



2021 MILESTONES



**MILESTONES
TABLE OF
CONTENTS**

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TABLE OF
CONTENTS**

4	MI's Mission	Methanol Covid Safety Fact Sheet	11	18	MI's New Website	MI's Newest Members	24
5	Message From Our Chairman	Bootleg Alcohol Poisoning Prevention	12	19	MI's Social Media	MI's Membership Tiers	28
6	MI's 2020 Accomplishments	2020 India Roundup	13	20	2021 Goals + Objectives	MI's Leadership Structure	29
8	COVID-19 Impact	China Fuel Blending Developments	14	22	Global Strategic Partnerships	MI's Office Locations	30
10	Methanol As A Marine Fuel	Worldwide Fuel Blending Developments	16	23	MI's Current Members	MI's Important Contacts	31



METHANOL INSTITUTE PROTECT - EXPAND - COMMUNICATE

Our Mission

As the global trade association for the methanol industry representing the world's leading methanol producers, distributors and technology companies, the mission of the Methanol Institute is to serve and provide cost-effective value to its membership by:

PROTECTING:

Protecting existing markets is a core function

- Meeting regulatory challenges & driving policy opportunities
- Promoting best practices across the global distribution chain
- Preventing product misuse

PROMOTING:

Promoting the growth of emerging energy markets

- Ensuring the methanol industry maintains momentum in key market applications
- Marine fuels
- Gasoline and Diesel substitution for road transport
- Heating/Power applications: cook stoves, industrial boilers, kilns, gensets, turbines
- Low carbon, renewable and small-scale methanol

SERVING:

Serving as the voice of the global methanol industry

- Supporting members during period of change and amplifying member messaging
- Building global stakeholder networks
- Expanding social media presence and use of digital communications/marketing

A CHALLENGING YEAR BRINGS NEW OPPORTUNITIES

I think we can say with a high degree of certainty that none of us has ever witnessed a year quite like 2020 before, both for the methanol industry, and in our personal lives. I'd like to first take this opportunity to express my hope that each of you and your loved ones remain safe and secure during these trying times.

The COVID-19 pandemic has driven economies to shut down, halted global travel, led an oil price collapse, and much more. The methanol industry is only now starting to see demand returning, and opportunities for growth in several sectors.

For the Methanol Institute, this year brought both great challenges and exciting opportunities. MI has worked hard this year to pivot our activities to maintain momentum and best position the industry for post-COVID expansion. As we have sought new opportunities, funding for conferences, events, and pilot projects has moved to tabletop studies, consultant activities, and a strong push to increase our digital presence.

In this year's edition of Milestones, you will learn more about some of these initiatives as well as additional MI activities, and a look at our new members: Advanced Chemical Technologies Gane Energy, Lake Charles Methanol, Neo-H2, RIX Industries, Southern Green Gas, Maersk & Stena Bulk.

Now entering my third year as the association's Board Chairman, I am proud of what we accomplished in 2020, and excited for the work that lies ahead in 2021. 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; expand our reach via our social media and web platforms; and many other important initiatives.

The organization and members of the Methanol Institute are making significant contributions to the advancement of the global methanol industry. MI stands ready to continue to move the methanol industry forward -- hopefully in an environment returning to normalcy -- however, MI has demonstrated the ability to function effectively in our current pandemic-changed environment.

Whatever challenges and opportunities 2021 bring, I'm confident that MI and our industry can meet them **successfully**.

Kevin Struve
CHAIRMAN OF THE BOARD
(EXECUTIVE VICE PRESIDENT, OCI N.V.)



MI ACCOMPLISHED A GREAT DEAL ACROSS A WIDE RANGE OF ACTIVITIES IN 2020. SOME HIGHLIGHTS INCLUDE:

- The launch of MI's own highly successful webinar series, featuring webinars on topics such as bio-methanol, methanol fuel cells, and renewable methanol.
- The completion of safety manuals for methanol boilers and kilns.
- The release of a joint report on renewable methanol with the International Renewable Energy Agency (IRENA).
- The launch of a carbon footprint assessment with consultancy Studio Gear Up.
- The release of methanol bunker guidelines with Lloyd's Register.
- Initiation of a marine-fuel techno-economic assessment with China's Waterborne Transport Research Institute.
- The conduct of a China Methanol Fuel Survey which deepened our understanding of the methanol fuel market in China.
- Reformulation of our strategy and increased focus on social media activities.
- The revamping of our website www.methanol.org
- Opening of our fifth MI staffed office in Delhi, India.

MORE OF MI'S ACCOMPLISHMENTS DURING 2020

MORE OF MI'S ACCOMPLISHMENTS DURING 2020



PSC & BAPS

Product Stewardship Committee (PSC) & Bootleg Alcohol Prevention Sub-Committee (BAPS)

- Safe Handling Video Translation & Manual
- New Safety Technical Bulletins
- ACC Formaldehyde Panel

- BAPS Social Media & Communications Campaigns (Part Of UNHCR & MSF Campaign, Related To Covid Safety Fact Sheet, Methanol Matters & Other Social Media Platforms)
- Alivion Methanol Detection

MFC

Marine Fuel Committee (MFC)

- 5 Events: IBIA/Methanol As Marine Fuel Webinar (Nov & Dec 2020)/Methanol As Marine Fuel @ Istanbul/Lloyd's Register Webinar
- Research Institute (WTRI) Feasibility Study On Methanol As A Marine Fuel

- DCS Methanol Bunker Project - CEN
- LR Techno-Economic Marine Fuel Assessment
- Methanol Bunkering Technical Reference By Lloyd's Register
- IMO - Interim Guidelines Approval (CS6 & MSC 102)

MDC

Market Development Committee (MDC)

- Communicating Methanol: Creating Awareness About Methanol Applications: IB/CS Brochures , Essential Methanol Infographic, Methanol Kiln & Boiler Safety Manuals, Video Creation - Methanol As A Clean Fuel, Cook Stove Campaign In India
- 5 Webinars: Why Bio-Methanol/Methanol Fuel Cells/Renewable Methanol/AMF ANNEX 56/India's Methanol Economy Aspirations

