



CIMAC CONGRESS **25**

ZURICH, MAY 19 – 23, 2025

Congress program

How to navigate this program

| | Weichai | Lubrizol | Duap | R4 |
|---------------------|---|---|--|---|
| 09:00 – 10:40 | Ammonia applications (Session 8: New & alternative fuels) | New & basic research I (Session 16: Basic research & advanced engineering) | Turbochargers I (Session 15: Turbochargers) | Hybrid system integration or integratio at ship level (Session 2: System integration & hybrid) |
| 11:20 – 13:00 | Methanol applications (Session 8: New and alternative Fuels) | Lubricants for low carbon fuels (Session 9: Lubricants) | Mechanics, materials, coatings (Session 18: Mechanics, materials, coatings) | Pecha kucha I (Pecha kucha session) |
| 14:00 – 15:40 | Colin Trust Keynote | | | |
| 16:40 – 18:20 | Engine platform and industry perspective (Session 10: Dual fuel) | Fuel system development for futre fuels I (Session 13: Fuel injection) | Ring liner interaction (Session 17: Tribology) | Combustion development for alternative fuels (Session 6: Emission reduction engine measures) |

1. In the daily overview:

(Slide 3-6)

Press the link in the session name to see the presentations of the session

(Does not work on this explanatory slide)

2. In the session overview:

(Slide 7 following)

Press the link on the day to quickly and conveniently return to the daily overview

(Does not work on this explanatory slide)

| ID | Abstract Title | Name | Company |
|-----|--|----------------------|----------------------|
| 25 | Multi-scale digital twins & AI analytics for lifecycle insights and accelerated energy solutions | Robert Whittaker | Innio Jenbacher GmbH |
| 131 | MAN-ES: Navigating Connectivity, Cyber Security and AI at Sea | Casper Olesen | MAN Energy Solutions |
| 195 | Securing legacy automation components in UR-E27 Systems | Christopher Sundberg | Woodward, Inc. |
| 200 | A Study on Engine Fault Diagnosis and Maintenance Solutions Based on the BERT Pre-trained Model | Jin Guan | FAWDE |
| 338 | DIEM - A Digital Engine Management Platform for Performance Assessment and CBM for LNG Fleets | Panos Kyratos | Propulsion Analytics |

3. Browse by topic:

Or browse the sessions from slide 7 on sorted by topic

Day: **Monday**
Time: **13:40 – 15:20**

Day 1:

Monday, 19.05.2025

| | Weichai | Lubrizol | Duap | Peter Fuchs Technology |
|---------------------|---|--|--|---|
| 10:00 – 13:00 | Opening Ceremony Keynote Speech: Prof. Lynn Loo (Global Centre for Maritime Decarbonisation) Keynote Speech: Karsten Rolle (World Energy Council) | | | |
| | Lunch break | | | |
| 14:00 – 15:40 | Future fuels properties / impacts (Session 8: New & alternative fuels) | Management and cybersecurity of connected vessels (Session 1: Digitalization) | Automation (Session 4: Controls, measurement, automation) | Power-Gen (Session 20: Operators' perspective) |
| | Poster Session Monday / Break | | | |
| 16:20 – 18:00 | Dual fuel low carbon fuels (Session 10: Dual fuel) | Combustions development I (Session 17: Simulation technologies) | Visualization: hydrogen (Session 19: Visualization) | Electrification and fuel cells I (Session 3: Electrification and fuel cells) |
| 19:30 | Welcome Reception @ the congress venue | | | |

Day 2:

Tuesday, 20.05.2025

| | Weichai | Lubrizol | Duap | Peter Fuchs Technology |
|---------------------|---|---|--|--|
| 09:00 – 10:40 | Ammonia applications (Session 8: New & alternative fuels) | New & basic research I (Session 16: Basic research & advanced engineering) | Turbochargers I (Session 15: Turbochargers) | Hybrid system integration or integration at ship level (Session 2: System integration & hybrid) |
| | Poster Session Tuesday Morning / Break | | | |
| 11:20 – 13:00 | Methanol applications (Session 8: New and alternative fuels) | Lubricants for low carbon fuels (Session 9: Lubricants) | Mechanics, materials, coatings (Session 18: Mechanics, materials, coatings) | Pecha Kucha I (Pecha Kucha session) |
| | Lunch Break | | | |
| 14:00 – 15:40 | Colin Trust keynote: „Strategic thinking on the four levels of AI” Prof. Stefan Michel, Professor of Management / Dean of Faculty and Research - IMD, Lausanne Panel discussion Peter Krähenbühl, Vice President Product Centre and former GM digital transformation (WinGD) Amelie Desrochers, Research Associate (Cleantech) Paolo Tonon, Technical Director (Berge Bulk) Marco Coppo, Co-Chair Digitalization Strategy Group (CIMAC) Moderation: Kathrin Lau, Editor in Chief (DVV / Ship & Offshore) | | | |
| | Poster Session Tuesday Afternoon / Break | | | |
| 16:20 – 18:00 | Engine platform and industry perspective (Session 10: Dual fuel) | Fuel system development for future fuels I (Session 13: Fuel injection) | Ring-liner interaction (Session 14: Tribology) | Combustion development for alternative fuels (Session 6: Emission reduction engine measures) |

Day 3:

Wednesday, 21.05.2025

| | Weichai | Lubrizol | Duap | Peter Fuchs Technology |
|---------------------|--|---|--|--|
| 09:00 – 10:40 | Biofuels / alternative liquid fuels I (Session 8: New and alternative fuels) | Engine measures and emission measurements (Session 6: Emission reduction technologies engine measures) | Retrofits (Session 12: Retrofit solutions) | Hybrid technologies (Session 2: System integration & hybridization) |
| | Poster Session Wednesday Morning / Break | | | |
| 11:20 – 13:00 | Condition monitoring of vessel components (Session 1: Digitalization) | Exhaust aftertreatment (Session 5: Exhaust Gas Aftertreatment Solutions & CCS) | New & basic research II (Session 16: Basic research and advanced engineering) | Electrification and fuel cells development II (Session 3: Electrification and fuel cells) |
| | Lunch Break | | | |
| 14:00 – 15:40 | Panel discussion: Decarbonizing Marine Across the Value Chain Peter Schild, Managing Director Sustainability (Proman) Eman Abdalla, Global Operations & Supply Chain Director (Cargill) Alexandra Ebbinghaus, GM Decarbonisation (Shell) Giuseppe Gargiulo, Head of New Newbuilding (MSC) Shingo Mizutani Executive Officer of NYK Line & CEO of NYK Shipmanagement Pte. Ltd (NYK) Moderation: Kathrin Lau, Editor in Chief (DVV / Ship & Offshore) | | | |
| | Poster Session Wednesday Afternoon / Break | | | |
| 16:20 – 18:00 | Future fuel concepts (Session 8: New and alternative fuels) | Combustion development II (Session 17: Simulation technologies) | New engine concepts and systems - ammonia (Session 11: New engine concepts & systems) | Controls (Session 4: Controls, measurement, automation) |

Day 4:

Thursday, 22.05.2025

| | Weichai | Lubrizol | Duap | Peter Fuchs Technology |
|---------------------|--|--|---|---|
| 09:00 – 10:40 | Hydrogen applications (Session 8: New and alternative fuels) | New engine concepts & systems – methanol and hydrogen (Session 11: New engine concepts & systems) | Fuel system development analysis (Session 13: Fuel injection) | NH3 aftertreatment (Session 5: Exhaust gas aftertreatment solutions & CCS) |
| | Poster Session Thursday / Break | | | |
| 11:20 – 13:00 | Ammonia (Session 19: Visualization) | Safety aspects of new and alternative fuels (Session 20: Operators' perspective) | Turbochargers II (Session 15: Turbochargers) | Fuel system development for future fuels II (Session 13: Fuel Injection) |
| | Lunch Break | | | |
| 14:00 – 15:40 | Biofuels / liquid alternative fuels II (Session 8: New and alternative fuels) | Conventional lubricants and low carbon lubricants (Session 9: Lubricants) | Monitoring (Session 4: Controls, measurement, automation) | Pecha Kucha II (Pecha Kucha session) |
| | Break | | | |
| 16:20 – 18:00 | Monitoring and operation (Session 14: Tribology) | Conventional fuels (Session 10: Dual fuel) | CCS and new technology (Session 5: exhaust gas aftertreatment solutions & CCS) | Components optimization (Session 17: Simulation technologies) |
| 19:00 | Gala Dinner @ Albisgütli | | | |

