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As the global trade association for the methanol industry, the Methanol Institute (MI) represents the world's leading methanol producers, distributors and technology companies. MI's mission includes:

- Building product awareness and ensuring the safe handling of methanol and its derivatives across the supply chain;
- Promoting the growth of the methanol industry by furthering methanol as an essential chemical commodity and an emerging source of clean and renewable energy; and
- Influencing global regulatory and public policy initiatives that impact the methanol industry.

MI accomplished a great deal across a wide range of activities in 2018:

- **Methanol Marine Fuel Steams Ahead:**
  MI represented the methanol industry through the International Bunker Industry Association (IBIA) at the International Maritime Organization (IMO) which led to the confirmation of Interim Guidelines for Methanol as a Marine Fuel; and working with DNV GL on including methanol in their Alternative Fuels Insight Platform; MI also continued our engagement in methanol marine pilot projects all over the world, including Summeth, Martec II (Finland/Sweden), MethaShip (Germany), LeanShips (Belgium), HyMethShip (Austria), and others.

- **Methanol as a Vehicle Fuel:**
  ASTM announced a new specification for High Octane Number Test Fuel that specifically prohibited any fuels containing methanol. MI sprung into action and participated in an ASTM Task Force working to ensure that a new ballot, which removed the methanol prohibition, has been proposed and adopted. MI also worked to support China’s engagement with methanol fuel blending, and continued our support for the Government of India who are looking to launch a number of methanol related projects.

- **Methanol Safe Handling:**
  Working closely with our members, MI worked to produce a new version of our venerable Methanol Safe Handling Video to address questions related to methanol handling, storage and transport. The deep collaboration of MI and our member companies in producing this vital resource for educational and training purposes highlights our continuing commitment to safety.

- **Methanol as an Energy Resource:**
  MI worked to codify standards for the use of methanol in industrial boilers in China. MI also produced a Renewable Methanol Primer aimed at providing an overview of methanol’s potential as a green energy resource.

- **As the Voice of the Methanol Industry:**
  Last year, MI staff presented at over 60 industry conferences and met with hundreds of government officials and policymakers around the world. We continue to publish our weekly Methanol Matters newsletter, Safety Snapshot and other newsletters, and to expand our digital reach through our websites, Twitter, Facebook, LinkedIn, YouTube, and through our new VeryConnect digital member platform.

In this year's edition of Milestones, you will learn more about some of these initiatives. Articles focus on our exciting new Renewable Methanol Report; the timely update of our Methanol Safe Handling Video; roundups of methanol related developments in China and in the marine sector; our expanded social media and digital membership activities; and a look at our new members: Advent Technologies, IGP Methanol, bse Engineering, Blue World Technologies, YCI, Olah Motors, Palcan, Quantiam Technologies and MMSA.

continued on page 5
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CONNECT WITH US
As the association’s new Board Chairman, I am excited for the work that lies ahead in 2019. MI revised our dues structure in 2018 and will greatly expand our program activity funding in 2019, and there is much important work to be done, from marine pilot projects to fuel specification testing and more. This year, MI will continue to lead the way in the emergence of methanol as a global transportation fuel; work to identify and open new markets and opportunities for methanol around the world; continue to promote our industry’s interests before legislators and regulators across the globe; to expand our reach via our social media and web platforms; and many other important initiatives.

With over 40 member companies representing the world’s principal methanol producers and distributors, as well as the technology leaders that support the industry, MI is truly a global organization. Our members are headquartered in 19 countries (Australia, Canada, China, Denmark, Germany, Iceland, Italy, Japan, Malaysia, Netherlands, Oman, Qatar, Russia, Saudi Arabia, Singapore, Switzerland, Trinidad, United Kingdom, and United States), and do business in every corner of the world.

The organization and members of the Methanol Institute are making significant contributions to the advancement of the global methanol industry. Together we are looking forward to an exciting 2019, and the Methanol Institute is well positioned to achieve continued growth and success for our industry.

2018 Marine Highlights

**Methanol Continued to Gain Traction As an Alternative Marine Fuel in 2018.**

Here is an overview of important 2018 MI initiatives and developments.

In an effort to assist vessel owners and operators, MI co-developed with Lloyd’s Register, an integrated technical/econometric model designed to analyze optimal fuel choices for specific vessels on targeted voyages. The model is available at: http://info.lr.org/l/12702/2018-03-28/4qhwkk
Methanol is already stored at large-scale in numerous ports globally, meaning there is less of an infrastructure hurdle to overcome in order to supply it ship side, as a bunker fuel.

Methanol trade as a chemical feedstock is highly liquid with ready suppliers already available in all major ports.

THE ARE CONSIDERABLE BENEFITS FOR VESSEL OWNERS AS WELL AS BUNKER SERVICE PROVIDERS AND PORTS TO USING METHANOL.
MI worked collaboratively through several focused, sectoral organizations to support the efforts of the International Maritime Organization (IMO) to introduce and adopt Interim Guidelines for Methanol as a Marine Fuel. MI expects to have the Interim Guidelines further reviewed at CCC 6, in September of 2019 with a view towards their confirmation by IMO’s Marine Safety Committee by June, 2020.

**IMO CONFIRMATION OF METHANOL AS A MARINE FUEL**

According to IHS, uptake for methanol as a marine fuel is projected to reach 150,000 MTPA by 2020.