- Government Engagement: Protecting & Expanding Markets With A Regulatory Focus
- Research Initiatives: China Methanol Market Study, Methanol Cook Stove Emissions Study, IRENA Bio-methanol & RM Technology Brief, Studio Gear Up Study On Methanol's Low Carbon Strategy

GFBC

Global Fuel Blending Committee (GFBC)

- IEA-AMF Methanol Annex 56: A Focused Report On Methanol Fuels That Can Be Accessible To Policy Makers, Joint MI/IEA-AMF Webinar To Promote Report On 26 Oct 2020 & Drew Over 250 Attendees

- Denmark's M85 Pilot/Blender Pump
- China National Standards For M100 & Additives
- SGS & Primer Reports Roll-Out

**‘UNPRECEDENTED’
‘NEW NORMAL’
‘YOU’RE ON MUTE’**

2019

2020

2021

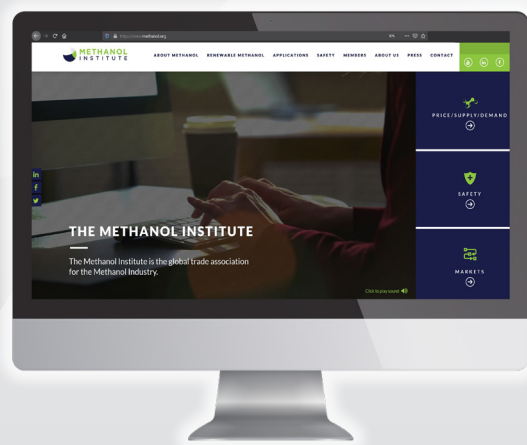
**THE BIGGEST
CHANGE FOR MI
DURING 2020**

These are just some of the words and phrases that entered mainstream speak and defined 2020.

The COVID-19 pandemic was a restart button that wiped the slate clean and challenged how the most fundamental of activities were carried out. Individuals, businesses, and governments had to reinvent themselves to ensure continuity. While some reeled at the inconvenience of change, change did present opportunities to re-adapt and pivot.

MI recognized the opportunity the crisis presented to expedite its transition towards digitalizing its services and strengthening our communications strategy. Prior to 2020, MI had established a strong foundation in communications, but 2020 saw MI working on different initiatives to further increase its reach with both traditional and social media. Beyond expanding its reach, a key objective was to position MI as a thought leader within and beyond the methanol industry.

This two-pronged approach allowed MI to convey key messages more effectively to a wider and more receptive audience.



FIRST ORDER OF BUSINESS



The first order of business for MI was to build a robust toolbox for its communications strategy. This involved creating content. Content that succinctly conveyed key industry messages while being easily digestible by target audiences. Following its first methanol industrial boiler brochure, MI created a methanol cook stove brochure.

The cook stove brochure gave readers an overview of how the technology works and provided case studies from different countries in which methanol cook stoves have been deployed to improve indoor air quality while ensuring that there was an affordable and reliable supply of cooking fuel.

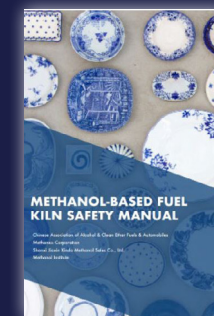
At the onset of the COVID-19 pandemic, there were discussions around the world about what should be considered as essential industries, industries that should continue operations without being encumbered by stringent restrictions or lockdown.

In response to that, an Essential Methanol infographic was developed to convey the ubiquity of methanol in a variety of everyday products from household equipment, automotive parts, and even personal protective equipment necessary in the fight against the pandemic.

The main aim was to communicate that methanol was a highly essential and useful product that touches the daily lives of most people. Infographics was chosen as the most effective medium to highlight the versatility of methanol as a widely used product in a concise but entertaining way.

BEYOND BROCHURES & INFOGRAPHICS

MI explored producing videos to creatively demonstrate the value of methanol as an energy carrier. The Methanol as a Clean Fuel animated video was created in 2020 to demonstrate the versatility of methanol as a clean and sustainable energy carrier across different applications like land & marine transport, industrial boilers, cook stoves, and fuel cells. The video was used in various digital events that MI participated in as an engaging way to convey and emphasize the message that methanol is a clean-burning fuel compliant with climate mitigation strategies.



While a bulk of MI’s communication strategies is centered on promoting methanol applications, there is also an equal recognition that these applications should be utilized safely and responsibly. In emerging applications such as methanol industrial boilers and cook stoves, there is a lack of regulations and standards to ensure that these technologies are deployed safely. Hence, MI worked with MI member Methanex in 2020 to develop safety manuals for methanol industrial boiler and kilns. The methanol industrial boiler application is a market in China with high-growth potential, and there was already a considerable and increasing number of methanol industrial boilers. The same methanol burner technology used in industrial boilers can also be deployed in kilns used for glass products and ceramic sintering. While there have not been safety incidents involving methanol industrial boilers or kilns, the safety manuals were developed to ensure that there was no ambiguity with safety protocols despite the lack of government-issued standards or regulations.

All materials that were developed were distributed in its digital format on social media, where MI shared posts to highlight the key features of each marketing collateral. These posts and the materials that were uploaded were well-received from MI’s target audiences, and some MI members also utilized these materials to supplement their own communications strategies. MI would like to continue to encourage members to utilize MI’s communication materials in their own communication platforms to amplify the key messages of the industry.

The biggest change that occurred for MI in 2020 was the lack of conferences and events at which MI could present at as a champion of the methanol industry, as during ‘normal’ years, MI’s professional staff present at 60-80 global conferences, seminars and workshops. As businesses around the world moved towards more digital platforms to facilitate their engagements, there was a sharp increase in online events – webinars. In response to that, MI organized its own series of webinars aimed at facilitating the continued engagement of stakeholders and ensuring that key industry-related messages are still being communicated to target audiences. In 2020, MI organized four webinars and one online fireside chat. The webinars were organized in a panel format often featuring MI member company representatives with subject matter ranging from bio-methanol, renewable methanol, methanol fuel cells, to methanol as a fuel in a range of applications. The webinars were well-attended by an international audience that came from different sectors such as land & marine transport, energy, petrochemicals, logistics, consulting, and government. MI also hosted a fireside chat with Dr. V. K. Saraswat from NITI Aayog about the latest developments in India’s methanol economy aspiration.