Topic 1: Digitalization, connectivity, artificial intelligence & cyber security

Session Name: Management and cybersecurity of connected vessels

Session Organizer:
Marco Coppo (OMT)
Konstantin Kiesling (LEC)

| ID | Abstract Title | Name | Company |
|-----|---|------------------|--------------------------|
| 25 | Multi-scale digital twins & AI analytics for lifecycle insights and accelerated energy solutions | Robert Whittaker | Innio Jenbacher |
| 131 | MAN ES: Navigating connectivity, cyber security and AI at sea | Casper Olesen | MAN Energy Solutions |
| 338 | DIEM - A digital engine management platform for performance assessment and CBM for LNG fleets | Panos Kyrtatos | Propulsion Analytics |
| 334 | HiMSEN digital transformation on sites: Optimizing emission evaluation and enabling advanced analysis | Seohyun Jang | Hyundai Heavy Industries |
| | | | |

Day: Monday
Time: 13:40 – 15:40

Topic 1: Digitalization, connectivity, artificial intelligence
& cyber security

Session Name: Condition monitoring of vessel components

Session Organizer:
Marco Coppo (OMT)
Konstantin Kiesling (LEC)

| ID | Abstract Title | Name | Company |
|-----|--|----------------------|-------------------------|
| 58 | Advanced digital methods for condition monitoring of bearing systems for large bore ICEs | Gunther Hager | Miba Gleitlager Austria |
| 122 | AI-supported surface topography characterization of cylinder liners in large ICEs | Christian Laubichler | LEC |
| 266 | Virtual model for continuous turbocharger optimization and monitoring | Matthias Roosz | AVAT Automation |
| 297 | Digitalization in filtration – how data-driven maintenance can help to protect your assets | Andreas Schilbert | Boll & Kirch Filterbau |
| | | | |

Day: Wednesday
Time: 11:20 – 13:00

Topic 2: System Integration & hybridization

Session Name: Hybrid system integration or integration at ship level

Session Organizer:
Elias Boletis (Enarate Marine)
Hinrich Mohr (Gaskraft Engineering)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------------------------|--|
| 140 | Design and optimized control of hybrid propulsion systems based on a modular simulation kit | Torsten Dunger | ITK-Engineering |
| 272 | CO ₂ reduction benefits through engine room hybridization by applying ECMS algorithm | Apostolos Karvountzis-Kontakiotis | Winterthur Gas & Diesel |
| 333 | DG optimization for CO ₂ reduction in microgrids with increased RES penetration: a simulation study | Issam Matragi | Centrale Nantes |
| 348 | Development and real ship application of intelligent multi-mode switching control device | Chen Defu | Shanghai Marine Diesel Engine Research Institute |
| 502 | Preliminary implementation of a FC-ICE system for power and propulsion of a 14000 TEU containership | Peter de Vos | Delft University of Technology |

Day: Tuesday
Time: 09:00 – 10:40

Topic 2: System integration & hybridization

Session Name: Hybrid technologies

Session Organizer:
Elias Boletis (Enarate Marine)
Hinrich Mohr (Gaskraft Engineering)

| ID | Abstract Title | Name | Company |
|-----|---|------------------|----------------------------------|
| 77 | Superior application solutions and key technical points for ship shaft generator system | Zhangchao Liu | Tongji University |
| 130 | Dynamic performance of a high-pressure direct injection methanol-fuelled engine | Benny Mestemaker | Royal IHC |
| 211 | Application of Kawasaki green gas engine L30KG for hybrid propulsion system | Nobuhiko Kii | Kawasaki Heavy Industries |
| 284 | Use case: Estimation and optimization of a hybrid ship power system in early design stage | Oliver Klein | Hamburg University of Technology |

Day: Wednesday
Time: 09:00 – 10:40

Topic 3: Electrification and fuel cells development

Session Name: Electrification and fuel cells development I

Session Organizer:
Mathias Moser (MAN ES)
Günter Figer (AVL List)

| ID | Abstract Title | Name | Company |
|-----|---|---------------------|-------------------------------|
| 109 | Advanced balance of plant solutions for high-power, high-efficiency and reliable fuel cell systems | Peter Fledersbacher | Woodward |
| 179 | Hydrogen retrofit of a RoRo-ferry – the holistic approach | Jorim Rosenberg | H2 Energy |
| 264 | PEM fuel cell systems for marine propulsion | Anton Reiter | AVL List |
| 417 | A predictive energy management for hybrid ship propulsion system considering battery capacity decay | Chen Chen | Harbin Engineering University |
| 83 | Integration of a hybrid hydrogen fuel cell-battery propulsion system into a modular rail vehicle | Stefan Bernsdorf | Stadler Rail Management AG |

Day: Monday
Time: 16:20 – 18:00

Topic 3: Electrification and fuel cells development

Session Name: Electrification and fuel cells development II

Session Organizer:
Mathias Moser (MAN ES)
Günter Figer (AVL List)

| ID | Abstract Title | Name | Company |
|-----|---|--------------------|--------------------------|
| 233 | Development of the 200kW marine PEMFC system for SMVs | Youngtak Cho | Hyundai Heavy Industries |
| 474 | Holistic Integration of battery hybrid systems in merchant vessels: Evaluation of real-life data | Alessandro Zanelli | Winterthur Gas & Diesel |
| 158 | Battery-electric propulsion for ocean-going cargo ships – design, operations and techno-economics | Jan Seidl-Zelenka | Nordem |
| 64 | A holistic approach to Solid Oxide technology through optimization of its supporting components. | Joseph McCarney | Johnson Matthey |
| 480 | Fuel cell retrofits - safety and practical challenges | Thomas Bayer | Lloyd's Register |

Day: Wednesday
Time: 11:20 – 13:00

Topic 4: Controls, automation, measurement, monitoring & predictive maintenance

Session Name: Controls

Session Organizer:
Yi Han (Woodward)
Rom Rabe (University of Wismar)

| ID | Abstract Title | Name | Company |
|-----|--|------------------|--------------------------------|
| 27 | MBD based development platform for large bore midium speed engines | Masashi Kuwata | Daihatsu Diesel |
| 88 | Research on engine cylinder pressure identification method based on multi-signal fusion | Renqi Zhang | Wuhan University of Technology |
| 110 | Assessment and status of gaseous fuel rating using the methane number | Daniel B. Olsen | Colorado State University |
| 471 | Change point detection method for estimating the remaining useful lifetime of engine filters | Jean-Pierre Noot | Liebherr Components Colmar |
| 476 | A device for accurate dynamic air flow control in a hydrogen internal combustion engine | Georgios Bikas | University of Nürnberg |

Day: Wednesday
Time: 16:20 – 18:00

Topic 4: Controls, automation, measurement, monitoring & predictive maintenance

Session Name: Automation

Session Organizer:
Yi Han (Woodward)
Rom Rabe (University of Wismar)

| ID | Abstract Title | Name | Company |
|-----|---|--------------------|-------------------------|
| 17 | Exploring digital ecosystems: Field insights from a powertrain monitoring perspective | Andreas Thalhammer | Geislinger |
| 194 | AFR3 fuel system by INNIO's Waukesha Engine | Bryan Hermsen | INNIO Waukesha Engine |
| 201 | Advanced actuation technology for cyber secure P2X engines | John Karspeck | Woodward Inc. |
| 230 | Maneuvering control technology for a ship with twin azimuth thrusters | Hidetaka Sato | IHI Power Systems |
| 287 | A methodology for data-driven diagnosis of marine two-stroke dual-fuel engines | Ioannis Sklias | Winterthur Gas & Diesel |