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**2014**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**2015**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**2016**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**2017**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**2018**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**2019**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**CCC 2**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**CCC 3**
- Fuel cells
- Ethyl/methyl alcohol
- Low-flashpoint diesel

**CCC 4**
- Fuel cells
- Ethyl/methyl alcohol
- Low-flashpoint diesel

**CCC 5**
- Ethyl/methyl alcohol
- Fuel cells
- Low-flashpoint diesel

**MSC 100**
- Amendments
- Confirmation
- Referral to other sub-committees

**MSC 101**
- Amendments
- Referral to other sub-committees

**MSC 102**
- Amendments
- Approval
- Adoption

**Draft Interim Guidelines Validated**
In 2018, China kept its position as the world’s largest methanol consumer not only for its use of methanol as a chemical building block but also with its continually expanding use of methanol in the energy and fuel sectors.

For methanol vehicles, 2018 was a transitional year from the government’s successful China Methanol Vehicle Pilot Program, which provided proof of concept in 10 cities with just over 1,000 vehicles, to even more cities and vehicles. Municipalities like Guiyang and Xi An, are expanding their fleets and building more M100 fueling stations, and it is expected that the number of M100 taxis in China will top 20,000 by the end of 2019.

2018 also marked the third year that the Ministry of Industry and Information Technology (MIIT) organized an industry event featuring methanol vehicles, fueling stations and related key components like engines and injectors in Kunshan City, where more Chinese OEMs showcased new methanol models. MI was pleased to again support this event, with CEO Greg Dolan providing a presentation on global progress in methanol energy applications.

Due to years of industry effort, a national policy on methanol vehicles was issued in March, 2019. The policy encourages the broad commercial expansion of methanol-fueled (M100) vehicles in China from the central government with the following key policies:

- **Encourage Development of Manufacturing Capabilities of Methanol Fueled Vehicles**, including passenger cars, commercial heavy-duty vehicles, off-road vehicles and machinery. Key and dedicated components for fuel injection, after treatment, filters and lubricant oil, corrosion resistant components. New technologies like methanol-electric hybrid vehicles, methanol range extended electric vehicles, and methanol fuel cell vehicles.
Promote Development of Production and Fueling Systems of Methanol Fuel, including methanol production feedstocks of low-quality coal, coal-bedded methane, coking gas, and exploring the production of renewable methanol from CO2. Fuel methanol should comply with National Standard of “Fuel Methanol for Motor Vehicles (GB/T23510-2009)” to ensure quality. Planning the expansion of methanol fueling stations according to local conditions along with related standards and guidelines.

Accelerate Development of Standards System, including methanol vehicles, engines, dedicated lubricant oils, and standard methanol fuel. Encourage international standards formulation and improve standards on methanol fuel and fueling system, including design and construction of methanol fueling stations, methanol fuel safe operation and additives of methanol fuel.

Encourage Promotion of Methanol Fueled Vehicles, accelerate deployment of M100 vehicles especially in regions of Shanxi, Shannxi, Guizhou and Gansu that have extensive methanol production resources and operational experiences. Encourage Methanol passenger cars in service and taxi fleets. Expand methanol commercial vehicles in municipal duty and logistics.

Execute Emission Standards Firmly, Methanol passenger cars should comply with China National 6 emission standard with methanol and formaldehyde emission limits of 2.5 mg/km respectively. Methanol heavy-duty vehicles should comply with China National 6 emission standard of heavy-duty diesel vehicles with methanol and formaldehyde emission limits of 20 mg/kwh respectively.

Other Promotional Measurements including to normalize methanol vehicle registration with no limitation. Research to include methanol vehicles into “Passenger car producer average fuel consumption and new energy vehicle credits, also called Double Credit Scheme.”

As longtime supporters of methanol vehicles in China, including having provided support for MIIT’s Methanol Vehicle Pilot Program which informed the government’s new policy, MI is pleased to see China moving forward so resolutely with methanol vehicles. “As the global methanol industry trade association, the Methanol Institute (MI) has enjoyed a strong working relationship with China’s MIIT to facilitate the exchange of information regarding methanol vehicles,” said MI CEO Gregory Dolan.

“The Chinese central government has announced that methanol fueled cars, trucks and buses are ready for commercial introduction. We welcome this policy which marks a critical guidepost for countries around the world in the use methanol as a clean and affordable transportation fuel.”

In 2019, methanol also comes back to the top tiers of auto racing. Two M100 cars developed by Geely Auto successfully completed the world’s most difficult race, the Dakar Rally in Peru.

As the Chinese government confirmed that it will continue decreasing the cash subsidies to Battery Electric Vehicles (BEV), Fuel Cell Vehicles (FCV) have begun to obtain attention due to their zero emission and long range capabilities, as well as their ongoing subsidies.

Methanol’s use as a hydrogen carrier is helping to provide answers to the transportation and storage of hydrogen in FCV vehicles in China. Examples include MI member company Palcan, who have released a reformed methanol powered delivery truck which began commercial operation in 2018. Palcan also announced the ground breaking of its new production facility which will be capable of producing 50,000 Reformed Methanol Fuel Cell (RMFC) units in Cixi City.