These digital events proved to be a good substitute to in-person events as it allowed MI to reach a global audience cost-effectively and efficiently. It also allowed the methanol industry to build new connections with individuals who were not usual attendees at conferences that MI participates in. These new connections led to fresh and genuine interest in methanol as a product and some even led to opportunities for collaboration.

2020 was a year that was fraught with challenge caused by change. It was indeed the year of the ‘new normal’. However, a year of change brought with it learning, adapting, and pivoting. It proved to be a fruitful year for MI’s communications strategy, having been bolstered by several new initiatives that will further hone the MI’s ability to be the voice of the methanol industry.

A PIVOTAL YEAR FOR METHANOL AS A MARINE FUEL



METHANOL COVID SAFETY FACT SHEET

2020 was a pivotal year for methanol as a marine fuel, especially from a policy perspective.

Given the global impact of COVID-19, the International Maritime Organization (IMO) was forced to delay key meetings focused on the decision to approve methanol for inclusion in the Interim Guidelines for Methanol as a Low Flash Point Fuel. The IMO was able to finally re-schedule those meetings originally slated for May, and by November capped off the year by approving methanol for inclusion in the Interim Guidelines, thus paving the way for further consideration of methanol by ports, flags, vessel owners and operators as a safe and compliant alternative marine fuel.

In China, the world's largest producer and consumer of methanol, MI initiated an extensive study with policy recommendations, together with MI member Methanex, SINOPEC, Huayi, China Classification Society and others, with a target for 2021 approval of methanol as a marine fuel in China, by China's Marine Safety Administration.

MI kicked off the year with a Future Fuels Workshop in Copenhagen hosted together with MAN, Lloyd's Register, Maersk and over 50 industry stakeholders across the entire value chain.

We were very active within shipping at all levels to both raise awareness and promote the benefits of methanol as a low carbon and net carbon neutral marine fuel and efficient energy carrier. In this capacity, we worked with Lloyd's Register to publish a widely received, Techno-Economic Assessment on Alternative Fuels.

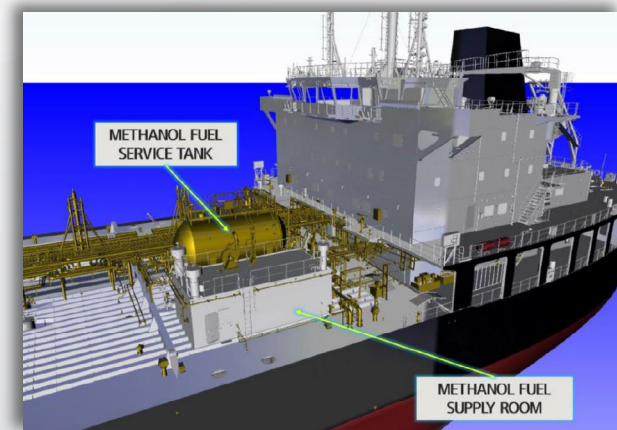
MI, together with MI members, achieved Approval in Principle (AiP) from DNV GL for a standardised methanol dual fuel product carrier design with South Korea's leading shipyard; Hyundai Mipo Dockyard, and began

similar work for a container vessel design, which is due to be released in 2021.

On the downstream side, we again collaborated with Lloyd's Register and numerous MI members to produce a Methanol Bunkering Guideline, based on the highest industry safety standards and best practices.

The sustainability merits of methanol as a future-proof, net carbon neutral fuel have been debated vigorously on the world stage and MI contributed a significant effort to "prove up" methanol's CO2 equivalent benefits in this regard. Together with IRENA, MAN, ABS, and Lloyd's Register, MI produced a series of compelling white papers and policy proposals underscoring the flexibility of methanol in the production of lower carbon fuels.

With extensive availability in over 100 ports globally and being a liquid at ambient temperature and pressure, methanol allows for re-purposing of existing infrastructure, as well as efficient retrofit possibilities, due to its "drop in fuel" credentials. The combination of technical, environmental, and economic benefits methanol can offer the shipping industry are now being independently verified with the first methanol dual fuel vessels outside of the product carrier segment expected in 2021.



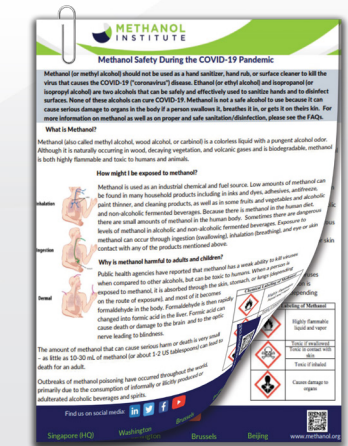
In early April 2020, in response to the rapidly escalating COVID-19 pandemic, and the news that ethanol in hand sanitizer was being replaced with methanol by some unscrupulous manufacturers, the Methanol Institute (MI) released a detailed fact sheet and "FAQ" noting that methanol is not an effective or safe product for use as a hand sanitizer or surface disinfectant to combat the COVID-19 virus.

The fact sheet notes that Methanol (methyl alcohol) should not be used in place of ethanol (ethyl alcohol) and isopropanol (isopropyl alcohol) based hand sanitizers or as a disinfectant to clean surfaces. First, public health agencies have reported that methanol has a weak ability to kill viruses when compared to other alcohols and is less effective than other alcohols. Second, methanol is much more toxic than ethyl or isopropyl alcohols, so it can cause bodily harm when it comes in contact with skin, is swallowed, or is inhaled. Ethanol and isopropanol are the alcohols approved by the US Food and Drug Administration (US FDA) for disinfection in health care settings, registered by the US Environmental Protection Agency (US EPA), and recommended by the World Health Organization (WHO) for use in alcohol-based hand rub formulations.

