. Fujii, K.-I. Tokoro, T. Takahashi, M. Morinaga, Central Research Institute of Electric Power Industry, Japan</p> <p>100 Development of technology to prevent performance degradation by improving intake air filtration system for large-size gas turbines, by H. Yoshida, The Kansai Electric Power Co., Inc., Japan</p> <p>223 Study on the HIP technology for the life extension of gas turbine buckets, by D. Saito, Y. Yoshioka, K. Ishibashi, H. Okamoto, Toshiba Corporation, A. Ito, Y. Kagiya, H. Watanabe, S. Hyakudome, Chubu Electric Power Co. Inc., Japan</p>

10:00 30 minutes coffee break

Time	Room A	Room D	Room B-1	Room B-2
10:30	<p>Session 07-02 Chairman: <i>F. Stadelmann, MTU Friedrichshafen GmbH, Germany</i> Co-chairman: <i>T. Ushijima, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</i></p> <p>Users aspects Service experiences (1)</p> <p>Short presentation of CIMAC WG 2 “Classification Societies”</p> <p>159 Laboratory performance analysis comparison of on-board marine cylinder oils, by N. Ohno, K. Fubasami, N.Y.K. Line Ltd., H. Miyano, K. Kuwada, Nippon Yuka Kogyo Co., Ltd., Japan</p> <p>24 How to detect trouble-making bunker fuel oil, by Prof. Dr. K. Takasaki, Prof. Dr. T. Kitahara, Kyushu University, Dr. T. Katafuchi, Idemitsu Kosan Co., Ltd., T. Yamada, Ishikawajima-Harima Heavy Industries Co., Ltd., Japan</p> <p>160 Actual capability of shipboard fuel oil pre-treatment systems, by N. Ohno, T. Kato, T. Mishima, N.Y.K. Line Ltd., H. Miyano, D. Miyawaki, Nippon Yuka Kogyo Co., Ltd., Japan</p>	<p>Session 06-02 Chairman: <i>T. Tanaka, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</i> Co-chairman: <i>H. Yamamoto, NABCO Ltd., Japan</i></p> <p>System integration Monitoring & control</p> <p>244 Development of a range of on-line lubricant and machinery condition sensors for engine monitoring, by T. Kent, C. Leigh-Jones, Kittiwake Developments Ltd., UK, M. Hutchings, M. Lucas, M. Matsuda, Intecho Japan Co., Ltd., Japan</p> <p>92 Bearing monitoring system recognizing friction before noticeable mechanical damage occurs, by H. Uebel, Schaller Automation KG, Germany</p> <p>88 Wireless technology for real time temperature monitoring of crank pin and crosshead bearings in diesel engines, by Dr. S. Fossen, Kongsberg Maritime AS, Norway</p> <p>23 Stroke by stroke measurement of diesel engine performance on board, by L. Karlsson, J. Sobel, ABB Automation Technology Products AB, Sweden</p>	<p>Session 14-02 Chairman: <i>T. Mimaki, Central Research Institute of Electric Power Industry (CRIEPI), Japan</i> Co-chairman: <i>E. Koda, Central Research Institute of Electric Power Industry (CRIEPI), Japan</i></p> <p>Integrated systems Combined systems with fuel cell</p> <p>144 A general overview of solid oxide fuel cell hybrid systems, by Prof. M. Assadi, A. Hildebrandt, M. Kemm, F. Hermann, Lund Institute of Technology, S. Ernebrant, Turbec AB, Sweden</p> <p>168 Hybrid cycles based on solid oxide fuel cell and internal combustion engine (SOFC-HCCI) for flexible operation, by Dr. J. Palsson, J. Hansen, S. Kristensen, Haldor Topsoe A/S, Denmark, P. Tunestal, Prof. M. Assadi, Prof. T. Torisson, Lund University, Sweden</p> <p>83 Isoengine Data Analysis and Future Design Options, by M. Coney, C. Linnemann, RWE Innogy plc, UK, K. Sugiura, T. Goto, Mitsui Engineering & Shipbuilding Co., Ltd., Japan</p>	<p>Session 04-05 Chairman: <i>D. Vrolijk, Chevron Oronite Technology b.v., Netherlands</i> Co-chairman: <i>K. Yamamoto, Kawasaki Heavy Industries, Ltd., Japan</i></p> <p>Tribology Maintenance/Cylinder liners</p> <p>46 Studies on tribology between cylinder liner and piston ring in marine diesel engine: past 30 years, by Prof. Dr. M. Soejima, Kyushu Sangyo University, Prof. Y. Wakuri, Prof. Dr. T. Kitahara, Kyushu University, Prof. Dr. T. Hamatake, Oita University, Japan</p> <p>56 Lengthening of the maintenance intervals for diesel TES engine oil, by Dr. S. Shirahama, N. Arimoto, S. Takeshima, Nippon Oil Corporation, Japan</p> <p>161 Development of surface treatments for marine diesel engine cylinder liner, by M. Azuma, K. Nagasawa, H. Ogishi, T. Yanamoto, T. Kaneko, H. Sakurai, Kawasaki Heavy Industries Ltd., Japan</p>
12:00	Lunch break			