Chinese automotive producer Aiways also worked with noted automobile designer Roland Gumpert to develop an electric supercar called the RG Nathalie which incorporates a methanol fuel cell as a range extender, and invested in the Denmark fuel cell developer and MI member Blue World Technologies.
Methanol is also making progress as a fuel in industrial boilers as China continues to work to improve its air quality. After two years’ joint effort with sponsorship from MI and MI member Methanex Corporation, two industry guidelines “Methanol Based Fuel for Boilers” and “Technical Requirements for Storage and Supply Facilities of Methanol Based Fuel for Boilers” were released in 2018. Following the national guidelines, the Shanxi provincial government also produced its own two local standards, and in Jinzhong city has created a promotional plan to develop the methanol boiler industry.

As in industrial boilers, methanol’s clean burning characteristics with low pollutants in the exhaust gas is leading to methanol’s use as a fuel in kilns for many applications including in food processing, tobacco leaf drying and ceramics sintering.

In yet another successful expansion, methanol has been gradually taking over the market in the cook stove fuel market in China due to the country’s increasing urbanization and need for clean-burning fuel sources.

In the marine sector, the results of a research project to use methanol fuel in a fishing vessel conducted by Tianjin University and sponsored by Methanex Corporation, was successfully accepted by the Chinese Ministry of Transportation (MOT). Beginning in 2017, a research team led by Prof. Yao Chunde at Tianjin University introduced its Methanol Diesel Compound Combustion (DMCC) technology in a heavy-duty marine engine which is widely used in the Chinese market, and documented promising results on emission reductions and fuel economy.
MI SPONSORED EVENTS

MI was involved in over 60 exciting events worldwide last year. Here is a sample of events that MI participated in as a sponsor across the globe in 2018.

MAN SEMINAR—MARCH

In March, the Methanol Institute and engine manufacturer MAN held a workshop in Copenhagen, Denmark to introduce MI members and other key stakeholders to the methanol dual-fuel marine engines MAN has commercially introduced. In welcoming remarks, MI CEO Greg Dolan stated, “At the Methanol Institute, we’ve talked about marine fuels as being a historic opportunity for the methanol industry. New markets don’t just fall in your lap, they take work and they take leadership. Waterfront Shipping has shown both in working with MAN and their shipping partners to demonstrate that chemical tankers hauling methanol in their cargo holds can also use methanol as a bunker fuel. Seven vessels on the water now, and four more ordered. We are hopeful that others from our industry will follow this lead, and that’s one of the reasons we are here today.”

The workshop featured high-level presentations by MAN on their 2-stroke engines, service experience and latest engine design for methanol application, and emissions testing and TIER II NOx compliance. In addition, Daniel Sahnen from cruise ship builder Meyer Werft gave a presentation on the evaluation of methanol developed for the German Methaship program, including information on methanol safety and environmental performance. Participants also had a detailed tour of MAN’s PrimeServ Academy where operator training is provided.

Representatives from a number of MI members participated in the workshop including Methanex, SABIC, Helm, Proman, Mitsui OSK Lines, IGP Methanol, and Waterfront Shipping. The 50-person audience also included key stakeholders from shipping companies, university researchers, classification societies, technology innovators, and the City of Copenhagen.
GREENPILOT SEMINAR—MAY

In May, approximately 85 participants attended the closing workshop of the GreenPilot project in Gothenburg. Among the participants were representatives from several OEMs, an Indian shipyard, classification societies, academia, and others.

Part funded by the Methanol Institute, the GreenPilot project has tested the use of methanol as a marine fuel in spark ignited Weichai and Scania engines onboard a pilot boat, donated by the Swedish Maritime Administration. The project was led by naval architect firm Scandinaos from Gothenburg, Sweden. The overall results are very encouraging. As one of the Scandinaos engineers explained, the team had anticipated that they might experience some initial start-up problems, but were pleasantly surprised to find that everything worked exactly according to plan.

The workshop included presentations from Professor Karin Andersson of Chalmers University, who looked more broadly at the options to reduce emissions in shipping and stop using fossil fuels, while Joanne Ellis of SSPA focused on the environmental and life cycle characteristics of methanol as a marine fuel.

In their presentation the Scandinaos team reviewed the various methanol marine projects throughout the last decade, the design changes to the pilot boat, and the performance and emissions of the converted engines.

MI’s EU representative Eelco Dekker gave an overview of the different methanol marine developments around the world, not only focusing on the ships, but also on the developments with regard to low carbon and renewable methanol pathways.
CAAEFA—SEPTEMBER

In September, more than 170 attendees gathered in Hefei, Anhui Province for the annual conference of the China Association of Alcohol and Ether Fuels and Automobiles (CAAEFA).

During his welcoming address Minister He Guangyuan (former Minister of Machinery Ministry of China) noted that “the Methanol Economy is getting broader and broader,” with the addition of new applications including fueling furnaces used for glass melting with over 60% of the world’s glass and ceramics made in China. CAAEFA President Hu Qianlin noted that direct methanol fuel use in China has reached 7 million metric tons, and just GEELY now has the capacity to produce 200,000 M100 cars per year.

MI CEO Greg Dolan assisted by China Chief Representative Kai Zhao gave an overview presentation of emerging global markets for methanol fuels and safe handling, as well as addressing the current US-China trade dispute. Zhang Jianning China President of MI member Methanex Corporation provided an update on the on-going project to demonstrate Diesel Methanol Compound Combustion (DMCC) in a fishing vessel and methanol boiler fuel. The conference featured several presentations on the use of methanol in industrial boilers and work by CAAEFA with support from MI and Methanex to develop industrial boiler related standards.