Although methanol is an alcohol like ethanol and isopropanol, methanol cannot be used as they are because it breaks down and produces different chemicals in the body. Ethanol produces acetate in the body, isopropanol produces acetone in the body, and methanol produces formic acid in the body, which is more toxic and harmful than those produced by the other alcohols.

The fact sheet goes on to note that use of methanol as a main ingredient in hand sanitizer has not been approved or recommended by any governmental authority. There are currently no regulatory safe levels for methanol in hand sanitizers or disinfectants. In the United States, products containing more than 4% methanol must be labeled as "poison." In Europe, products may contain up to 5% methanol in cosmetic and personal hygiene products.

Methanol is an impurity sometimes present in ethanol, and therefore, small amounts can be present in ethyl alcohol-based hand sanitizers or rubs. Product specifications limit the amount of methanol in ethyl alcohol to 0.5% or 0.2 mL/L. Because methanol is an impurity in ethyl alcohol, it is not listed as an active ingredient on the product label.



This fact sheet titled **Methanol Safety During the COVID-19 Pandemic** can be found here:

www.methanol.org

The fact sheet was prepared for the Methanol Institute by Gradient, an environmental and risk sciences firm.

BOOTLEG (ILLICIT) ALCOHOL POISONING PREVENTION



2020 INDIA ROUNDUP

MI continued and expanded our work to prevent poisoning from bootleg (illicit) alcohol in 2020.

We maintain a wide range of tainted alcohol poisoning prevention and treatment materials on our website at:

www.methanol.org/bootleg-alcohol-prevention

As always, these materials are freely available to download and share.

MI responded to the tragic news that citizens in Iran were consuming industrial alcohol in a bid to ward off the Covid-19 virus ([click here to read](#)), and produced a fact sheet on Methanol Safety During the COVID-19 Pandemic which noted that methanol should not be used as a hand sanitizer or surface disinfectant (see story on page 11 or [click here](#))

Most recently, MI has entered into an exciting partnership to fund the work of Swiss researchers, who through their startup venture Alivion AG, have created a methanol breath detector. This device will be able to rapidly detect methanol poisoning by sampling a person's breath and allowing first responders to begin methanol poisoning treatment immediately.

With India continuing to express an interest in moving toward a methanol economy, MI has endeavored to create a fertile ecosystem for the adoption of methanol applications through constructive engagements with the Government of India (GoI) and private sector.

MI's efforts have resulted in the positive development of public policy supporting the creation of a domestic methanol economy, pilot projects demonstrating viability of methanol applications, and information-sharing forums where greater awareness of methanol was created.

To deepen and broaden MI's engagements in India, MI also welcomed Ms. Prakriti Sethi in 2020 as MI's representative in Delhi, India. Her addition to the MI team has bolstered the methanol industry's relationship with key Indian stakeholders, resulting in the strengthening of existing partnerships and widening MI's in-market network.

In 2020, the MI team conducted an extensive stakeholder mapping assessment to identify and establish key contact points for different methanol applications. This led to various stakeholder consultations with the methanol industry and the forging of strong partnerships.

MI and engineering leader FEV India signed a MoU to strengthen their partnership as one of the local technology partners for retrofitting methanol engines. The major thrust of the MoU is to strengthen the commitment and interest of both organizations to commercialize the utilization of methanol as a fuel in locomotives, land, and marine transport in India. The MoU aims to facilitate partnerships with Indian private sector stakeholders for research and pilot projects while growing domestic technical capabilities in methanol applications.

The National Institution for Transforming India (NITI Aayog) and MI announced the renewal of their strategic

partnership to spearhead the development of the Indian methanol economy over the next two years. The renewed agreement seeks to strengthen the commitment of both organizations to develop India's methanol economy through robust policy dialogue, with the goal of reinforcing India's energy security with an efficacious methanol energy market.

The agreement entails a comprehensive roadmap for scaling up the methanol economy in India with the following objectives:

- Create greater awareness about methanol as a fuel across the automotive, maritime, power, and cookstove markets through targeted consumer awareness and promotional campaigns. User buy-in will be a key enabler in the development of an efficient methanol energy market.
- Identify and develop key regions in India that can serve as test-beds for methanol-related technologies, where development work can be conducted before the technologies are exported nationwide.
- Develop and strengthen the infrastructure and processes needed for the last-mile delivery of methanol as a fuel for off-grid power generation and cookstoves

Additionally, as part of our 2020 webinar series, MI organized "Methanol as a fuel for India's Inland Waterways" to discuss methanol's potential role as a fuel for vessels on India's inland waterways. MI also organized an exclusive fireside chat with Dr. V.K. Saraswat of NITI Aayog, to shed light on the future of the methanol economy post COVID-19. In July 2020, MI launched our WhatsApp for Business platform in India to promote dialogue and discussion among stakeholders interested in the Indian methanol industry. This exciting tool provides market and policy updates on the methanol industry in India, stakeholder engagement opportunities (through WhatsApp group chat), insights on how methanol can be leveraged to achieve positive change, and access to methanol industry experts and resources.



15 LANGUAGES

Many of our bootleg alcohol poisoning prevention materials are now in 15 languages! MI maintains website landing pages in these languages and responds rapidly to global reports of illicit alcohol poisoning incidents by sharing these materials with local health authorities, and by reaching out to the public via location and language targeted Facebook advertisements linking to our lifesaving materials.



2,032,007 PEOPLE

Last year these targeted Facebook ads alone reached over 2,000,000 people.

CHINA FUEL BLENDING DEVELOPMENTS

Led by 2019's "Policy Paper 61," which guides work for methanol vehicle applications and development in China, China's central government ministries and various local governments are working together with companies, research institutes and local associations to continue the growth of methanol fuel use in cars, trucks and buses. By January 2021, the total number of registered methanol vehicles in China exceeded 25,000, including passenger cars for taxi fleets and trucks.