Time	Room A	Room D	Room B-1	Room B-2	
13:30	<p>Session 07-03 <i>Chairman: O. Toft, Bergesen d.y. ASA, Norway</i> <i>Co-chairman: S. Miyake, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</i></p> <p>Users aspects Service experiences (2)</p> <p>95 Analysis of reliability/failure of newly built diesel engines, by A. Kubo, N. Ohno, N.Y.K. Line Ltd., K. Okawara, K Line, K. Iwaya, Mitsui OSK Lines, K. Igari, Japan Marine Engineers' Association, Japan</p> <p>11 Service experience of the MC/MC-C engines, by M. Jensen, C. Egeberg, MAN B&W Diesel A/S, Denmark</p> <p>70 Ranking lubricating oil consumption of different power assemblies on an EMD 16-645-E locomotive diesel engine, by K. Froelund, S. Fritz, Southwest Research Institute, B. Smith, Transportation Technology Center, Inc., USA</p> <p>4 Development of wear-resistant piston ring groove designs for large two-stroke engine, by S. Jakobsen, J. Fogh, MAN B&W Diesel A/S, Denmark, B. Kim, J. Hwang, Hyundai Heavy Industries Co., Korea</p>	<p>Session 06-03 <i>Chairman: J. Kytölä, Wärtsilä Corporation, Finland</i> <i>Co-chairman: Y. Hayashi, Woodward Governor Ltd., Japan</i></p> <p>System integration New systems</p> <p>39 ISAK – a novel application specific integrated circuit (ASIC) for use in smart fieldbus sensors, by Dr. O. Malmo, S. Berg, T. Sivertsen Kongsberg Maritime, Norway</p> <p>151 Active vibration isolation of a diesel engine generator with linear voice coil motors, by M. Sakamoto, E. Yagi, T. Kubota, H. Wada, H. Sakurai, Kawasaki Heavy Industries, Ltd., Japan</p> <p>110 A continuous, on-board analysis technique to determine optimum feed rate and TBN level of marine diesel cylinder lubricants, by Dr. S. Cook, Dr. G. Brown, R. Leahy, O. Benlahmar, Lubrizol Ltd. UK, K.-W. Damm, C. Castanien, A. Klapka, Lubrizol Corporation, USA</p> <p>148 An angular position measurement system of diesel engine using resolver, by K.-H. Goh, H.-M. Kim, STX Corporation, Korea</p>	<p>Session 07-04 <i>Chairman: K. Wilson, Keith Wilson & Associates, UK</i> <i>Co-chairman: Y. Wakatsuki, Mitsubishi Heavy Industries Ltd., Japan</i></p> <p>User aspects Engine operation</p> <p>64 Large marine low speed diesel engines analytical assessment of factors involved in cylinder liner and piston ring wear, by K. Iwaya, Y. Togo, Y. Kurose, K. Tanaka, M. Kobayashi, C. Shimokawa, Mitsui