The expansion of methanol cook stove markets was also featured, including a site visit by delegates to Anhui Shengbao New Energy Sci-Tech Co to see a cook stove fuel blending facility and the demonstration of several commercial cook stoves.

Earlier in the week Mr. Dolan and Mr. ZHAO visited the site of a methanol boiler in Beijing supported by Methanex and built by Jin Jing Da EP Thermal Power Co. Later in the week, Greg and Kai also visited MI member Palcan Energy Corporation who have developed methanol fuel cells as range extenders for battery electric vehicles.

SIBCON—OCTOBER

In October, MI’s Chris Chatterton and Belinda Pun represented the association at the Singapore International Bunkering Conference (SIBCON) 2018.

MI member SABIC’s John Livorness, Chairman of the MI Marine Fuels Committee gave an interview with SIBCON and May Chen of MI member Billion Miles presented during the Alternative Cleaner Fuel Solutions panel.

MI sponsored the refreshment break ahead of the conference’s panel on Alternative Cleaner Fuel Solutions which included discussion of methanol’s use as a marine fuel. MI also maintained an exhibit station in the conference’s main hall and distributed materials to the event’s nearly 1500 delegates.

Highlights of the conference included an announcement by the Maritime and Port Authority of Singapore (MPA) that it has allocated SG$5 million under the MPA’s Green Energy Programme to support the development and use of clean alternative fuels such as biofuels and methanol.
DUBAI MARINE—DECEMBER

In December, MI’s Tim Chan presented in Dubai at the “Methanol as a Marine Fuel” seminar produced by Capt. Saleem Alavi’s Sea Commerce. The conference offered a look into the opportunities presented by methanol as a bridge from the current day into a future of decarbonization.

Carleen Lyden Walker of SHIPPINGInsight noted that “Much has been said about LNG as a “bridging” fuel, but not much has been said about methanol, which has the capability to move the maritime industry into a world without carbon. Already it reduces SOx by 99%, NOx by 60% and PM by 95% and has an 11% lower CO2 content than diesel for new ships.”

Walker also took notice of the fact that “The ability to produce methanol from renewable sources offers the maritime industry a fuel that has very attractive carbon life cycle analysis, allowing a greater reduction in the industry’s carbon footprint. It can also be used in existing equipment with modest modifications to vessels or in dual fuel engines, which reduces the capital expense of having emission-compliant vessels.”

MI’s then Board Chairman Ben Iosefa of Methanex and Bengt Ramne of ScandiNAOS also presented at the seminar, which was sponsored by both MI and Methanex.
In order to advocate for the interests of the methanol industry as the United States and China engaged in a trade dispute throughout much of 2018, MI joined Americans for Free Trade, a coalition of over 80 associations, manufacturers, farmers, retailers, technology companies, service suppliers and other supply chain stakeholders united against higher tariffs.

Americans for Free Trade has effectively shown the growing negative impact of tariffs on the economy. Working together, the campaign has amplified the voices of the American families, workers, farmers and businesses who are being hurt by these tariffs.

The campaign has highlighted opposition to current and new tariffs by:

- Holding events in states across the United States that bring together farmers, business owners and factory workers to discuss how tariffs are directly hurting them;
- Featuring op-eds, blogs and statements from Americans bearing the brunt of tariffs;
- Launching a digital media campaign explaining the economic harm of tariffs to a wide online audience;
- Conducting direct outreach to key members of Congress on behalf of grassroots voices from across the nation;
- Operating a rapid response “war room” that fact checks and responds to tariff announcements; and
- Running paid TV, radio and online advertisements highlighting how tariffs are affecting families, farmers, factory workers and businesses of all sizes.

In addition to joining Americans for Free Trade, MI submitted written comments to the United States Trade Representative (USTR) and MI CEO Greg Dolan testified before a public hearing of the USTR in Washington, D.C. opposing the inclusion of methanol in USTR’s “List 3” of items imported from China targeted for additional tariffs.

In his testimony, Dolan noted: “We strongly urge the USTR to remove tariff subheadings 2905.11.10 and 2905.11.20 for methanol or “methyl alcohol” from any supplemental action taken against China. Given that the United States is becoming a methanol exporting country, and imports from China are not economical and therefore practically non-existent, a tariff on methanol imports from China would only serve to trigger the action we’ve now seen - the threat of retaliatory tariffs by China on methanol exported from the U.S. This tariff war on methanol threatens to curtail the resurgence we are now seeing in U.S. methanol production driven by the shale gas revolution.”

With the sustained expansion of our trade association - both in the number of member participants as well as in applications for methanol, we are continuously seeking ways to improve external and internal communications. It is with this in mind that last summer MI launched our “VeryConnect” member platform. The platform is extremely user friendly and has a ‘feel’ similar to other social networks.

VeryConnect (VC) is an integrated membership management software solution, which is designed to enhance MI’s internal committee communications and provide secure access to MI’s document repository. VC also streamlines association administrative issues, all within a protected platform. You can learn more about VC here: www.veryconnect.com

Going forward, MI will continue to use VC as one of the main communication channels in engaging with our members and key stakeholders. VC empowers MI members and stakeholders to engage with other members of the MI online community in a more direct manner, wherever they may be located, and it is compatible with all major devices.
MMSA PROVIDES METHANOL INDUSTRY DATA

MI begun an exciting new partnership with MMSA, who now provide methanol industry data to MI which is viewable to the public on our website at www.methanol.org. The Methanol Institute shares the information provided by MMSA as a service to the community, this does not represent an endorsement by MI and should not be considered as an official reference price index. The Methanol Institute assumes no liability whatsoever with respect to the accuracy and completeness of the information presented below, and disclaims all liability arising out of the use of such data.