Methanol Fueled Vehicles in China (by Jan, 2021)			
Province	City	Vehicle Type	Vehicle No.
Shanxi	Jinzhong	Taxi	260
	Yun Cheng	Taxi	12
Shannxi	Xi'An	Taxi	8,124
	Baoji	Taxi	585
		Mini MPV	15
	Yulin	Self-Dumping Truck	5
Guizhou	Hanzhong	Taxi	20
	Guiyang	Taxi	15804
	Tongren	Taxi	100
Gansu	Bijie	Taxi	150
	Pingliang	Taxi	150
Xin Jiang	Urumchi	HD Truck	15
Total			25240

Notably, methanol is now the dominant fuel for taxi fleets in Gui Yang City, the capital of Gui Zhou province. The cities of Bijie and Tongren are the newest regions to promote M100 (neat methanol) taxis. Methanol fuel refueling infrastructure is also rapidly growing, with the total number of filling stations approaching 100, including those managed by Sinopec and CNPC.

Progress has also been made on regulations and standards, in December 2020, the Chinese Ministry of Industry and Information Technology (MIIT) updated a notice on its website to clarify the details of the methanol vehicle approval process, guiding automakers to develop more methanol fueled vehicles. The notice clarifies the vehicle model and engine approval process specifically for methanol fueled vehicles. There is now a new vehicle classification item shown as "methanol".

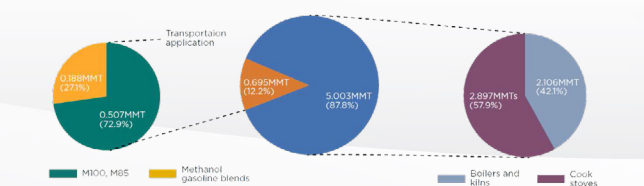
Methanol vehicles must comply with a variety of standards, including China VI emission standards (which are similar to Euro VI), methanol and formaldehyde tailpipe emissions standards, methanol vapor emissions, and heavy-duty engine emission standards. All the relevant emission standards were released by the Chinese Ministry and Environment and Ecology (MEE) earlier in the year.

In compliance with the new certifying regulation and standards, Geely Auto has developed its first China National VI passenger car model, which is produced at its facility in Shanxi Province. Shanxi Province is also taking steps to join the group of regions which are working to promote methanol vehicles locally by issuing preferential policies including free parking, and cash subsidies to automakers and filling station operators who open new methanol pumps.

In 2021, MI expects more methanol vehicles will be on the roads of even more cities across China, and ongoing growth will be facilitated by additional standards which are being drafted on M100 fuel and fuel additives, methanol fuel station safe operation, and related automotive parts. MI will host another methanol vehicle and fuel exhibition and forum in Gui Yang City, June of 2021. Our Chinese partners promise every international guest will be picked up by M100 taxi from the airport!

Chinese Market Development and Renewable Methanol -

In addition to road transportation, the use of methanol fuel in other applications such as cookstoves and boilers is becoming more well known in China. From 2019 to 2020, in partnership with the China Association of Alcohol and Ether Clean Fuel and Automobiles (CAAEEFA) and MI member Methanex Corporation, MI conducted a China methanol fuel survey which covers all the major provinces across China via site visits, telephone interviews and a questionnaire. A total of 77 companies responded to the questionnaire, and around 300 companies accepted phone inquiries. In addition, the survey team visited dozens of companies in Sichuan, Shaanxi, Shanxi, Jiangsu, Zhejiang, Beijing, Henan, Anhui, Fujian, Guizhou provinces and municipalities.



The work deepens our understanding of the methanol market and shows that total market consumption for methanol fuel in all applications in China is close to 6 million metric tons (MMT), and that the thermal sector accounts for the majority.

The report also identifies major concerns from the local companies and calls for more joint work on better industry practices, including policy support and additional standard work. In 2021, MI is working with

CHINA FUEL BLENDING DEVELOPMENTS

Chinese partners to address the industry's needs.

At the same time as needing to meet the population's energy demands by providing more energy and fuel, as the world's largest GHG emitting country, China also must transit to a low carbon society. China has made a commitment to hit peak emissions before 2030 and to reach carbon neutrality by 2060. MEE has released a draft of National Carbon Emission Trading Management Rules and supporting rules of Registration, Trading and Balancing, and a national emission trading scheme (ETS) is to be in effective in 2021. As the biggest single chemical in the whole Chinese chemical industry, it is likely that methanol will be covered by the ETS in the coming years.

China is also developing renewable pathways to produce methanol. In November 2020, the Dalian Institute of Chemical Physics (DICP) of the Chinese Academy of Sciences (CAS) put the world's first 1000-ton scale solar to methanol plant into production, with a ceremony featuring virtual congratulations from MI CEO Greg Dolan.

Located in Lanzhou, the project is composed of a 10MW photovoltaic (PV) power generation, water electrolysis (2*1000Nm³) and CO₂ hydrogenation to methanol units, with total investment of 140 million RMB (USD\$22 million). The process made two breakthroughs: the hydrogen production process requires as low as 4.0-4.2 kWh/Nm³, which is highest efficiency for Alkaline Electrolysis at scale; a new ZnO-ZrO₂ catalyst used in the CO₂ hydrogenation to methanol, with single loop selectivity over 90% and performance decaying within 2% after 3000 hours operation. The research team is looking at 100,000-ton scale facility for its next project.

WORLDWIDE FUEL BLENDING DEVELOPMENTS

WORLDWIDE FUEL BLENDING DEVELOPMENTS

MI continued to expand our involvement in methanol fuel projects for road transport around the world in 2020. Just a few highlights of the work we are undertaking in conjunction with our member companies and leading researchers around the globe include:

1

IEA-AMF METHANOL ANNEX

MI supported project management of the International Energy Agency-Advanced Motor Fuels group's Annex 56 report on Methanol as a Motor Fuel. The IEA-AMF report is a focused report on methanol fuels designed to be accessible to global policy makers. Each of the countries involved in the report prepared a section (Finland, Germany, Sweden, and Denmark) including their needs and use of methanol as a fuel for transportation (road and marine). The rollout of the report featured press releases, social media blasts and a joint MI/IEA webinar which is available on MI's YouTube page at: www.youtube.com/user/MethanolInstitute

2

SGS AND PRIMER REPORTS ROLLOUT

After having worked throughout 2019 on these important reports, MI released them both in 2020. The rollouts for the reports featured press releases, amplification across MI's social media channels, and paid advertisements in industry publications. The SGS Inspire "Methanol: Properties and Uses" report highlights fuel testing conducted by SGS on a range of methanol/gasoline blended fuels, a total of nearly 4000 tests on different methanol concentrations and co-solvent blends. The Methanol Fuel Primer prepared by Future Fuel Strategies addresses the often misleading and inaccurate concerns around methanol fuel blending in gasoline, while presenting the benefits and global experience with fueling cars, trucks and buses with methanol.