Day: Monday
Time: 13:40 – 15:20

Topic 4: Controls, automation, measurement, monitoring & predictive maintenance

Session Name: Monitoring

Session Organizer:
Yi Han (Woodward)
Rom Rabe (University of Wismar)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------------|--------------------------------|
| 98 | Challenges of measuring raw exhaust of ammonia engines | Philipp Jakubec | IAG Test Cell Technology |
| 176 | On the development of novel telemetry systems for online monitoring of highly stressed components an | Bernhard Rossegger | LEC |
| 224 | Alarm management in the maritime industry. A field investigation into the watchkeepers' experiences | Asger Schliemann-Haug | Lloyd's Register |
| 411 | Integrating physics-based models and ML for condition monitoring of large bore medium speed engines | Rik De Graeve | Anglo Belgian Corporation |
| 440 | Fuel slip monitoring in high-humidity flue gases from co-firing of ammonia with methane | Liuhao Ma | Wuhan University of Technology |

Day: Thursday
Time: 14:00 – 15:40

Topic 5: Exhaust gas aftertreatment solutions & CCS

Session Name: NH₃ engine aftertreatment

Session Organizer:

Daniel Peitz (Hug Engineering)

Kati Lehtoranta (VTT Technical Research Center of Finland)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------|--------------------------------------|
| 30 | Practical application study of exhaust gas aftertreatment system for ammonia diesel dual fuel engine | Yuki Shimizu | Daihatsu Diesel |
| 172 | Exhaust gas treatment concept with coordinated combustion process management for NH ₃ -diesel engines | Felix Wenig | University of Rostock |
| 235 | Emmissions countermeasures for low-speed 2-stroke marine ammonia engines | Takaaki Makino | Mitsui E&S |
| 255 | Development of after-treatment system for ammonia fueled engine | Taehwan Kim | Hyundai Heavy Industries |
| 465 | Exhaust after-treatment concepts for 2-stroke NH ₃ engines | Georgia Voniati | Aristotle University of Thessaloniki |

Day: Thursday
Time: 09:00 – 10:40

Topic 5: Exhaust gas aftertreatment solutions & CCS

Session Name: Exhaust aftertreatment

Session Organizer:

Daniel Peitz (Hug Engineering)

Kati Lehtoranta (VTT Technical Research Center of Finland)

| ID | Abstract Title | Name | Company |
|-----|--|----------------------|--|
| 34 | Operational insights into marine selective catalytic reactors (SCRs) | Fabian Kock | DNV |
| 74 | From lab to machinery space: Advances in methane slip catalyst technology & engine internal measures | Hans-Philipp Walther | MAN Energy Solutions |
| 138 | Ash generation options for accelerated testing of marine diesel particulate filters | Päivi Aakko-Saksa | VTT Technical Research Centre of Finland |
| 505 | Ultra-low emission vessel field experience | Koen Christianen | Anglo Belgian Corporation |
| 508 | Methanol combustion engine exhaust gas aftertreatment | Daniel Peitz | Hug Engineering |

Day: Wednesday

Time: 11:20 – 13:00

Topic 5: Exhaust gas aftertreatment and CCS

Session Name: CCS and new technology

Session Organizer:

Daniel Peitz (Hug Engineering)

Kati Lehtoranta (VTT Technical Research Center of Finland)

| ID | Abstract Title | Name | Company |
|-----|---|------------------------|-----------------------------|
| 183 | A techno-economic evaluation of decarbonization concepts for the shipping sector | Christoph Redtenbacher | LEC |
| 251 | Application of MHI CO ₂ capture technology for exhaust gas from internal combustion engine | Takashi Kamijo | Mitsubishi Heavy Industries |
| 700 | CIMAC WG5 White Paper: CCUS – Carbon Capture, Utilisation and Storage | Daniel Peitz | CIMAC e.V. |
| | | | |

Day: Thursday

Time: 16:20 – 18:00

Topic 6:

Emission reduction technologies - engine measures and combustion development

Session Name:

Engine measures and emission measurements

Session Organizer:
Christer Wik (Wärtsilä)
Koji Takasaki (Kyushu University)

| ID | Abstract Title | Name | Company |
|-----|--|--------------------|------------------------------|
| 171 | Wärtsilä active NOx control development for lean burn engine | Gilles Monnet | Wärtsilä |
| 330 | Advancing sustainable shipping: Strategies for methane slip reduction in Wärtsilä 4-stroke engines | Diego Delneri | Wärtsilä |
| 225 | Methane Slip Reduction Technology from LNG Fueled Engine by Catalyst and Engine Modification | Kazuteru Toshinaga | Yanmar Power Technology |
| 193 | Increasing Low-Load Exhaust Temperatures To Aftertreatment Suitable Levels on a Two-Stroke EMD 645 | Christopher Stoos | Southwest Research Institute |

Day: Wednesday
Time: **09:00 – 10:40**

Topic 6:

Emission reduction technologies - engine measures & combustion development

Session Name:

Combustion development for alternative fuels

Session Organizer:
Christer Wik (Wärtsilä)
Koji Takasaki (Kyushu University)

| ID | Abstract Title | Name | Company |
|-----|--|--------------------|-------------------------------|
| 85 | GHG and methane slip reduction: The role of hydrogen blending into natural gas. | Stefania Ischia | Wärtsilä |
| 102 | Investigation of port fuel injected methanol and its aftertreatment concepts | Martin Axelsson | Wärtsilä |
| 125 | A large-scale development of GHG reduction technology by ammonia fueled and hydrogen fueled engines | Takahiro Nagashima | Japan Engine Corporation |
| 292 | Design and demonstration of a NH ₃ -fueled two-stroke uniflow engine for greenhouse gas reduction | Joshua Marion | Dumarey USA |
| 7 | Combustion development of an ammonia diesel dual-fuel medium speed marine engine | Hongmei Li | Shanghai Jiao Tong University |

Day: Tuesday
Time: 16:20 – 18:00

Topic 7: Pecha kucha

Session Name: Pecha kucha I

| ID | Abstract Title | Name | Company |
|-----|--|---------------------|---|
| 26 | The solubility of ammonia in various fluids at different temperatures | Pourya Parsaeian | British Petroleum |
| 29 | New engine development - 16V180 from Isotta Fraschini Motori | Francesco Iannone | Isotta Fraschini Motori |
| 163 | A general-purpose digital twin for modern LNG carrier propulsion arrangements | George Dimopoulos | National Technical University of Athens |
| 184 | A value chain approach to decarbonizing the marine Industry | Paul Nai | Lubrizol |
| 187 | Hydraulically actuated hydrogen DI-injector | Alexandre Hild | Ganser CRS |
| 249 | Servo green edge - A high-performance stationary gas engine oil from IndianOil | Yogesh Kumar Sharma | IndianOil Corporation |
| 361 | Accelerating GHG reductions by changing your fuel, not your engine | Philip Hill | Quadrise |
| 507 | Hydrogen combustion engine exhaust gas aftertreatment | Daniel Peitz | Hug Engineering |

Day: Tuesday
Time: 11:20 – 13:00

Topic 7: Pecha kucha

Session Name: Pecha kucha II

| ID | Abstract Title | Name | Company |
|-----|---|-----------------|--|
| 20 | Is GHG emissions direct measurement a dilemma? | MAX WU | Lloyd's Register |
| 48 | Optimizing crankcase ventilation for alternative fuels: Addressing blow-by dilution and filtration | Niclas Nowak | UT99 |
| 155 | Advanced hybrid propulsion control system: Development, validation, and future | Seungwan Nam | HD Hyundai Heavy Industries |
| 173 | Measuring methane emissions from LNG engine utilizing different devices | Kati Lehtoranta | VTT Technical Research Centre of Finland |
| 192 | Modular automation (software and hardware) platform for P2X engine architectures | Yi Han | Woodward |
| 467 | Innovative oil mist separation for crankcase ventilation of ICE as a revised state of the art | Ulrich Luger | IFT |
| 268 | Multimodal analysis of biodiesel blended VLSFO for marine application: Techno-economic perspectives | Deva Dinesh | Hindustan Petroleum Corporation |