Since its formation in 2004, Methanol Market Services Asia Pte Ltd (MMSA) has advised hundreds of companies aligned with the methanol industry, from upstream feedstock suppliers through methanol producers to methanol consumers, traders, distributors, and other aligned interests (financial, process technology, catalyst suppliers, governments, others). MMSA offers unique and independent multiclient services and has provided market and technical advisory support to methanol project sponsors and investors. MMSA also organizes a major industry conference in Singapore annually, connecting the global industry.

MMSA staff have worked with the Methanol Institute since 2006, providing guidance on key initiatives. “I have admired the Methanol Institute’s dedication to creating global awareness of the commercial and societal benefits of methanol using fact-based analysis. With contributions including regular updates of our historic methanol price reports available on the MI website, we look forward to furthering the MI cause.” says Mark Berggren, Managing Director of MMSA.

MI SOCIAL MEDIA

MI stepped up our visibility across a wide-variety of social media platforms in 2018. We post daily updates, stories and links from our MI Twitter and LinkedIn accounts, CEO Greg Dolan’s Twitter and LinkedIn accounts, and from our Facebook account.

Additionally, MI also provides access to a broad range of methanol related content from our YouTube account, including our Methanol Safe Handling Video, webinars on renewable methanol and industrial boilers and cookstoves, and more!

For 2018, MI had over 855,000 impressions of our Twitter account content, over 51,000 minutes of watch time of our YouTube videos, and we now have over 2,300 LinkedIn followers and an average of 21,000 LinkedIn views per month.

Facebook: www.facebook.com/Methanol-Institute

LinkedIn: www.linkedin.com/company/methanol-institute

Twitter: @methanoltoday
www.twitter.com/methanoltoday

YouTube: www.youtube.com/user/MethanolInstitute

CEO Gregory Dolan’s Twitter: https://twitter.com/gdolan1

CEO Gregory Dolan’s LinkedIn: https://www.linkedin.com/in/gregory-dolan-57b1194/
MI RELEASES RENEWABLE METHANOL REPORT

Compared to conventional fuels, renewable methanol cuts carbon dioxide emissions by up to 95%, reduces nitrogen oxide emissions by up to 80%, and completely eliminates sulfur oxide and particulate matter emissions, according to a ‘Renewable Methanol Report’, prepared for the Methanol Institute (MI) by ATA Insights.

Renewable methanol’s power to cut emissions helps in the fight against climate change and contributes to improving local air quality by reducing emissions in road transport, marine applications, and in power generation.

One of the many advantages of renewable methanol is that it can be manufactured from a variety of widely available feedstocks, many of which are by-products of industrial activity. This includes carbon dioxide emissions from industry and power generation coupled with renewable electricity, or biomass resources such as municipal solid waste, agricultural waste and forestry residues. Given its ability to re-use such a variety of feedstocks, renewable methanol can be an integral part of the circular economy.

MI CEO Greg Dolan notes that “Renewable methanol provides a future-proof pathway to fuel our cars, trucks, ships, homes and businesses.”

In addition to the Renewable Methanol Report, ATA produced a companion webinar which featured presentations by Benedikt Stefanson of MI member company Carbon Recycling International (CRI), Juergen Battke of thyssenkrupp and Larry Navin of MI.

The report is available to download on MI’s website at www.methanol.org, and the webinar is available to view both on our website and on our YouTube page at www.youtube.com/user/MethanolInstitute
Sustainable biomass (residues, MSW, etc.)

Fermentation

Biogas

Biomethane

Gasification

Kraft process

Electrolysis

Carbon capture

Renewable electricity

H₂

CO₂

Renewable methanol

Syngas

Reactor & distillation

Bio-methanol

Source: The Methanol Institute and Qofaq

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*JENSEN, Mads Friis
NEW SAFE HANDLING VIDEO RELEASED

As the global trade association for the methanol industry, product stewardship is Job #1 for the Methanol Institute. Our organization is committed to promoting the safe handling of methanol across the global distribution chain in order to protect your health and that of your co-workers, your workplace, the environment, and your community.

MI is proud to introduce a completely new and updated Methanol Safe Handling Video. This video provides an overview of critical methanol safety information, including methanol health and fire risks, and how to mitigate them through proper safe handling procedures. This important video provides critical information not just for methanol production facility personnel, but anyone who may come in contact with methanol.

MI member companies as well as additional outside organizations were critical partners in the production of this vital safety resource, and MI in particular wishes to thank the people of the Methanex Corporation and Kinder Morgan for the generous use of their time and facilities for the filming of this video, and the RISE Research Institutes of Sweden for the generous use of footage of fire tests recorded as part of the research project proFLASH.