3

DANISH BLENDER PUMP

MI is working with the Danish Methanol Association to support the installation of a methanol blender pump to support a pilot program running cars on a range of methanol-gasoline blended fuel (M30-M60, M85, M100 and Mpure). In addition to serving passenger cars modified to run on methanol and gasoline blends, methanol fuel will also be provided for heavy-duty vehicles as well as fuel cell vehicles featuring on-board methanol reformers.

4

SUSTAINABLE TRANSPORTATION FUEL BOOK

A Book on Methanol as a Sustainable Transportation Fuel featuring a number of authors globally and edited by the India Internal Combustion Engine Institute will be published by Springer Publishing. MI contributed a chapter titled A Brief Review Methanol Fueled Vehicles (MFV) in China and Implementation Policy principally authored by MI China Chief Representative Kai Zhao.

MI also continues to work on a number of other projects, including:

The German C3 Mobility Project

- Includes a number of German OEM's and will trial seven light and heavy-duty vehicles on methanol and derivative fuel blends

The Methanol Standard Project

- An effort to investigate the technical basics for standardization of methanol fuels in Europe & which, in addition to MI, includes partners BMW, Daimler, FEV Europe, Ford & GM

Methanol from Renewable Energy for Mobility with Plug-in Hybrid Cars (MEEMO)

- Will test the suitability of renewable methanol (M15-M100) in modern gasoline engines.

MI'S NEW WEBSITE

2020 was unlike any year that we have seen previously. The COVID-19 pandemic accelerated existing trends and introduced many new realities, making digital communication ever more important as the primary means of sharing information.

MI saw the pandemic as an opportunity to reimagine our website, both expanding the breadth of content it offers, while simultaneously streamlining its user experience.

In our 'new normal', the redesigned website's user-friendly experience, with improved navigation and functionality allows for easy access to all that MI has to offer.

Considered with the user experience firmly in mind, the website has been optimized for easy navigation and with accessible infographics and videos to best convey information.

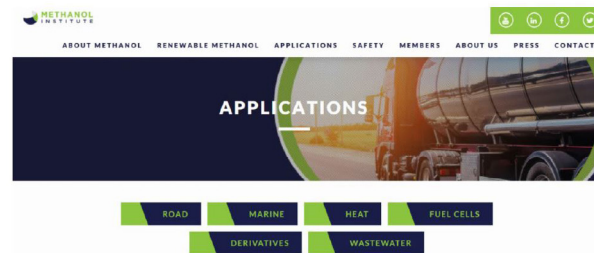
www.methanol.org contains a wealth of information about methanol and has expanded sections highlighting methanol's emergence as renewable energy resource and as a critical chemical building block.



MI'S SOCIAL MEDIA

As part of our 'COVID pivot' in 2020, MI undertook a process to refine our social media strategy with an eye towards continuing to increase our global reach as the voice of the methanol industry.

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. In 2020, we also expanded our social media activities to directly reach stakeholders in India.



The site also features a new Applications section which houses individual pages for many of methanol's main applications; *Road, Marine, Heat, Fuel Cells, Derivatives, and Wastewater.*

As always, the site also features our extensive suite of methanol safe handling resources, which are available to all free of charge. Visitors can also learn more about the Methanol Institute itself, our mission and our member companies.

We believe that the new www.methanol.org solidifies MI's position as global methanol thought leaders and as the preeminent source of information for all things methanol.

In 2020, MI...



...provided 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!



...had over 450,000 impressions of our **Twitter** account content.



...increased our total **website** pageviews from 230,000 to over 430,000.



...saw our number of followers on **LinkedIn** leap from 4000 to over 7500.

Please visit the site and let us know your thoughts!

WWW.METHANOL.ORG



2021 GOALS + OBJECTIVES

2020

2021

2022

2021 GOALS + OBJECTIVES

GLOBAL FUEL BLENDING

- Global Stakeholder & Media Engagement To Promote The Use Of Methanol As A Direct Fuel For Road Transportation In Combustion Engines & Electric Platforms
- Target Key Potential New Markets For Methanol Fuel Blending With Methanol Promotion Campaigns
- Ensure A Supportive Public Policy Framework For Methanol Fuel Blending

MARKET DEVELOPMENT

- Develop Chinese Industry Standards For Methanol Industrial Boilers, Cook Stoves, Kilns & Home Heating
- Disseminate China Methanol Market Study
- Promote Renewable Methanol & Small-Scale Methanol Technology Commercialization
- Support Methanol Fuel Cell Commercial Introduction
- Support Introduction Of Methanol-To-Power

MARINE FUELS

- Encourage & Support Pilot Demonstrations Of Methanol Marine Fuels In Multiple Markets
- Develop Methanol Maritime Technical Workshops
- Lead Social Media Campaigns In Support Of Methanol As A Marine Fuel
- Provide Leadership For National/International Regulations Of Marine Sector To Advocate For Methanol As Alternative Fuel

PRODUCT STEWARDSHIP

BOOTLEG ALCOHOL POISONING

- Expand Global Network On Illicit Alcohol Poisoning Prevention
- Education Through Social Media Campaigns
- Availability For Pharmaceutical and medical technology (ie; Fomepizole & Medical Test Strips)

SAFE HANDLING

- Disseminate Needs-Based Educational Materials For Customers Across The Global Distribution Chain
- Promote Best Practices For Methanol Handling In Emerging Energy Applications