Day: Thursday
Time: 14:00 – 15:40

Topic 8: New and alternative fuels

Session Name: Future fuel properties / impacts

Session Organizer:
German Weisser (WinGD)
Andreas Wimmer (Graz University of Technology)

| ID | Abstract Title | Name | Company |
|-----|---|-----------------|------------------|
| 14 | Digital Fuel Twin - a simple and consistent solution to foster drop-In and alternative fuels | Jens Olaf Stein | Robert Bosch |
| 89 | Overcoming the technical barriers of methanol fuel using additives | Frank Simpson | Infineum |
| 238 | Stability assessment of bio-residual marine fuels (RF grades) through extended TSP and spin testing | Muhammad Usman | Lloyd's Register |
| 308 | Exploration of novel combustion strategy for alternative fuel using computational fluid dynamics | James Wood | Woodward |
| 424 | Evaluation of corrosion properties and oxidation stability of biodiesel blends | Sara Rezaee | Viswa Group |

Day: Monday
Time: 13:40 – 15:40

Topic 8: New and alternative fuels

Session Name: Biofuels / alternative liquid fuels I

Session Organizer:

Bartosz Rozmyslowicz (WinGD)

Charlotte Rojgaard (Bureau Veritas)

| ID | Abstract Title | Name | Company |
|-----|---|-------------------------|---------------------------------|
| 21 | Qualification of pyrolysis oil from cashew nut shell press cake as marine biofuel | Jan Seidl-Zelenka | Norden |
| 167 | Cashew nutshell liquid as a biofuel: Use of additives to improve engine operability | Amy Bates | Infineum |
| 489 | Study on the performance, emission and combustion characteristics of low-speed engine | Wu Gang | Shanghai Maritime University |
| 513 | Biodiesel blends with VLSFO - Brazil's field tests in vessels | Antonio Fernandez Prada | Petrobras - Petróleo Brasileiro |
| | | | |

Day: Wednesday

Time: 09:00 – 10:40

Topic 8: New and alternative fuels

Session Name: Biofuels / liquid alternative fuels II

Session Organizer:
Charlotte Rojgaard (Bureau Veritas)
Bartosz Rozmyslowicz (WinGD)

| ID | Abstract Title | Name | Company |
|-----|--|--------------------|--|
| 70 | The investigation on the application of dimethyl-ether based green synthetic fuel to Marine power | Teng Liu | China Shipbuilding Power Engineering Institute Co., Ltd. |
| 80 | Ethanol: A viable alternative fuel option | Juho Repo | Wärtsilä |
| 227 | Exhaust emissions on a 4-stroke engine from bio residual fuel containing tire pyrolysis oil and FAME | Barbara Heyberger | TotalEnergies |
| 416 | Stability of bio-blended residual marine fuel oil | Floris Lauwers | Bureau Veritas |
| 499 | Blending behaviour of pure, esterified and hydrotreated pyrolysis oils | Fanny Langschwager | University of Rostock |

Day: Thursday
Time: 16:20 – 18:00

Topic 8: New and alternative fuels

Session Name: Hydrogen applications

Session Organizer:

Andreas Wimmer (Graz University of Technology)

Christoph Kendlbacher (Robert Bosch)

| ID | Abstract Title | Name | Company |
|-----|---|----------------|--|
| 97 | Hydrogen based ship propulsion, first ever large two-stroke engine tests with hydrogen. | Johan Sjöholm | MAN Energy Solutions |
| 144 | Effects of hydrogen co-firing on the performance of Mitsubishi KU30GSI gas engine | Junnosuke Ando | Mitsubishi Heavy Industries |
| 151 | Analysis on combustion and emission of hydrogen-LNG blends in a medium-speed LNG dual-fuel engine | Hyunwoo Song | HD Korea Shipbuilding & Offshore Engineering |
| 208 | Kawasaki's gas engines powered by hydrogen for stationary generation | Akihito Aota | Kawasaki Heavy Industries |
| 305 | Preliminary investigation of the Wabtec NextFuel engine for hydrogen/diesel dual fuel operation | Adam Klingbeil | Wabtec Corporation |

Day: Thursday
Time: **09:00 – 10:40**

Topic 8: New and alternative fuels

Session Name: Ammonia applications

Session Organizer:
Kangki Lee (Zoellner Marine)
German Weisser (WinGD)

| ID | Abstract Title | Name | Company |
|-----|---|----------------|-------------------------------|
| 82 | High efficiency ammonia combustion in the MAN B&W LGI-A marine two-stroke engine | Johan Hult | MAN Energy Solutions |
| 191 | Efficiency and emissions of ammonia-diesel dual-fuel combustion in a high-speed 4-stroke engine | Brian Kaul | Oak Ridge National Laboratory |
| 214 | Development of ammonia fueled engine (28ADF) for future marine industries | Yutaka Masuda | IHI Power Systems |
| 421 | Power generation using ammonia as a single fuel in internal combustion engines | Clément Leroux | Innio Jenbacher |
| 455 | The steady-state and transient performance of an ammonia-diesel dual fuel multi-cylinder engine | Longfei Deng | Tianjin University |

Day: Tuesday
Time: 09:00 – 10:40

Topic 8: New and alternative fuels

Session Name: Methanol applications

Session Organizer:
Christoph Kendlbacher (Robert Bosch)
Fabian Kock (DNV)

| ID | Abstract Title | Name | Company |
|-----|---|-------------------|--|
| 16 | Experimental study on improvement of ignitability of methanol fuel | Katsuyoshi Asaka | Daihatsu Diesel |
| 37 | Effects of biodiesel pilot ignition in dual-fuel methanol combustion | Derek Splitter | Oak Ridge National Laboratory |
| 170 | E-methanol for shipping: Quality considerations for reduced environmental impact | Päivi Aakko-Saksa | VTT Technical Research Centre of Finland |
| 108 | Experimental investigations of a methanol dual-fuel combustion process for marine engines | Karsten Stenzel | WTZ Roßlau |
| | | | |

Day: Tuesday
Time: 11:20 – 13:00

Topic 8: New and alternative fuels

Session Name: Future fuel concepts

Session Organizer:
Fabian Kock (DNV)
Kangki Lee (Zoellner Marine)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------------|-------------------------------|
| 234 | High reactivity fuel ignition pre-chamber: Stable and rapid combustion for ammonia marine engine | Jinze Li, Zhuohang Li | Shanghai Jiao Tong University |
| 341 | Ammonia-based powertrain with onboard generation of hydrogen for small ICEs | Benjamin Stengel | FVTR |
| 396 | Gane fuel and Infineum additives – a single fuel methanol solution | Greg Morris | Gane Energy & Resource Pty |
| 446 | Ammonia: Energy carrier only or well-suited sustainable fuel for large engine applications? | Marcel Lackner | LEC |

Day: Wednesday
Time: 16:20 – 18:00

Topic 9: Lubricants

Session Name: Lubricants for low carbon fuels

Session Organizer:

Sadao Nakayama (IHI Power Systems)

Stefan Schmitz (Boll und Kirch)

| ID | Abstract Title | Name | Company |
|-----|--|-------------|--------------------------------------|
| 1 | Lubricants enabling alternative fuels for maritime decarbonization | Paul Elliot | Gulf Marine |
| 510 | Field experience with Shell Alexia 40 XC in dual fuel 2-stroke engines combusting alternative fuels. | Luis Garcia | Shell Global Solutions (Deutschland) |
| 107 | Achieving the right viscosity for marine lubricants in a sustainable future | Shenghua Li | Chevron Oronite Company LLC |
| 222 | Engine Oil Formulations with Improved Cleanliness for New-Generation Two-Stroke Marine Engines | Bijan Roy | Indian Oil Corporation Limited |
| | | | |

Day: Tuesday

Time: 11:20 – 13:00

Topic 9:

Lubricants

Session Name: Conventional lubricants and low carbon lubricants

Session Organizer:
Stefan Schmitz (Boll und Kirch)
Sadao Nakayama (IHI Power Systems)

| ID | Abstract Title | Name | Company |
|-----|---|-------------------|---|
| 293 | Emerging fuel impact on engine lubrication and lubricating oil condition in marine low speed and med | Luc Verbeeke | Chevron Belgium |
| 514 | Medium speed engine oils optimized for ultra low emission profiles | Daniel Peitz | Hug Engineering |
| 280 | Reducing CO ₂ impact through fuel economy: Developing a 2-stroke FE system oil – results, next steps | Catherine Amblard | TotalEnergies |
| 478 | Assessment & Comparison of Dispersancy Properties in Fresh Lube Oils | Ganesh Natarajan | The Viswa Group |
| 511 | Development of an Advanced Lubricant for Modern Gas Engines and Field Performance Confirmation | Luis Garcia | Shell Global Solutions (Deutschland) GmbH |