The new Methanol Safe Handling video is available both on our website at www.methanol.org/safe-handling/ and on MI’s YouTube page at www.youtube.com/user/MethanolInstitute

THIS IMPORTANT VIDEO PROVIDES CRITICAL INFORMATION NOT JUST FOR METHANOL PRODUCTION FACILITY PERSONNEL, BUT ANYONE WHO MAY COME IN CONTACT WITH METHANOL.
ADVENT TECHNOLOGIES

Advent Technologies develops materials and components for transportation, energy, defense, and sensor applications. Advent materials enable electrochemical cells to work with multiple fuels (nat. gas, methanol, DME), rather than high-purity hydrogen and provide significant advantages for electrification and GHG reduction worldwide. A commercial truck with Advent materials refills in minutes, needs half the Li-ion battery infrastructure, has longer range and lower cost. Benefits in range, refill, cost, and clean operation apply to the APU and Portable Power (drones, defense, security) markets.

The Company was founded by world-renowned scientists with many years of industry experience. It is headquartered in Cambridge, MA with production and R&D facilities in Europe. Advent has a wide and international portfolio of patents and proven experience in scaling manufacturing.

Advent has developed, tested, patented and released to multiple customers superior materials (membranes, electrodes, catalysts) that are the heart of the next generation of electrochemical cells. Unlike the competition, Advent’s MEAs run at high temperature. This allows electrochemical cells to work with liquid fuels (methanol), biogas, aviation fuel, natural gas, not only hydrogen. Contaminants such as carbon monoxide (CO), which at a few parts per million (ppm) will kill conventional systems, can be as high as several percent (%) delivered to an Advent membrane. Because of these differences systems built with Advent inside have greater flexibility of end-user applications, simpler design, and lower cost of manufacturing.

BLUE WORLD TECHNOLOGIES

Blue World Technologies, headquartered in Aalborg, Denmark, is an advanced developer and manufacturer of methanol fuel cell components and systems for use in mobility and automotive applications. The result is electric vehicles with 1000km range, 3 minute refueling using existing infrastructure and zero harmful emissions.

The exclusive fuel for Blue World systems is methanol which is a simple liquid fuel - renewable and cost effective which can be stored for years and transported around the world unlike other alternatives.

Blue World Technologies is focused on the high-temperature PEM-technology combined with methanol reforming. The combination ensures a simple system design with high conversion efficiency and compliance with automotive design requirements. The end solution is a vehicle with all benefits; long range, fast refueling, zero harmful emissions, and low fuel cost.

NEW MI MEMBERS:

Advent

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BSE ENGINEERING

BSE Engineering (BSE), founded in 1990, is an independent engineering company for new, replacement and maintenance investments of industrial construction. The private and management held company focuses their services in Europe, but operates globally as licensor and catalyst supplier for H2/CO2 methanol plants.

BSE has developed business opportunities and business cases in different branches for power-based methanol. With the skid-mounted small-scale methanol plant “FlexMethanol”, it is economic to produce methanol from excess electricity and CO2 and thus make a significant contribution to achieving the climate protection goals of the UN and most countries. This applies especially for countries with high CO2 emissions and high natural energy potential from wind, solar and hydro.

Chemicals and fuels from these resources offer the opportunity to be seamlessly integrated into existing infrastructures. To secure the offtake of FlexMethanol, BSE works together with all German car manufacturers.

Christian Schweitzer, Managing Director of bse Engineering noted that “The decision to become member of MI became easy after we held together conferences in the context of FlexMethanol. Small-scale methanol plants are specific in Europe where new stakeholders have to be informed about these business opportunities. We are proud to work with MI together in organising technical workshops e.g. at the IHS World Methanol Conference for the next years. With almost three decades of experience in industrial plant design, we support our clients with our expertise in the technical, technological, normative, economical and material fields.”

OLAH MOTORS

Olah Motors was founded in 2016 by Shanghai Yihua Information Technology Co.

Olah Motors develops methanol-based fuel pistons, internal combustion engines and range-extended hybrid power systems for commercial vehicles. The company is currently working across four areas to achieve the best balance among power output, fuel economy and emission performance for future cargo transportation:

- Internal combustion engine suitable for methanol fuel;
- Range-extended hybrid power system coupled with ISG generator;
- Compression ignition engine with methanol fuel for better engine efficiency; and
- Intelligent electric vehicles including vans and trucks (L3-L4) with methanol-electricity hybrid system.
**PALCAN**

**Palcan** is a hi-tech enterprise whose mission is help drive forward the “hydrogen” economy. Palcan produces reliable, affordable power systems for the transportation industry. Palcan is the first company in China to obtain approval of its own designed methanol reformed fuel cell (MRFC), which will be integrated in fleet vehicles across China beginning in 2020. Palcan’s MRFC adapts to many other sectors beside transportation including; communication, mobile charging, off grid homes and back-up power.

Palcan has been involved in the fuel cell business for many years, initially in Canada where much of the fuel cell industry began to commercialize. Since 2016 Palcan has made moves to launch a business in China, a Country that has shown commitment to supporting a hydrogen society.

China’s foresight to create a “country wide” distribution of methanol, a fuel that enjoys the highest concentration of hydrogen, will fuel Palcan’s MRFC. The MRFC benefits include; extend a vehicle’s range, the life of batteries, reduce operating costs, and only discharge warm water and slight CO2.

Palcan is presently completing its manufacturing and research facility which is located near Shanghai. This new complex has a total surface area of 60,000 m², with a planned production scale of 50,000 various fuel cell systems for total investment of ¥500 million (USD 74.5 million). Upon completion the facility will be the largest fuel cell production facility in Asia.