GLOBAL STRATEGIC PARTNERSHIPS



MI'S CURRENT MEMBERS

- American Chemistry Council
- Asian Clean Fuels Association
- China Ministry of Industry & Information Technology
- China Nitrogen Fertilizer Industry Association
- Chinese Association of Alcohol & Clean Ether Fuels & Automobiles
- European Chemical Industry Council (CEFIC)
- European Sustainable Shipping Forum (ESSF)
- Formacare
- Gasification & Syngas Technologies Council
- German Regenerative Methanol Network
- Gulf Petrochemicals and Chemicals Association
- International Bunker Industry Association
- International DME Association
- International Methanol Producers & Consumers Association
- Lloyd's Register
- National Biodiesel Board
- National Institution for Transforming India (NITI Aayog)
- Oslo University Hospital
- Sustainable Biofuels Platform
- VDMA Power-to-X for Applications

Tier 1



Tier 2



Tier 3



Tier 4



MI'S NEWEST MEMBERS

MI'S NEWEST MEMBERS

ACHT



Advanced Chemical Technologies Inc. (ACHT) is commercializing its patented low carbon methanol production process and developing a first of a kind major clean industry infrastructure project in Canada. The project brings together an innovative combination of commercially proven technologies – hydrogen and oxygen production (electrolysis), carbon capture and utilization and low carbon methanol production – for clean utilization of Canada's abundant natural resources and infrastructure. ACHT's project is scalable from 320 to 6000 metric tonnes per day (MTPD) low carbon methanol production with world-leading hydrogen and carbon capture plants providing H₂, O₂ and CO₂ inputs. The project will propel the hydrogen economy with existing infrastructure, deliver large scale utilization of industrial CO₂ emissions and provide low carbon base methanol that will in turn reduce the carbon intensity of derivative products including transportation and other fuels. ACHT's patented process and innovative project design enables substantial scale-up and market expansion opportunities geographically and into various low carbon products using hydrogen, CO₂ & methanol. ACHT plans to develop multiple projects in Canada.

CER



Clean Energy Resources (CER) is a leader in applying circular economy principles, including large-scale carbon capture and refinery waste recycling to the hydrocarbon industry. It is currently developing the Lake Charles Methanol project near Lake Charles, Louisiana, which will be the world's largest integrated, greenfield industrial carbon capture facility with a capacity of 4 million tons of methanol per year. This is the first in a series of CER projects which produce zero-carbon products from petroleum waste and natural gas. The LCM Project combines two plants using environmentally sound processes to produce separate streams of syngas. The petcoke plant will recycle the petcoke into methanol while using proven technology to capture and sequester over 4 million tons per year of CO₂. The natural gas plant will employ advanced autothermal reforming, significantly improving carbon efficiency compared to standard steam methane reforming technology currently being utilized in existing U.S. natural gas-to-methanol plants. The blended syngas streams from the two plants will provide the world's first large scale, zero-carbon Blue Methanol product at production costs in the lowest quartile of global methanol producers.

MAERSK



Maersk is an integrated container logistics company working to connect and simplify its customers' supply chains. As a global leader, the company operates in 130 countries with about 80,000 employees. Maersk comprises four business segments: Ocean, Logistics & Services, Terminals & Towage, Manufacturing & Others. In the Ocean segment, Maersk has a fleet of 700+ container vessel transporting almost 13 million containers per year around the globe. Consuming more than 10 million tonnes of bunker fuel per year, Maersk is one of the largest offtakers of bunker fuel oil. In February 2021, Maersk announced the launch of the world's first liner vessel to operate carbon-neutrally on methanol (bio-methanol and e-methanol) in 2023 – seven years ahead of the company's initial 2030-ambition. All future Maersk owned new buildings will have dual fuel technology installed, enabling either carbon neutral operations or operation on standard very low Sulphur fuel oil (VLSFO). Maersk's first methanol feeder vessel will have a capacity of around 2000 TEU and be deployed in one of its intra-regional networks. While the vessel will be able to operate on standard VLSFO, the plan is to operate the vessel on carbon neutral e-methanol or sustainable bio-methanol from day one.

RIX



RIX Industries is a technology-focused company specializing in the design, development and manufacturing of gas generation systems, precision compressor solutions, and cryogenic cooling technologies for critical applications in Marine, Aerospace, Land, Energy, Industrial, Medical, and Telecom markets. Founded in 1878, the company is headquartered in Benicia, CA, and operates additional facilities in Sparks, NV (production) and Rockville, CA (Innovation Center). RIX's methanol-to-hydrogen (M₂H₂) generation systems enable the integration of advanced fuel reforming and hydrogen purification technologies for power generation and hydrogen delivery applications and afford users with a proven alternative to stored hydrogen (gas and liquid), thereby eliminating the associated costs and safety concerns. RIX's mobile M₂H₂ systems provide an optimal solution for onboard hydrogen generation on a diverse range of platforms, including marine vessels, heavy-duty logistic vehicles, rail systems and off-road FCEVs. Our stationary M₂H₂ systems ensure continuous service and extended life for fuel cell backup power systems, hydrogen refueling stations, and materials handling equipment. All RIX M₂H₂

MI'S NEWEST MEMBERS

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GANE ENERGY



Gane Energy has developed a methanol-based replacement for diesel in heavy-duty compression ignition engines. Gane Fuel can be used in many existing engines via retrofit. The fuel has been successfully tested, showing a very significant reduction in engine-out emissions of NOx and Particulate Matter as compared to diesel. Tailpipe measurements have demonstrated NOx emissions which are significantly below current Euro VI regulatory levels. Gane Fuel is a combination of methanol and water with small quantities of fumigated DME and can be carbon neutral through the use of renewable methanol as the primary ingredient. Gane Fuel provides a clear pathway for industry to transition to a carbon-neutral, clean burning liquid alternative to diesel using existing engines.

NEO-H2



Formed in 2018, and located in Rock Hill, South Carolina, Neo-H2 has developed innovative methanol reformation technology. The core of their technology is a series of unique and proprietary nanocatalysts which have been developed from more than 20 years of research and development by the original inventor and one of Neo-H2's founders. One of these catalysts has been incorporated in their HR-100 reforming system that allows for highly efficient methanol reformation. The HR-100 system, is an autothermal reformer, which produces a hydrogen rich gas of approximately 40% that has multiple industrial applications. Currently, Neo-H2 is focusing on utilizing the Neo-gas for multiple different industrial and energy applications including powering solid oxide fuel cells and for dual fueling compression engines. Neo-H2's mission goal is to reduce fossil fuel dependency and to contribute to the clean energy initiative.