O.S.K. Lines Ltd., Japan</p> <p>14 Investigations into abrasive and corrosive wear mechanisms of pistons and liners in large bore 2-stroke diesel engine cylinders, by T. McGeary, Flame Marine Ltd., UK, F. Chew, Flame Marine Ltd., Singapore, J. Fogh, MAN B&W Diesel A/S, Denmark</p> <p>9 Influence of low cylinder consumption on operating cost for 2-stroke engines, by J. Dragsted, A.P. Møller, Denmark, O. Toft, Bergesen d.y. ASA, Norway</p>	<p>Session 03-05 <i>Chairman: K. Aabo, MAN B&W Diesel A/S, Denmark</i> <i>Co-chairman: T. Tokuoka, Kawasaki Heavy Industries Ltd., Japan</i></p> <p>Environment New fuel development</p> <p>Short presentation of CIMAC WG 7 “Heavy Fuel”</p> <p>170 The development of a new emulsified alternative fuel for diesel power generation, produced from waste plastics, by Dr. V. Soloiu, T. Kako, Prof. Dr. Y. Yoshihara, Prof. Dr. K. Nishiwaki, Prof. Dr. M. Hiraoka, Ritsumeikan University, Japan</p> <p>191 Systemic lubrication – delivery of performance through fuel and lubricant, by D. Adams, R. Caprotti, Infineum UK Ltd., UK</p> <p>207 Development of hydrogen injection clean engine, by S. Osafune, H. Akagawa, H. Ishida, H. Egashira, Y. Kuma, Mitsubishi Heavy Industries Ltd., W. Iwasaki, Energy and Industrial Technology Development Organisation, Japan</p> <p>212 Power station performance optimised by the use of fuel treatment additives, by B. Wouters, Peruhmahan Bukit Indah Sukajadi, Indonesia, J. Östlund, Bycosin AB Octel Marine & Power, Sweden, A. Marschewski, Octel Deutschland GmbH, Germany</p>	
<p>15:00 30 minutes coffee break</p>					
15:30	<p>Panel “Reliability and certification”</p> <p>Panellists: N. Rattenbury, Lloyd's Register, UK S. Miyake, Mitsui Engineering & Shipbuilding Co. Ltd., Japan N. Ohno, N.Y.K. Line Ltd., Japan H. Fellmann, Märkische Werk GmbH, Germany T. David, NSB Niederelbe Schifffahrtsgesellschaft mbH & Co. KG, Germany N. Mikulicic, Wärtsilä Switzerland Ltd., Switzerland R. Hoogerbrugge, P&O Nedlloyd, Netherlands</p>		<p>Panel “Gas turbine future aspects”</p> <p>Panellists: Dr. M. Sato, Central Research Institute of Electric Power Industry (CRIEPI), Japan (Chair) Y. Fukuizumi, Mitsubishi Heavy Industries Ltd., Japan Dr. K. Mori, Kawasaki Heavy Industries Ltd., Japan A. Robinson, Solar Turbines Inc., USA</p>		