**QUANTIAM**

**Quantiam** is a Canadian high technology manufacturing company founded in 1998 by Steve Petrone. Quantiam works to solve pervasive, high-cost materials problems in selected industry segments by applied research, development, and pilot-scale trial manufacturing in collaboration with key global clients.

Quantiam’s Methanol+ delivers a carbon negative solution to petrochemical and hydrogen manufacturing with global potential. The game changing Methanol+ (Green Methanol and Solar Hydrogen) technology package couples two process technologies. The first generates hydrogen from sunlight and water. The second uses this hydrogen and captured carbon dioxide emissions to produce methanol, a high value global commodity chemical, energy resource, and a key building block in olefins and polymer production. Methanol+ is a sink for nearly 1.5 tonnes of CO2e per tonne of methanol produced, disrupting the traditional thinking that climate action and commercial success cannot move forward together.

Quantiam’s innovation pipeline spans a large range of technology readiness. The company’s commercially available CAMOL™ (Catalytically-Assisted Manufacture of Olefins) technology improves performance, profitability, reduces energy consumption and greenhouse gas emissions in steam cracking for olefins manufacture. A new generation of catalyst (SGX) and inert (i-1300) coatings for high severity steam cracking are under development and will be commercialized in 2022. Wear coatings for the oil and gas sector (TRL 6/7) are on their second generation and second round of field trials. The Methanol+ technologies (Solar Hydrogen and Green Methanol) which enable carbon-negative production of methanol are advancing to TRL 5+ by 2020.
**YCI METHANOL**

*YCI Methanol One, LLC (YCI Methanol)* is a joint venture between Yuhuang Chemical Industries Inc. (YCII) and Koch Methanol Investments, LLC (Koch Methanol) which is currently constructing a $1.85 billion methanol production facility in St. James Parish, LA with an installed capacity of 4,950 metric tons per day, and capable of producing about 1.8 million metric tons of IMPCA quality methanol per year. YCI Methanol management expects the project will be operational by Q3-2020.

Koch Methanol has the exclusive methanol offtake rights from the facility, and will construct, own, and operate the methanol logistics assets for the outbound flow of methanol via marine, rail, and truck.

Dr. Charlie Yao, YCI Methanol CEO, says that “the Methanol Institute is one of the best methanol producer platforms for YCI and other producers to share manufacturing technology experiences, network with other methanol producers, and help develop new market opportunities for the methanol business and its stakeholders”.

**NEW MI MEMBERS CONTINUED**
**LEGISLATIVE/REGULATORY AFFAIRS**
Directs all international public policy advocacies.

- MI’s Legislative & Regulatory Committee is focused on interactions with governments around the globe to ensure that the development of public policy utilize the best available scientific evidence and do not unduly hinder the growth of the methanol industry.

- As the chemical industry globally comes under increasing regulatory scrutiny, the Committee is charged with ensuring that the methanol industry meets every challenge head on.

- The Committee is currently coordinating with the REACH Methanol Consortium on the European Union’s review of methanol, and monitoring regulatory initiatives across Asia Pacific and the Middle East.

- The Committee also tracks regulatory challenges to downstream products like formaldehyde and MTBE.

**PRODUCT STEWARDSHIP**
Responsible for methanol health & safety activities.

- MI’s Product Stewardship Committee (PSC) is responsible for overseeing efforts to promote health and safety activities throughout the global supply chain.

- The Committee supervises the development of MI’s critical Methanol Safe Handling Manual and related documents that distribute best practice and safety information to producers, distributors and consumers.

- The PSC also is responsible for addressing issues related to methanol health and safety that arise around the globe, including oversight of the Bootleg Alcohol Prevention Subcommittee (BAPS).

**MARKET DEVELOPMENT**
Facilitating the development of methanol applications in a number of emerging markets.

- From fostering emerging technology companies to promoting the use of methanol as a vital energy solution, the MDC is focused on augmenting methanol markets around the globe.

- The Committee oversees issues related to the use of commercialization of fuel cells and fuel-related technologies, methanol-to-power (MTP), the use of methanol in wastewater treatment facilities, methanol-to olefins (MTO), renewable methanol production, dimethylether (DME), industrial boilers, and cooking applications.

**GLOBAL FUEL BLENDING**
Encourages the growth of methanol fuel blending worldwide.

- Aggregate all relevant technical & emissions data on methanol fuel blending (low, mid, & high level).

- Identify research needs & fund appropriate testing programs that fill information gaps and share with all members.

- Support & lobby for critical programs and legislation such as the Open Fuels Standard Act in the U.S., and defend and support methanol inclusion in fuel regulations in the EU and around the world.

**MARINE FUEL**
Encourages the growth of methanol fuel blending worldwide.

- The Marine Fuels Committee will focus on expanding methanol as a marine fuel, by:

  - Developing and advocating legislation
  - Proving conversion, new build and infrastructure economics
  - Addressing supply & demand issues
  - Promoting environmental benefits
  - Providing best practices and safe handling
OUR 2019 MEMBERS