SOUTHERN GREEN GAS



Southern Green Gas is a renewable energy company pioneering world-first technology aimed at creating carbon-neutral fuels; renewable methane and renewable methanol. At the heart of Southern Green Gas's technology is the ability to extract carbon dioxide from the atmosphere to create fuels that are not only sustainable, but also can be transported in existing infrastructure. Southern Green Gas's approach is unique in the use of small production modules that are amenable to mass manufacture. The potential cost reduction benefits from this approach could allow a least cost transition to a low carbon vibrant economy. The technology can be applied to the production of renewable methanol that can be used in existing petrol and diesel engines with no or relatively minor modifications and can be exported through existing ports and methanol shipping tankers. The renewable methanol production process is very similar to that of methane, with hydrogen and CO2 catalytically converted in a methanol synthesis reactor.

LIQUID WIND



Liquid Wind is a Power-to-Fuel Development Company committed to reducing carbon emissions. From Gothenburg, Sweden, the company develops, finances, builds and manages eMethanol facilities to accelerate the transition to carbon neutral transportation and industry. Liquid Wind has a strong Consortium, including Siemens Energy, Haldor Topsoe and Carbon Clean. The close collaboration and integration of leading technology will ensure production of cost-effective renewable methanol. Each facility will upcycle 70,000 tons of CO2 into 50,000 tons of carbon neutral fuel per year. Liquid Wind is designing its business to scale, to meet growing demand for cleaner fuel, with plans for 500 facilities by 2050.

STENA BULK



Stena Bulk's mission is to provide customers with safe and cost-efficient tanker transportation based on innovation and performance. Stena Bulk's fleet consists of about 100 vessels and the company have offices in six countries. Stena Bulk is part of the Stena Sphere, which has around 20,000 employees in Sweden and abroad. In late 2019, Proman Stena Bulk Ltd, a joint venture between Stena Bulk and MI member Proman, finalized an agreement with Guangzhou Shipyard International (GSI) in China to build two state of the art IMOIIeMAX methanol-ready 49,900 DWT vessels, with the first vessel due for delivery at the beginning of 2022. The IMOIIeMAX line of vessels are amongst the most energy efficient mid-range tankers in existence. Both vessels will be fitted with the latest generation of dual-fuel engines and run on methanol, which is rapidly emerging as one of the most viable, low emission and cost-effective marine fuel alternatives. The three ships will be 50/50 owned and then on long term charter to Proman Shipping after delivery. Each vessel will utilize an estimated 12,500 mt/year of methanol. Stena Bulk's vision is to be the customers' first choice for safety, innovation and performance in tanker transportation, resulting in profitable growth and financial strength for the company.

MI'S MEMBERSHIP TIERS

MI'S LEADERSHIP STRUCTURE

TIER 1

MAJOR METHANOL PRODUCERS

\$250,000 ANNUALLY

- Major Producers Of Methanol (> 1.5M mtpa)
- Two Board Seats With Voting Rights
- Board Chairman, Vice Chairman & Treasurer
- Standing Committee Chairmanship Potential

TIER 2

METHANOL PRODUCERS

\$125,000 ANNUALLY

- One Board Seat With Voting Rights
- Board Secretary
- Standing Committee Chairmanship Potential

EXECUTIVE COMMITTEE

TIER 1 MEMBERS
BOARD CHAIRMAN, VICE PRESIDENT & TREASURER



- Association Leadership
- Regular Engagement With Senior Staff
- Budget Oversight

TIER 3

ASSOCIATE MEMBERS

\$62,500 ANNUALLY

- Minimum Tier Level For Producers
- Board Of Directors Meeting Participation (Non-Voting)
- Standing Committee Chairmanship Potential

TIER 4

AFFILIATE MEMBERS (NON-PRODUCERS)

\$18,750 ANNUALLY

- Board Of Meeting Participation (Non-Voting)
- Participation In Standing Committees

BOARD OF DIRECTORS

TIER 1 MEMBERS
TIER 2 MEMBERS



- 2 Board Meetings Per Year - Tier 1
- 3 Board Meetings Per Year - Tier 2
- Voting Members
- Committee Leadership

MI'S OFFICE LOCATIONS

MI'S IMPORTANT CONTACTS



SINGAPORE

Chris Chatterton
COO
cchatterton@methanol.org

Tim Chan
Manager Of Govt & Public Affairs,
AP & ME
tchan@methanol.org

Belinda Pun
Executive Manager
bounr@methanol.org

WASHINGTON

Greg Dolan
CEO
gdolan@methanol.org

Lawrence Navin
Director Of Government & Public
Affairs Americas / Europe
lnavin@methanol.org

Nov Bajwa
Operations & Web Media Coordinator
nbajwa@methanol.org

BRUSSELS

Eelco Dekker
Chief EU Representative
edekker@methanol.org

Matthias Olafsson
Manager Of Government &
Public Affairs - Eucorpe
molafsson@methanol.org

DELHI

Prakriti Sethi
India Representative
psethi@methanol.org

BEIJING

Zhao Kai
Chief China Representative
kzhao@methanol.org

SINGAPORE

20 Anson Road
#11-01 Twenty Anson
Singapore 079912
[+65 6303 5220](tel:+6563035220)

WASHINGTON

225 Reinekers Lane
Suite 205
Alexandria, VA 22315
[+1 703 248 3636](tel:+17032483636)

BEIJING

Level 26 Fortune
Financial Center
Chaoyang District No.
5 Dongsanhuan Rd.
Beijing 100020, China
[+86 010 5775 0588](tel:+8601057750588)

BRUSSELS

Avenue de
Tervueren,188A, 4th
Floor, Postbox 4, 1150
Brussels, Belgium
[+32 2 761 1600](tel:+3227611600)

Delhi



The Voice Of The Global Methanol Industry

www.methanol.org