Day: Thursday
Time: 14:00 – 15:40

Topic 10: Dual fuel

Session Name: Dual fuel 1: Low-carbon fuels

Session Organizer:
Adam Klingbeil (Wabtec Corporation)
Kaj Portin (Wärtsilä)

| ID | Abstract Title | Name | Company |
|-----|--|-------------|--|
| 127 | The optimization of the structure of piston for ammonia-diesel dual-fuel engine under heavy load | Yanling He | Tianjin University |
| 203 | Methanol port fuel injection technology study on CPGC M320 engine | Yuehua Qian | China Shipbuilding Power Engineering Institute |
| 418 | Genetic algorithm-assisted performance prediction of an MW-scale ammonia-diesel dual-fuel engine | Yan Zhang | University of Birmingham |
| | Reorganization of the room for the welcome reception from 17:20 on | | |

Day: Monday
Time: 16:20 – 18:00

Topic 10: Dual fuel

Session Name: Dual fuel 2: Engine platform and industry perspective

Session Organizer:
Sebastian Hensel (WinGD)
Adam Klingbeil (Wabtec Corporation)

| ID | Abstract Title | Name | Company |
|-----|---|-------------------|------------------------------|
| 367 | Innovative HiMSEN methanol engine development with virtual product development(VPD) technology | Gwanghyeon Yu | Hyundai Heavy Industries |
| 120 | The latest technologies of J-ENG UE engine | Jun Yanagi | Japan Engine Corporation |
| 381 | Development of 4-stroke medium speed methanol/diesel-fueled engine for marine application in YANMAR | Daisuke Morimitsu | Yanmar Power Technology |
| 470 | X-DF-M - WinGD's new methanol engine | Andrea Pastore | Winterthur Gas & Diesel |
| 8 | Methanol Dual Fuel Engine Development Status | Yoshinori Kaji | Daihatsu Diesel MFG.CO.,LTD. |

Day: Tuesday
Time: 16:20 – 18:00

Topic 10: Dual fuel

Session Name: Dual-fuel 3: Conventional fuels

Session Organizer:
Kaj Portin (Wärtsilä)
Sebastian Hensel (WinGD)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------------------|---|
| 105 | Lowest GHG emissions on medium speed engines by higher epsilon and H ₂ -admission to the fuel gas | Manuel Glauner | University of Rostock, Chair of Piston Machinery and Internal Combustion Engines |
| 311 | Using multi-stage Wiebe to characterize the combustion of a converted marine NG SI engine | Konstantinos Kiouranakis | Delft University of Technology |
| 384 | Investigation on the effects of water blending on spray and combustion characteristics of methanol | Tianlong Lu | Tianjin University |
| 487 | Methane slip measurement and mitigation: A multi-vessel case study and lessons learned | Patrick Kirchen | University of British Columbia |
| 68 | Direct comparison of hydrogen-diesel and methanol-diesel dual direct injection engine combustion | Shawn Kook | The University of New South Wales |

Day: Thursday
Time: 16:20 – 18:00

Topic 11: New engine concepts & systems

Session Name: New engine concepts & systems I

Session Organizer:
Matthias Auer (MAN ES)
Keitaro Hironaka (IHI Power Systems)

| ID | Abstract Title | Name | Company |
|-----|--|--------------------|-------------------------------|
| 528 | Ammonia-powered future: Introducing Wärtsilä 25 | Tobias Krook | Wärtsilä |
| 90 | Ammonia combustion technology for single fueled spark ignition engine | Kenta Miyauchi | IHI Corporation |
| 135 | Auxiliary systems and safety concepts for two-stroke ammonia burning engines | Arrigo Battistelli | MAN Energy Solutions |
| 329 | WinGD's ammonia engine technology for the new X-DF-A family | Barbara Graziano | Winterthur Gas & Diesel |
| 450 | Ammonia cracking: enabler for ammonia engines in power generation applications | Nicole Wermuth | Graz University of Technology |

Day: Wednesday
Time: 16:20 – 18:00

Topic 11: New engine concepts & systems

Session Name: New engine concepts & systems II

Session Organizer:
Matthias Auer (MAN ES)
Keitaro Hironaka (IHI Power Systems)

| ID | Abstract Title | Name | Company |
|-----|--|---------------------|---|
| 190 | Next-generation ship development in Japan | Chiharu Kawakita | New Energy and Industrial Technology Development Organization |
| 217 | Development of marine hydrogen fuel system (MHFS) | Takashi Izumi | Kawasaki Heavy Industries |
| 232 | Deduction of a customer-oriented methanol four-stroke engine portfolio | Maximilian Bartholy | MAN Energy Solutions |
| 254 | Adaptability and efficiency analysis of hybrid electric propulsion systems for ocean going vessels | Diego Pauluzzi | Wärtsilä |
| 517 | SCE920 - Key enabler for the roll-out of validated new technologies to largest engine sizes | Marc Spahni | WinGD |

Day: Thursday
Time: 09:00 – 10:40

Topic 12: Retrofit solutions

Session Name: Retrofits

Session Organizer:

Stephan Laiminger (Innio Jenbacher)

Patrick Frigge (Makeen Saudi Engines Manufacturing)

| ID | Abstract Title | Name | Company |
|-----|---|---------------------------------|----------------------|
| 181 | New retrofit solutions for MAN B&W marine two-stroke engines | Dorthe Marie Sveistrup Jacobsen | MAN Energy Solutions |
| 261 | Methanol upgrade solution for the existing M 32 & M 43 platforms | Michael Sturm | Caterpillar Motoren |
| 279 | Assessment of methanol and hydrogen combustion in large engines | Shinsuke Murakami | AVL List |
| 288 | Innovating maritime sustainability: Designing a fuel-flexible vessel and engine | Sangram Nanda | Wärtsilä |
| 362 | A pathway to develop a methanol combustion concept for retrofit propulsion applications | Maximilian Malin | LEC |

Day: Wednesday

Time: 09:00 – 10:40

Topic 13: Fuel injection & gas admission and engine components

Session Name: Fuel system development for future fuels I

Session Organizer:
Daniel Bosshard (Woodward)
Masayoshi Kawakami (JICEF)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------|----------------------------------|
| 15 | Premixed combustion of alternative fuels as a fast and economic path to decarbonize | Jens Olaf Stein | Robert Bosch |
| 236 | Application & experience of a pilot-controlled DI gas & hydrogen injector on marine engine | Erich Vogt | DUAP |
| 253 | Further development of a methanol port fuel injection platform for medium-speed engines | Peter Gaiser | Heinzmann GmbH & Co. KG |
| 258 | Design, modelling and performance of an OMT methanol port fuel injector for large marine engines | Marco Ferro | OMT - Officine Meccaniche Torino |
| 527 | Manufacturing of Stainless Components for Alternative Fuel Systems Applications | Alkan Göcmen | Peter Fuchs Technology AG |

Day: Tuesday
Time: 16:20 – 18:00

Topic 13: Fuel injection & gas admission and engine components

Session Name: Fuel system development for future fuels II

Session Organizer:
Daniel Bosshard (Woodward)
Masayoshi Kawakami (JICEF)

| ID | Abstract Title | Name | Company |
|-----|--|------------------|--|
| 165 | Development of the twin-circuit-injector for liquid and gaseous alternative fuels | Tomohiro ASAI | NICO Precision |
| 188 | An integrated CFD-FEM analysis on heat load of LGI-M fuel injectors | Kar Mun Pang | MAN Energy Solutions |
| 257 | Tailormade solutions for high pressure direct injection of methanol and ammonia | Claudio Negri | OMT - Officine Meccaniche Torino SpA |
| 325 | A new future fuel injection system for CPGC 4-stroke engine family in the 32 to 45 cm bore segment | Li Yang | Shanghai Jiao Tong University & China Shipbuilding Power Engineering Institute |
| 354 | System architectures for HPDF injection of PTX-fuels on large marine engines | Michael Willmann | Woodward L'Orange |