Tier 1
- MHTL
- Methanex
- Sabic
- OCI

Tier 2
- MITSUBISHI GAS CHEMICAL AMERICA, INC.
- ATLANTIC METHANOL
- MITSUI & CO., LTD
- PETRONAS

Tier 3
- Ecofuel
- Sipchem
- G2X ENERGY
- Johnson Matthey

Tier 4
- Eni
- Mitsubishi International Corporation
- FiTech
- Advent
- HELM PROMAN METHANOL
- azelis
- MOL
- Blue World
- Carbon Recycling International
- Haldor Topsoe
- Southern Chemical Corporation
- bse
- engineering
- YCI METHANOL ONE
- Fuel Freedom
- Gastechno
- Nippon Innovation Works
- TRICON
- Quantum technologies inc.
- CLARIANT
- IGP Methanol
- Nakhoodka Fertilizer Plant
- Double Green Bridge
- IMTT
- CoogeeChemicals
- OLAM
- VITUSA PRODUCTS INC.
- solvadis

2019 METHANOL INDUSTRY IN FOCUS
## MEMBERSHIP TIERS

### “WHERE YOU FIT IN”

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<th>TIER</th>
<th>ANNUAL DUES</th>
<th>CRITERIA</th>
<th>BENEFITS</th>
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| 01   | $250,000    | Major producers of methanol (over 1.5 MMT per year). | - Appoint two voting representatives to the Board of Directors  
- Membership on the MI Executive Committee  
- Ability to serve as Board Officer, including Chairman & Vice Chairman  
- Ability to Chair Standing Committee(s) |
| 02   | $125,000    | Organizations which are producers of methanol or are otherwise interested in promoting the interests of the methanol industry | - Appoint one voting representative to the Board of Directors  
- May be invited to participate in Executive Committee meetings (non-voting)  
- Ability to serve as Board Secretary or Treasurer  
- Ability to Chair Standing Committee(s) |
| 03   | $62,500     | Minimum level of membership for methanol producers. Also includes non-producers and sellers of methanol who are interested in promoting the interests of the methanol industry. | - Ability to participate in Standing Committee(s) |
| 04   | $16,875     | Organizations that are interested in promoting the interests of the methanol industry. | - Cross-listing in membership directories and websites  
- Sharing of newsletters and informational resources  
- Joint legislative/regulatory activities  
- Co-sponsored research initiatives |
| RA   | N/A         | Allied trade associations and other non-profit organizations who are interested in promoting the interests of the methanol industry. | - May participate in Board of Directors meetings (non-voting)  
- Ability to Chair Standing Committee(s) |
2019 METHANOL INSTITUTE CALENDAR OF EVENTS

FEBRUARY, 2019

February 7TH
IMPCA Mini-Conference Americas
📍 Miami, Florida
☑️ www.impca.eu/IMPCA/

February 21ST
ADI Analytics: 2019 ADI Forum
📍 Houston, Texas
☑️ https://www.adi-forum.com/

February 28TH
NAMEPA: What the Maritime Industry Needs for the Future: Creating Order out of Chaos
📍 Houston, Texas
☑️ https://namepa.net/event/what-the-maritime-industry-needs-for-the-future/

MARCH, 2019

March 4TH
2019 Nitrogen and Syngas Conference
📍 Berlin, Germany
☑️ https://events.crugroup.com/nitrogenandsyngas/home

March 4TH – March 6TH
KAUST Research Conference: The Future of Fuel
📍 Thuwal, Saudi Arabia
☑️ https://ccrc.kaust.edu.sa/KRCFF/Pages/about.aspx

March 14TH – March 16TH
APM 15: Asia Pacific Marine
📍 Singapore
☑️ https://www.apmaritime.com/s

March 20TH
MAN/MI Marine Workshop
📍 Copenhagen, Denmark
☑️ www.methanol.org

March 19TH – March 22ND
WPC 2019: Annual World Petrochemical Conference
📍 San Antonio, Texas
☑️ https://wpc.ihsmarkit.com/registration/

March 22ND
MI Board Meeting
📍 Houston, Texas
☑️ nbajwa@methanol.org

APRIL, 2019

April 2ND – April 4TH
CMA Shipping 2019
📍 Tokyo, Japan
☑️ https://maritime.knect365.com/cma-shipping/

April 11TH – April 12TH
CIS Petrochemicals
📍 Moscow, Russia
☑️ https://www.globuc.com/cispetrochemicals/
M A Y ,  2 0 1 9

May 9th – May 10th
APIC 2018: Asia Petrochemical Industry Conference
📍 Taipei, Taiwan
✉️ https://www.apic2019.tw/

J U N E ,  2 0 1 9

June 13th
MI Board Meeting
📍 Wiesbaden, Germany
✉️ nbajwa@methanol.org

June 13th – June 14th
IMPCA European Mini-Conference
📍 Wiesbaden, Germany
✉️ www.impca.eu/IMPCA/IMPCA/Future-Conferences

June 16th – June 19th
IMTOF 2019
📍 London, UK

O C T O B E R ,  2 0 1 9

October 4th – October 5th
37th Annual World Methanol Conference
📍 Berlin, Germany
✉️ https://ihsmarkit.com/events/37th-Annual-World-Methanol-Conference/overview.html

October 27th – October 29th
2019 Global Syngas Technologies Conference
📍 Austin, Texas
✉️ https://www.globalsyngas.org/events/2019-conference

November 7th
MI Board Meeting
📍 Singapore
✉️ bpun@methanol.org

November 7th – November 8th
IMPCA Asian Methanol Conference
📍 Singapore
✉️ www.impca.eu/IMPCA/IMPCA/Future-Conferences

S E P T E M B E R ,  2 0 1 9

September 9th - September 11th
Argus Methanol Forum
📍 Houston, TX, USA