Methanol:
A Clean, Cost-Effective Marine Fuel Solution

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Methanex

The world’s largest producer and supplier of methanol to major international markets

Headquartered in Vancouver, Canada, Methanex operates production sites in Canada, Chile, Egypt, New Zealand, the United States and Trinidad and Tobago.

Our global operations are supported by:

- an extensive global supply chain of terminals
- storage facilities and
- the world’s largest dedicated fleet of methanol ocean tankers.
Approximately 60% of our long-term fleet will be methanol capable by 2023.

49,999 DWT Methanol Dual Fuel Engine

Ship deadweight tonnage (DWT)

- 45K - 49K
- 3K - 12.5K
- 20K - 32K
About Methanol
Methanol
An essential ingredient of modern life

Traditional Chemical Market
Essential ingredient used in countless industrial and consumer products
Slightly over 50% of global demand

- Paint
- Carpet
- Adhesives
- Plastics
- Refrigerants
- Solvents
- Sportswear
- Fleece Fabrics
- Safety Glass Laminate
- Windshield Washer Fluid

Clean and Economic Alternative Fuel
Represents a growing demand segment for methanol
Just under 50% of global demand

Fuel applications

- Upholstery
- Synthetic fibres

Methanol-to-olefins (MTO)
Decarbonization pathway to meet IMO 2050 goals

Source: The Methanol Institute and QAFAQ
Waterfront Shipping Experience
### Key Learnings

#### Initial Challenges
- First-of-its-kind construction
- Relatively short R&D phase prior to construction
- Not a diesel fuel
- Uncovering right mix for sensors, injectors, valves, etc.
- Low viscosity & lubricity
- Low flashpoint

#### Performance Achieved
- Lower emissions:
  - SOx
  - NOx
  - PM
  - CO2
- Improved fuel efficiency
  - 2-3% at full load
- Run time
  - Over 100,000 hours & almost 5 years of operations

#### 2nd Generation Engines
- Methanol block is simplified with standard components
- FBIV is simplified in design
- Cooling oil is omitted and sealing system is simplified
- Tier III NOx compliance with water blending
Methanol Adoption
Methanol as a marine fuel

Methanol is safe, clean and cost-effective

Methanol

**Environmental**
- Low emissions
- Safe, environmentally friendly
- Bio-degrades rapidly in water

**Available**
- Available globally
- Long history of safe handling
- Straightforward bunkering with existing infrastructure

**Affordable**
- Low incremental investment
- Competitive fuel costs
- Liquid fuel flexibility

**Proven**
- Successfully in use today
- Commercialization activity expanding

Diesel bunker fuel
Summary
Key takeaways

*Positive outlook for methanol marine fuels*

- Meets current and future emission regulations
- Dual fuel engine technology is proven at a commercial scale
- Practical and cost competitive alternative marine fuel
- Provides a pathway to 2050 decarbonization goals
Growing investment and interest in methanol vessel technology
Thank you for attending!

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