Day: Thursday
Time: 11:20 – 13:00

Topic 13: Fuel injection & gas admission and engine components

Session Name: Fuel system development analysis

Session Organizer:
Daniel Bosshard (Woodward)
Masayoshi Kawakami (JICEF)

| ID | Abstract Title | Name | Company |
|-----|---|-------------------|--|
| 139 | Development and prospect of ‘Stratified injection system’ | Koji Takasaki | Kyushu Univ. National Maritime Research Institute, Japan |
| 174 | Experimental characterization of MPDI & HPDI gas injectors for 4-stroke applications | Sebastian Cepelak | University of Rostock |
| 449 | Machine learning-assisted spray pattern identification and prediction for liquid ammonia fuel | Dawei Wu | University of Birmingham |
| 526 | Optimizing ammonia-hydrogen combustion for high-performance marine engines: Insights from experimental and CFD investigations | Arne Güdden | FEV |
| | | | |

Day: Thursday
Time: 09:00 – 10:40

Topic 14: Tribology

Session Name: Ring-liner interaction

Session Organizer:
Franz Koch (FEV)
Jörgen Marken (MAN ES)

| ID | Abstract Title | Name | Company |
|-----|---|----------------------|-------------------------------|
| 10 | Superior reliability piston rings made of alloy steel with PVD coating | Minoru Kawanishi | RIKEN Corporation |
| 22 | Ammonia fuel engines: The change of tribological behavior for the cylinder liner – piston ring | Xing Xu | Harbin Engineering University |
| 71 | A multi-scale fourier feature network for efficient lubrication analysis of engine rough surfaces | Yihu Tang | SMDERI |
| 134 | Evaluating plain bearing performance in alternative fuel engine applications | Sebastian Kirchhamer | Miba Gleitlager Austria |
| 464 | Progressive evolving of a high-performance PCU design: From natural gas to hydrogen applications | Frank Berbig | Rolls-Royce Power Systems |

Day: Tuesday
Time: 16:20 – 18:00

Topic 14: Tribology

Session Name: Monitoring and operation

Session Organizer:
Franz Koch (FEV)
Jörgen Marken (MAN ES)

| ID | Abstract Title | Name | Company |
|-----|--|-------------------|-------------------------------|
| 274 | Cost-efficient piston ring design for WinGD engines achieved with advanced development methods | Markus Weber | Winterthur Gas & Diesel |
| 431 | Follow-up report on a new real-time condition monitoring method for engine bearings | Motohiko Koshima | Daido Metal |
| 2 | New monitoring system for direct operating surveillance of con-rod bearings | Leander Marquardt | University of Stralsund |
| 443 | Life and Reliability Analysis of Marine Engine Piston Ring Based on Tribo-dynamic Model | Lining Gao | Shanghai Jiao Tong University |

Day: Thursday
Time: 14:00 – 15:40

Topic 15: Turbochargers & air / exhaust management

Session Name: Turbochargers I

Session Organizer:
Silvio Risse (KBB Turbo)
Dino Imhof (HUG Engineering)

| ID | Abstract Title | Name | Company |
|-----|---|-----------------|-------------------------------|
| 3 | Development of e-compressor system to improve high-speed engine transient load acceptance | Keith Douglas | Bowman eTurbo Systems |
| 63 | The impact of alternative fuels on the requirements for future turbocharger generations | Thomas Pitschel | Kompressorenbau Bannewitz |
| 444 | Optimized design of centrifugal compressor splitter blades in marine turbocharger | Yao Song | Harbin Engineering University |
| 503 | Sequential turbocharging as performance enabler for demanding marine propulsion engines | Cyril Bessonard | Accelleron Industries |
| | | | |

Day: Tuesday
Time: 09:00 – 10:40

Topic 15: Turbochargers & air / exhaust management

Session Name: Turbochargers II

Session Organizer:
Silvio Risse (KBB Turbo)
Dino Imhof (HUG Engineering)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------|--|
| 91 | New Technology of MET Turbocharger toward Decarbonization | Taiyo Shirakawa | Mitsubishi Heavy Industries Marine Machinery & Equipment |
| 259 | Actuator platform for driving various functions in air/exhaust path of internal combustion engines | Sören Wiskandt | Heinzmann GmbH & Co. KG |
| 363 | ACCX300-L axial turbocharger series development update | Simon Ma | Accelleron Industries |
| 493 | Upgrading the MAN 32/40 engine with the new TCF20 turbocharger | Martin Kern | MAN Energy Solutions |
| | | | |

Day: Thursday
Time: 11:20 – 13:00

Topic 16: Basic research & advanced engineering - new concepts
Session Name: New & basic research I

Session Organizer:
Bert Buchholz (University of Rostock)
Michael Engelmayer (LEC)

| ID | Abstract Title | Name | Company |
|-----|--|---------------|---------------------------------|
| 57 | Sensitivity of in-cylinder pressure measurement and analysis to ammonia and hydrogen fuel blends | David Rogers | Kistler Instrumente |
| 114 | Towards conceptual understanding of pre-ignition mechanisms in hydrogen-fueled engines | Ales Srna | Sandia National Laboratories |
| 205 | Partial cracking ammonia for marine engine applications: From mechanism to numerical investigation | Yuan Fang | Dalian University of Technology |
| 244 | Ammonia as carbon-free fuel for maritime applications – combustion investigations and safety aspects | Matthias Auer | MAN Energy Solutions |
| 509 | Ammonia combustion engine exhaust gas aftertreatment | Enno Esser | Hug Engineering |

Day: Tuesday
Time: 09:00 – 10:40

Topic 16: Basic research & advanced engineering - new concepts
Session Name: New & basic research II

Session Organizer:
Bert Buchholz (University of Rostock)
Michael Engelmayer (LEC)

| ID | Abstract Title | Name | Company |
|-----|--|----------------|-----------------------------------|
| 282 | Compression without compromise: Dynamic optimization of combustion in dual-fuel engines with VCR | Marcel Ott | Winterthur Gas & Diesel |
| 291 | Assessment of ammonia combustion in large engines | Andrej Poredos | AVL List |
| 456 | Effects of methanol reforming gas addition on the combustion characteristics of methanol engines | Wenju Ma | Harbin Engineering University |
| 457 | Evaporation and combustion characteristics study of diesel oil droplets in premixed ammonia/air | Meijia Song | Dalian University of Technology |
| 161 | Development of an ammonia-fueled cracker-engine unit as propulsion system for inland waterway vessel | Annalena Braun | Karlsruhe Institute of Technology |

Day: Wednesday
Time: 11:20 – 13:00

Topic 17: **Simulation technologies, digital twins and
complex system simulation**

Session Name: **Components optimization**

Session Organizer:
Ioannis Vlaskos (WinGD)
Mingfa Yao (Tianjin University)

| ID | Abstract Title | Name | Company |
|-----|--|-------------|-------------------------------|
| 100 | Virtualization of fuel injection system development for methanol-fueled large-bore marine engines | Ugo Olivaud | GammaTech Engineering |
| 132 | The effect of the engine's thermal environment on the injection performance of future fuel injectors | Gangao Lu | Harbin Engineering University |
| 61 | Predictive Dual-Fuel Combustion and Emission Modeling for Large Engines Using GT-Power Analysis | Shiyan Li | Shanghai Jiao Tong University |

Day: **Thursday**
Time: **16:20 – 18:00**

Topic 17:

Simulation technologies, digital twins and complex system simulation

Session Name:

Combustion development I (gas, methanol, hydrogen, ammonia)

Session Organizer:
Ioannis Vlaskos (WinGD)
Mingfa Yao (Tianjin University)

| ID | Abstract Title | Name | Company |
|-----|---|-----------------------------|--------------------------------|
| 41 | Verification of a CFD model on hydrogen combustion in a large marine two-stroke engine | Yudai Abe | Mitsui E&S |
| 156 | Numerical and experimental analysis of gas DI operation on a medium speed dual fuel marine engine | Jules Christopher Dinwoodie | University of Rostock |
| 197 | CFD simulations of prechamber gas engines with temporal adjustment of turbulent flame speed | Azusa Fuse | Mitsubishi Heavy Industries |
| 281 | CFD simulation of hydrogen combustion in an optical engine, focus on thermodynamical differences | Evelyn Flesch | Technical University of Munich |

Day: Monday

Time: 16:20 – 18:00

Topic 17:

