

The world's first MAN B&W Ammonia-fueled engine



Powering sustainable shipping by opening clear routes

LNG

Ethane

Methanol

LPG

Ammonia

ME-GI
499
engines

ME-GA
214
engines

ME-GIE
31
engines

ME-LGIM
72
engines

ME-LGIP
126
engines

→ 2024

MAN B&W Ammonia engine development and market introduction



Two-stroke ammonia engine development schedule

2019

2020

2021

2022

2023

2024

Pre-study

- ✓ NH3 combustibility investigation

Project kick-off

- ✓ 4T50ME-X test engine received as platform for the Ammonia engine development
- ✓ HAZID workshop on engine concept
- ✓ Combustion chamber 1st evaluation

Engine concept R&D

- ✓ Engine basic concept defined based on R&D and simulations
- ✓ Ammonia fuel supply & auxiliary systems specified

Engine combustion and emission

- ✓ Ammonia fuel supply & auxiliary systems established in Research Centre Copenhagen (RCC)
- **1st engine confirmation at RCC**
- Specification of emission after-treatment

Full scale engine test

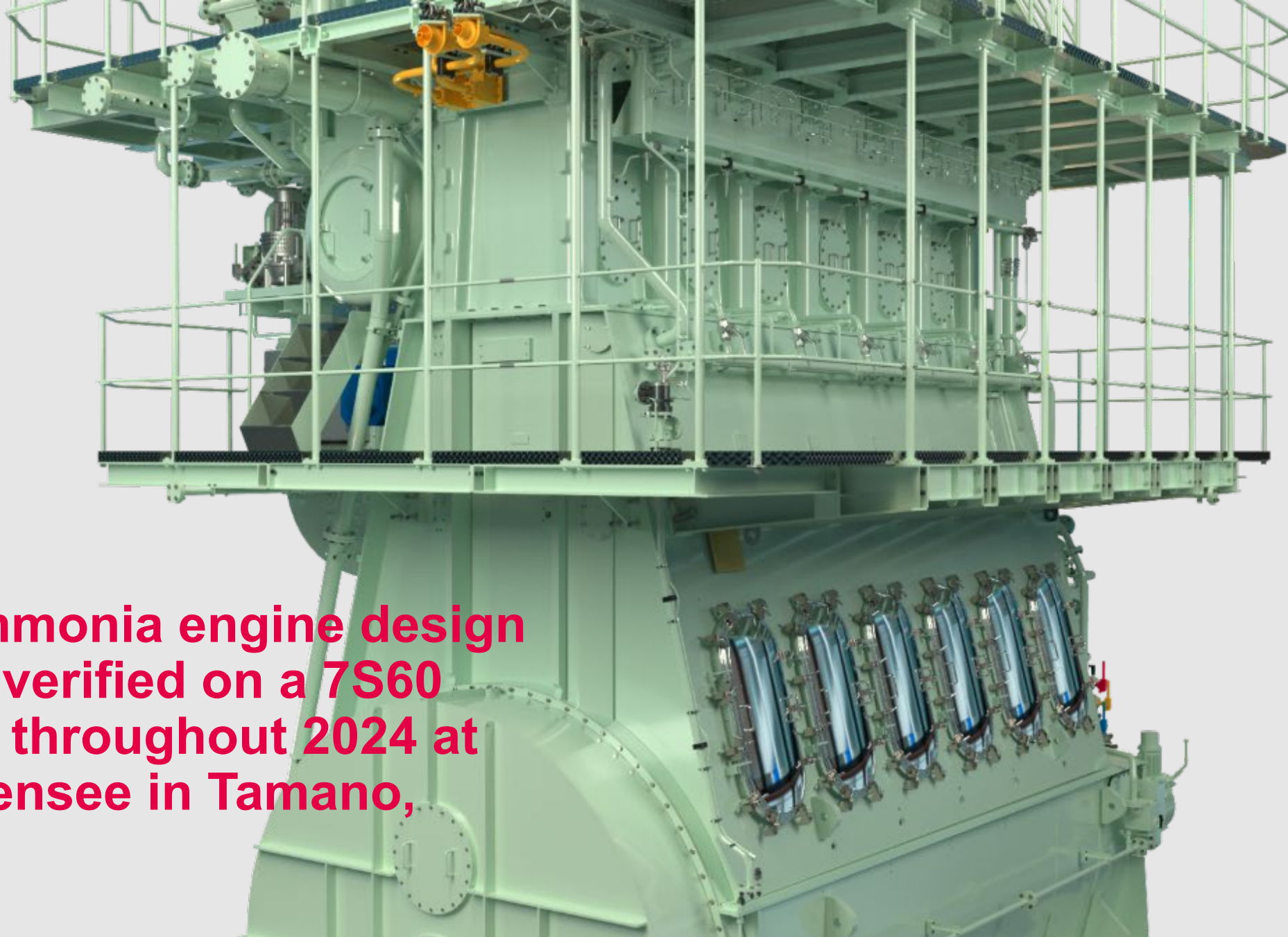
- Full scale engine test at RCC evaluated for 1st commercial design

1st engine delivery to yard

- First commercial design available
- 1st ammonia fueled engine delivered to yard



Components at Research Center Copenhagen



The ammonia engine design will be verified on a 7S60 engine throughout 2024 at our licensee in Tamano, Japan

The 60-bore engine

Typical applications



VLGC



Container feeders



Panamax & newcastlemax bulk carriers



PCTC



LR1 & LR2 tankers



MAN Energy Solutions
Future in the making

Thank you
very much



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