Poster session (located in the exhibition area)

Presentation during the breaks of the technical session

- 194 Characteristic transition and tendency for marine fuel oil in last ten years,**
by T. Sasaki, M. Imai, T. Moriwaki, Mitsui O.S.K. Lines, Japan
- 188 Experiences in operation and maintenance of diesel engines – INDIAN NAVY,**
by B. Paramesh, Indian Navy, India
- 186 The role of effective diesel engine owner's groups in successful power plant operations,**
by A. G. Killinger, MPR Associates, Inc., USA
- 65 Synthetic coated bearings as future alternative for large engines,**
by Dr. R. Mergen, Dr. H. Lang, L. Harreither, MIBA Gleitlager GmbH, Austria
- 106 A study of theoretical analysis for improving the safety factor of main bearing under vessel deformation,**
by I. Sugimoto, S. Baba, Hitachi Zosen Corporation, M. Yatsuo, T. Nakao, H. Tanaka, Hitachi Zosen Diesel & Engineering Co., Ltd., Japan
- 270 A study on the key techniques of common rail fuel injection system for marine diesel engine,**
by Fang Zuhua, Prof. Feng Mingzhi, Ping Tao, Jin Jiangshan, Liu Shaoyan, Fang Wenshao, Zhao Wie, Shanghai Marine Diesel Engine Research Institute, PR China
- 59 Design optimization of turbocharger compressor for high pressure turbocharged diesel engine,**
by S. Ibaraki, T. Matsuo, K. Shiraishi, Mitsubishi Heavy Industries, Ltd., K. Imakiire, MHI Marine Engineering, Ltd., Japan
- 15 CANopen framework for maritime electronics,**
by H. Zeltwanger, CAN in Automation e.V., Germany

17:00 End of technical sessions for Wednesday

Thursday, 10th June 2004

Technical Programme – “Environment”

Time	Room A	Room D	Room B-1	Room B-2
08:30	<p>Session 03-01 <i>Chairman:</i> R. Vestergren, Wärtsilä Corporation, Finland <i>Co-chairman: Prof. T. Ishiyama, Kyoto University, Japan</i></p> <p>Environment Exhaust emissions abatement technology (1)</p> <p>Short presentation of CIMAC WG 5 “Exhaust Emission Control”</p> <p>187 Maritime air pollution prevention regulations from the view of a classification society, by H.-J. Goetze, Germanischer Lloyd AG, Germany</p> <p>87 NOx emission from bunker fuel combustion, by Prof. Dr. K. Takasaki, Dr. H. Tajima, A. Strom, Kyushu University, Dr. K. Tayama, Japan Internal Combustion Engine Federation, H. Tanaka, Hitachi Zosen Diesel & Engineering Co., Ltd, S. Baba, Hitachi Zosen Corporation, Japan</p> <p>25 Development of diesel engine emission control system on NOx and SOx by seawater electrolysis, by H.