Simulation technologies, digital twins and complex system simulation

Session Name:

Combustion development II (gas, methanol, hydrogen, ammonia)

Session Organizer:
Ioannis Vlaskos (WinGD)
Mingfa Yao (Tianjin University)

| ID | Abstract Title | Name | Company |
|-----|--|-----------------------|---|
| 79 | Numerical study on hydrogen-diesel and ammonia-diesel combustion in internal combustion engines | Kenji Hiraoka | Yanmar Holdings |
| 475 | Parametric investigation of hydrogen-diesel combustion for a marine medium-speed dual fuel engine | Gerasimos Theotokatos | University of Strathclyde |
| 524 | A computational study of methanol combustion chemistry at high pressures | Lambros Kaiktsis | University of Doha for Science and Technology |
| 12 | An establishment of a digital storehouse based on ROM, FBS and RPA technologies for the rapid design of low-vibration marine engines | Daegeun Lim | Hyundai Heavy Industries |

Day: Wednesday
Time: 16:20 – 18:00

Topic 18: Mechanics, materials and coatings

Session Name: Mechanics, materials and coatings

Session Organizer:

Alexander Leitner Audoui (Innio Waukesha Gas Engines)

Tero Frondelius (Wärtsilä)

| ID | Abstract Title | Name | Company |
|-----|--|----------------|-----------------------------------|
| 96 | "SOFT" sputter bearing, a new solution balancing performance and robustness | Ping Li | Miba Precision Components (China) |
| 207 | Optimizations of both reliability and thermal efficiency of medium speed diesel engine | Hao Zou | Dalian CRRC Diesel Engine |
| 300 | Mechanical development challenges and solutions for alternative fuels | Martin Rustler | AVL List |
| 390 | Enhanced reliability of composite pistons: A study on fretting damage | Gang Liang | SMDERI |
| 466 | 1st methanol generation of valve spindles and seat ring for newbuildings and retrofit | Janis Kimm | Märkisches Werk |

Day: Tuesday

Time: 11:20 – 13:00

Topic 19: Visualizations

Session Name: Hydrogen

Session Organizer:
Gerhard Pirker (LEC)
Long Liu (Harbin University)

| ID | Abstract Title | Name | Company |
|-----|---|---------------------|---|
| 60 | Optical visualization of performance-limiting combustion phenomena in marine and stationary hydrogen engines | Sven Ole Deist | Technical University of Munich |
| 451 | Hydrogen engines for power generation: How to overcome the limitation posed by combustion anomalies? | Constantin Kiesling | LEC |
| 269 | Ignition and combustion behaviour of H ₂ / CH ₄ blends at conditions relevant for large engines | Silas Wüthrich | University of Applied Sciences and Arts Northw. Switzerland |
| 28 | Ignition and combustion characteristics of hydrogen-diesel dual-fuel direct injection | Hao Wu | King Abdullah University of Science and Technology |
| 45 | Hydrogen in Large-Bore Engine Applications: Insights on Experimental and Simulative Research | Andreas Zepf | Technical University of Munich |

Day: Monday
Time: 16:20 – 18:00

Topic 19: Visualizations

Session Name: Ammonia

Session Organizer:
Gerhard Pirker (LEC)
Long Liu (Harbin University)

| ID | Abstract Title | Name | Company |
|-----|--|------------------|-------------------------------|
| 106 | Visualizing ammonia combustion: From laminar flames to engine application | Marc Klawitter | Graz University of Technology |
| 501 | Ammonia pre-chamber engine combustion with online ammonia cracking | Jiuling Sun | Tianjin University |
| 24 | Experimental study of relation between combustion and emission characteristics for ammonia | Katsuyoshi Asaka | Daihatsu Diesel MFG.CO.,LTD |
| 438 | Effect of turbulence intensity on the spray statistical variation under marine engine-like condition | An Chen | Harbin Engineering University |

Day: Thursday
Time: 11:20 – 13:00

Topic 20: Operators' perspective

Session Name: Safety aspects of new & alternative fuels

Session Organizer:
Dirk Bergmann (Accelleron)
Christopher Stoos (Southwest Research Institute)

| ID | Abstract Title | Name | Company |
|-----|---|-------------------|--|
| 56 | Development of supply and safety system for hydrogen in two-stroke marine diesel engine | Ryosuke Ishibashi | Mitsui E&S Co. |
| 212 | Operation of Diesel and Otto cycle ammonia engine, treatment and safety systems | Seungpil Lee | HD Korea Shipbuilding & Offshore Engineering |
| 415 | The path to zero: A safe deployment of ammonia as maritime fuel | Martin Eriksen | Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping |
| 220 | Experimental study of dispersion characteristics of ammonia under various humidity conditions | Dongguk IM | Korean Register |

Day: Thursday
Time: 11:20 – 13:00

Topic 20: Operators' perspective

Session Name: Power-gen

Session Organizer:
Dirk Bergmann (Accelleron)
Christopher Stoos (Southwest Research Institute)

| ID | Abstract Title | Name | Company |
|-----|--|----------------------|---------------------------|
| 73 | Flexible operation of gas engines for grid power stability and carbon neutrality | Yohei Tsuji | Kawasaki Heavy Industries |
| 175 | ICE's in the future energy landscape with increased renewables | Martial Claudepierre | Wärtsilä |
| 215 | Development of an automatic generation scheduling system aimed at efficient operation of power plant | Takashi Fukuoka | IHI Power Systems |
| 95 | Successful demonstration of decarbonization through hydrogen blending in power plant engines | Fredrik Östman | Wärtsilä |
| 6 | Advancements and pathways for hydrogen and ammonia in maritime applications: A technical simulation | Sadi Tavakoli | SINTEF |

Day: Monday
Time: 13:40 – 15:40

CIMAC Congress Technical Tours 2025

Tour 1 (08:30 – 16:30)

- WinGD / Burkhardt Compressions / Kistler / HUG Engineering /



- [Details on cimaccongress.com](https://www.cimaccongress.com)

Tour 2 (07:30 – 13:30)

- Accelleron & Libs



- [Details on cimaccongress.com](https://www.cimaccongress.com)

Tour 3 (09:30 – 15:00)

- Duap



- [Details on cimaccongress.com](https://www.cimaccongress.com)

Technical Tours have to be booked two weeks in advance of the Congress, to allow all companies to prepare accordingly. The number of tickets is limited.

[Register here!](https://www.cimaccongress.com)

Day: Friday
Time: 07:30 – 15:30

Poster Session Monday

| ID | Abstract Title | Name | Company |
|-----|--|----------------|---|
| 38 | Development of China First Ammonia Dual-fuel large engine for marine applications | Ahmed Al-Sened | Dalian CRRC Diesel Co. Ltd |
| 344 | Rotordynamic performance prediction of electrically assisted turbocharger | Baoyin Duan | Harbin Engineering University |
| 54 | Research on Performance Optimization of Methanol Engine Based on the Multi-Model Combined NSGA-II | Beidong Zhang | Huazhong University of Science and Technology |
| 352 | Power distribution in cruise ship generator sets using different fuels under impact of carbon tax | Guozheng Liu | Harbin Engineering University |
| 204 | Research on Modeling and Simulation Technology of Ammonia Fuel Digital Engine System | Haopeng Nie | China Shipbuilding Power Engineering Institute CO., LTD |
| 495 | Research and multi-objective optimization of fuel cavitation flow inside fuel injector control valve | Jiangtao Li | Wuhan university of technology |
| 159 | Investigation on the thermal cavitation effect of an injector control valve | Jianhui Zhao | Harbin Engineering University |
| 9 | Combustion Characteristics of a Dual-Fuel Marine Engine with Different Methanol Substitution Rate | Xiao Li | National Key Laboratory of Marine Engine Science and SMEDRI |

Authors are kindly asked to be present at the poster during the first 15min of the break to answer possible questions.
Posters are on display all day long.