-S. Kim, Kobe University of Mechanical Engineering, Japan</p> <p>30 Predictive monitoring system for oxides of nitrogen emissions from marine diesel engines, by Dr. L. Goldsworthy, Australian Maritime College, Australia</p>	<p>Session 03-03 <i>Chairman: N. Raje, Indian Oil Corporation Ltd., India</i> <i>Co-chairman: Dr. S. Yamagishi, The Shipbuilding Research Association of Japan, Japan</i></p> <p>Environment Combustion (1)</p> <p>85 Highly temporal resolved detection of soot particle properties in a common-rail direct injection diesel engine, by M. Stumpf, Dr. B. Jungfleisch, H. Kubach, Dr. A. Velji, Prof. Dr. U. Spicher, Dr. R. Sultz, Prof. Dr. H. Bockhorn, J. Hentschel, Universität Karlsruhe, Germany</p> <p>171 Development of combustion facility of constant-volume vessel for investigating combustion characteristics of bunker fuel oil, by Prof. E. Tomita, N. Kawahara, T. Ohuchi, T. Imahashi, Okayama University, I. Takasu, Diesel United Ltd., H. Morinaka, Eiwa-Giken, K. Yokota, Daiichi-Koei, Japan</p> <p>138 Possibilities and perspectives of combustion system development using electronically controlled fuel injection systems, by Dr. P. Eilts, G. Tinschmann, MAN B&W Diesel AG, Germany</p> <p>226 A predictive model for catalytic converters on stationary internal-combustion engines, by J. Aleixo, T. Leprince, S. Williams, M. Chen, DCL International Inc., Canada</p>	<p>Session 15-02 <i>Chairman: R. Duda, Unlimited Design International, Inc., USA</i> <i>Co-chairman: K. Shiode, American Petro Chemical (Japan) Ltd., Japan</i></p> <p>ASME-ICED Emissions</p> <p>254 Chemical composition of the exhaust from low-NOx low-PM Diesel Combustion, by Dr. R. Wagner, S. Sluder, Dr. J. Storey, Dr. S. Lewis, Oak Ridge National Laboratory, USA</p> <p>264 Comparison of X-ray based fuel spray measurements with computer simulation using the cab model, by S. Ciatti, Argonne National Laboratory, USA</p> <p>260 Performance comparison of diesel with hydrogen at different speeds, by Prof. M. Tayyab, Muffakham Jah College of Engineering & Technology, India</p>	<p>Session 08-02 <i>Chairman: L. Nerheim, Rolls-Royce Marine A/S Engines-Bergen, Norway</i> <i>Co-chairman: Dr. A. Sakane, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</i></p> <p>Gas engines Combustion</p> <p>2 Development considerations for lean burn natural gas engines employing the Miller cycle, by Dr. J. Hiltner, Hiltner Combustion System, USA</p> <p>183 Virtual development of combustion concepts for large gas engines, by Prof. Dr. A. Wimmer, Dr. F. Chmela, Dr. M. Engelmayer, H. Winter, LEC - Large Engines Competence Center, Austria</p> <p>210 Regeneration of palladium based catalyst for methane abatement, by T. Leprince, J. Aleixo, S. Williams, M. Naseri, DCL International Inc., Canada</p> <p>31 Ignition and combustion characteristics of natural gas in a dual fuel diesel engine, by Prof. M. Ishida, T. Tagai, Prof. H. Ueki, D. Sakaguchi, Nagasaki University, Japan</p>

10:00 30 minutes coffee break

Time	Room A	Room D	Room B-1	Room B-2
10:30	Session 03-02 Chairman: <i>G. Fleischhack, OSC, Germany</i> Co-chairman: <i>Prof. O. Nishida, Kobe University, Japan</i>	Session 03-04 Chairman: <i>J.-F. Chapuy, S.E.M.T. Pielstick, France</i> Co-chairman: <i>Prof. Dr. K. Takasaki, Kyushu University, Japan</i>	Session 15-04 Chairman: <i>Dr. A. Kirkpatrick, Colorado State University, USA</i> Co-chairman: <i>S. Yasueda, GDEC - Gas & Diesel Engine Consultant, Japan</i>	Session 11/12 Chairman: <i>Dr. H. Wettstein, Alstom Power (Switzerland) Ltd., Switzerland</i> Co-chairman: <i>K. Hiraoka, National Maritime Research Institute, Japan</i>
	Environment Exhaust emission abatement technology (2)	Environment Combustion (2)	ASME-ICED Gas engines	Environment Combustion and high temperature technology
	<p>169 Application of ZrO₂-type NOx sensor for on-board measurements of engine emissions, by N. Kihara, T. Kusaka, HORIBA, Ltd., Japan</p> <p>107 Measurement of PM emission from marine diesel engines, by Prof. Dr. K. Maeda, M. Tuda, M. Yasunari, National Fisheries University, Prof. Dr. K. Takasaki, Kyushu University, K. Masuda, DAIHATSU DIESEL MFG. CO., LTD., Japan</p> <p>179 Large scale SCR application on diesel power plant, by K. Rasmussen, L. Ellegaard, Burmeister & Wain Scandinavian Contractor A/S, Denmark, M. Hanafusa, K. Shimada, Mitsui Engineering & Shipbuilding Co. Ltd., Japan</p> <p>126 Latest on emission control water emulsion and exhaust gas re-circulation, by K. Aabo, N. Kjemtrup, MAN B&W Diesel A/S, Denmark</p>	<p>121 Estimation of combustion process based on rate of heat release curve in a two-stroke slow-speed large marine diesel engine, by T. Imahashi, Prof. E. Tomita, S. Yoshiyama, S. Ichimura, Okayama University, K. Moriyama, Diesel United, Co. Ltd., Japan</p> <p>57 Study on the correlation between carbon composites of marine fuel oil and high exhaust gas temperature, by T. Hashimoto, S. Sasaki, Nippon Kaiji Kyokai (ClassNK), Japan</p> <p>231 Cylinder pressure data analysis to estimate emission factors on large bore slow speed marine diesel engines, by Dr. T. Borkowski, Prof. J. Listewnik, Maritime University Szczecin, Poland</p> <p>112 Humidification methods for reduction of NOx emissions, by J. Hupli, Wärtsilä Italy S.p.A., Italy, D. Paro, Wärtsilä Corporation, Finland</p>	<p>257 Pilot ignition of stoichiometric natural gas mixtures with exhaust gas recirculation, by T. Callahan, Southwest Research Institute, USA</p> <p>253 Adaptive control for extending the effective lean limit in a spark-ignition engine model, by Dr. K. Edwards, Dr. R. Wagner, Dr. C. Daw, Oak Ridge National Laboratory, USA</p> <p>215 Optimum load-step response of fuel-injected reciprocating gas engines, by Dr. J. Klimstra, Wärtsilä Nederland BV, Netherlands</p> <p>204 Laser ignition for natural gas reciprocating engines: a literature review, by S. Gupta, R. Sekar, Argonne National Laboratory, S. Saretto, S. Pal, R. Santoro, The Pennsylvania State University, A. Bining, California Energy Commission, USA</p>	<p>225 Numerical simulation on combustion of low calorific fuel in gas turbines, by Dr. D. Riechelmann, Dr. T. Fujimori, Ishikawajima-Harima Heavy Industries Co., Ltd., Japan, F. Prudhomme, Ecole Nationale Supérieure de Mécanique et d'Aérotechnique (ENSMA), France</p> <p>228 Degradation and cracking behaviors of stage 1 bucket coating in 1100°C-class gas turbines, by Y. Yoshioka, D. Saito, K. Ishibashi, H. Okamoto, A. Izumi, Y. Aburatani, Toshiba Corporation, Japan</p> <p>173 Ultra low emission gas turbine combustion: an experimental investigation of catalytically stabilized lean pre-mixed combustion on modern gas turbine conditions, by J. Jayasuriya, A. Ersson, Prof. S. Jaras, J. Fredriksson, Prof. T. Fransson, Royal Institute of Technology, Sweden</p> <p>108 Developments of gas turbine combustors for air-blown and oxygen-blown IGCC, by T. Hasegawa, Dr. M. Sato, T. Hisamatsu, T. Ninomiya, Central Research Institute of Electric Power Industry (CRIEPI), H. Koizumi, A. Hayashi, N. Kobayashi, Hitachi Ltd., M. Yamada, Y. Iwai, Toshiba Corporation, Japan</p>

12:00 Lunch break

13:30 The Collin Trust Lecture, by Prof. M. Ikegami, Kyoto University, Japan

14:30 Panel - "Environment and human friendly ICE"

Panelists:

Prof. N. Kyrntatos, NTUA, Greece (chair)

S. Dexter, AVL List GmbH, Austria

L. Nerheim, Rolls Royce Marine A/S Engines-Bergen, Norway

Dr. G. Wachtmeister, MAN B&W Diesel AG, Germany

Prof. M. Kleimola, Wärtsilä Corporation, Finland (co-chair)

J. Kytölä, Wärtsilä Corporation, Finland

K. Sakaguchi, Mitsubishi Heavy Industries Ltd., Japan

16:00 End of technical sessions for Thursday

18:30 Gala dinner party at Westin Miyako Hotel, Kyoto