Day: Monday
Time: **15:40 – 16:20**

Poster Session Tuesday Morning

| ID | Abstract Title | Name | Company |
|-----|--|-------------------|--|
| 486 | Research on Detection Methods for Unconventional Pollutants in Ship Methanol Engine Exhaust Gas | Hanqiao Zhang | Shanghai Marine Diesel Engine Research Institute |
| 318 | Research on injection volume closed-loop control based on MPC for high-pressure common rail system | Bingxin Liu | Harbin Engineering University |
| 412 | Study of Methanol Engine on Tribology Properties: ZDDP Additive Degradation and Tribofilm Behavior | Xuan Ma | Harbin Engineering University |
| 425 | Assessment of Bio-Oil and Off-Spec Biodiesel Blends for Maritime Applications | Sara Rezaee | Viswa Group |
| 221 | Applying the Scrubber for Leaked NH3 and Derivation of Optimal Wash Water Management Measure | Soomin Kang | Korean Register |
| 243 | Realization of decarbonization through development of marine hydrogen dual fuel engine | Masato Nakai | Kawasaki Heavy Industries, Ltd. |
| 186 | Development and application of a flex-fuel single cylinder platform for high-speed engines | Francesco Accurso | Dumarey Automotive Italia S.p.A. |
| 178 | Experimental Long-Term Study of a Methane Oxidation Catalyst on a Medium-Speed Dual-Fuel Engine | Pascal Seipel | University of Rostock |

Authors are kindly asked to be present at the poster during the first 15min of the break to answer possible questions.
Posters are on display all day long.

Day: **Tuesday**
Time: **10:40 – 11:20**

Poster Session Tuesday Afternoon

| ID | Abstract Title | Name | Company |
|-----|---|----------------|--|
| 19 | Energy, exergy, economic, and environmental (4E) analysis of S-CO ₂ Brayton cycle for low-speed engine | Liangtao Xie | Wuhan University of Technology |
| 500 | Experimental study on macroscopic characteristics of free and impingement spray of low diesel temper | Liyan Zhao | Kunming University of Science and Technology |
| 162 | Experimental study of injector spray inconsistency based on a combined spray momentum and visualization | Long guo He | Harbin Engineering University |
| 349 | Research on Unbalanced Fault Diagnosis of Marine Turbocharger Rotor Based on Transfer Learning | Luyuan Liu | Wuhan University of Technology |
| 504 | Lubricant Performance and Reliability in Ammonia-Fueled Internal Combustion Engines | Maria Rappo | Total Energies |
| 383 | Study on the performance and optimization of pilot diesel-ignited HPDI methanol combustion | Minghao Xiahou | Tianjin University |
| 196 | Study of Main Engine Behavior During Rough Seas Based on Ship Monitoring Data | Rei Miratsu | Nippon Kaiji Kyokai (Class NK) |
| 310 | Optimization of Pre-Chamber Design and Operation for Marine Future Fuels | Nathan Peters | Dumarey USA |
| 356 | Investigation on dynamic electromechanical coupling effects in diesel generator sets | Jie Tao | Harbin Engineering University |

Authors are kindly asked to be present at the poster during the first 15min of the break to answer possible questions.
Posters are on display all day long.

Day: Tuesday
Time: 15:40 – 16:20

Poster Session Wednesday Morning

| ID | Abstract Title | Name | Company |
|-----|--|----------------------|---|
| 228 | Advancing Decarbonization of Electrification with IHI Power Management System | Masaki Takiguchi | IHI Power Systems |
| 498 | Non-destructive testing method research on cracking tendency of welding gas valve surface | Li Liting | National Key Laboratory of Marine Engine Science and Technology |
| 142 | Corrosion study on carbon steel immersed in alternative fuels | Carolin Nuortila | University of Vaasa |
| 469 | Selective catalytic reduction systems for ammonia combustion in heavy-duty engines-a modelling study | Madhumitha Rajendran | University of Sheffield |
| 523 | Usage of 1-D system simulation for the development of a maritime PEM-Fuel cell system | Stephan Karmann | Freudenberg |
| 40 | Analysis of Zero-Emission Scenarios of a Cruise Ship using a Modelica-based Digital Twin | Marouane Barbri | University of Rostock |
| 347 | Real-ship application of composite energy storage DC energy management control technology for hybrid | Chen Defu | Shanghai Marine Diesel Engine Research Institute |
| 55 | Study on Ammonia/Diesel Coaxial Injection Combustion Based on a Rapid Compression Expansion Machine | Jie Wu | Harbin Engineering University |
| 226 | Simulation Research of the Phase change in Ammonia Supply System Based on Amesim | Hua Li | Shanghai Marine Diesel Engine Research Institute |

Authors are kindly asked to be present at the poster during the first 15min of the break to answer possible questions.
Posters are on display all day long.

Day: Wednesday
Time: **10:40 – 11:20**

Poster Session Wednesday Afternoon

| ID | Abstract Title | Name | Company |
|-----|---|---------------------------|---------------------------------|
| 430 | Study on the ammonia diffusion combustion characteristics under active thermal atmosphere effects | Rui Yang | Tianjin University |
| 496 | Radical derating as retrofit technology to reduce carbon impact from large 2-stroke marine engines | Stefano Emanuele Iannuzzi | Wartsila Services Switzerland |
| 295 | Methanol-fueled marine engine: combustion characteristics and new lubricant performance need | Valerie Doyen | Total Energies |
| 206 | Mechanism development and combustion system study of low-speed two-stroke marine hydrogen engine | Wenjing Qu | Dalian University of Technology |
| 337 | Pre-Chamber Strong Swirl Combustion Model for a Dual-Fuel Engine's Digital Twin System | Xiao Han | Harbin Engineering University |
| 260 | Research on Multi-objective Control Technology for Heavy-duty Natural Gas Engines Based on H ₂ /H _∞ | Xingchao Shi | Weichai Power Co., Ltd |
| 462 | Optimization of combustion in diesel pilot ignition high-pressure direct-injection liquid ammonia | Shiwu Yu | Tianjin University |
| 189 | Influence of combustion gas temperature on piston deposits for diesel and NH ₃ dual-fuel combustion | Brian Kaul | Oak Ridge National Laboratory |

Authors are kindly asked to be present at the poster during the first 15min of the break to answer possible questions.
Posters are on display all day long.

Day: Wednesday
Time: **15:40 – 16:20**

Poster Session Thursday

| ID | Abstract Title | Name | Company |
|-----|---|----------------|---|
| 112 | Research on methanol spray characteristics of marine engine | Xinran Wang | China Shipbuilding Power Engineering Institute CO, Ltd |
| 516 | Simulation and optimization of low-pressure power turbine based on supercharged diesel engine. | Yajie Zhang | Shanghai Jiao Tong University |
| 101 | Development of CPGC M450DF-Clean, Efficient, High-Powered Medium-Speed Dual Fuel Series Engines | Yali Song | China Shipbuilding Power Engineering Institute CO., Ltd |
| 8 | Methanol Dual Fuel Engine Development Status | Yoshinori Kaji | Daihatsu Diesel MFG.CO.,LTD. |
| 198 | Application of PHM Technology in High-altitude Locomotives | Yuting Su | CRRC Dalian CO.,LTD |
| 328 | Research on the Active Permanent Magnet Torsional Vibration Control Technology for ICE | Zhou Yan | Shanghai Marine Diesel Engine Research Institute |
| 374 | Research on construction of hybrid feature fault diagnosis model of turbocharger based on data | Irong Yang | Harbin Engineering University |
| 428 | Development of a cryogenic high-pressure pump for compact FGSS high-pressure skids | Tae Hyung Park | Hyundai Heavy Industries |

Authors are kindly asked to be present at the poster during the first 15min of the break to answer possible questions.

Posters are on display all day long.

Day: Thursday
Time: **10:40 – 11:20**

CIMAC Congress Technical Tours 2025

Tour 1 (08:30 – 16:30)

- WinGD / Burkhardt Compressions / Kistler / HUG Engineering /



- [Details on cimaccongress.com](https://www.cimaccongress.com)

Tour 2 (07:30 – 13:30)

- Accelleron & Libs



- [Details on cimaccongress.com](https://www.cimaccongress.com)

Tour 3 (09:30 – 15:00)

- Duap



- [Details on cimaccongress.com](https://www.cimaccongress.com)

Technical Tours have to be booked two weeks in advance of the Congress, to allow all companies to prepare accordingly. The number of tickets is limited.

[Register here!](https://www.cimaccongress.com)

Day: Friday
Time: 07:30 – 15:30