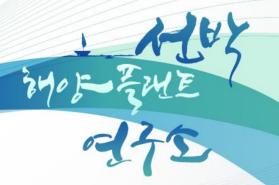
13K급 Product Tanker Alternative Fuel 추진엔진 관련 검토

2022, 12, 29

친환경선박설계기술사업단/의장설계팀 황영석 책임





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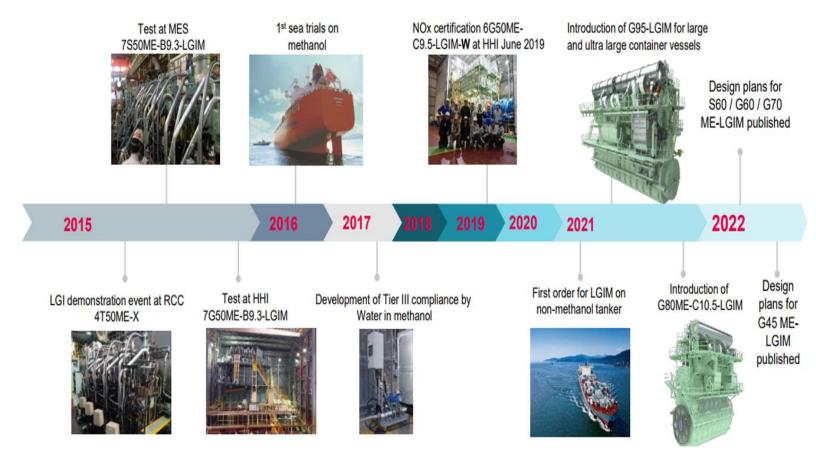
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- 1. 2-Stroke Methanol Engine 현황
- 2. 2-Stroke Ammonia Engine Development 현황
- 3. Summary

1. 2-Stroke Methanol Engine 현황



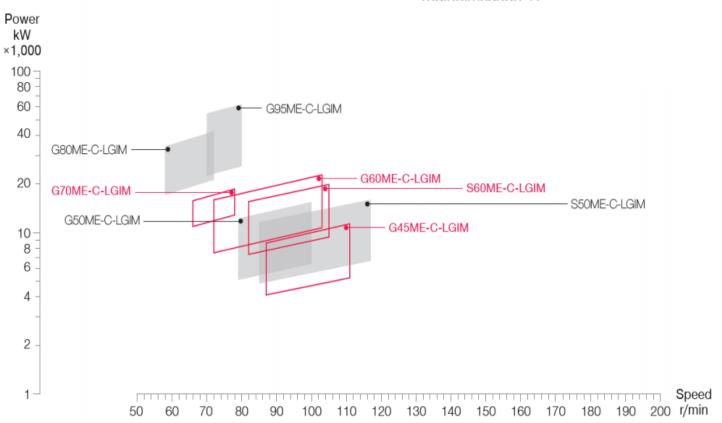
[MAN-ES] 13K급 엔진(35 bore급) 개발 계획 없음 Methanol Engine Development Milestones : MAN-ES



1. 2-Stroke Methanol Engine 현황

Methanol Engine: MAN-ES

Existing S50, G50, G80 and G95-LGIM engines, alongside new G45, S/G60 and G70 LGIM engines of which design plans have been published.



1. 2-Stroke Methanol Engine 현황



Timing

[WinGD] 13K급 엔진(35 bore급) 개발 계획 없음

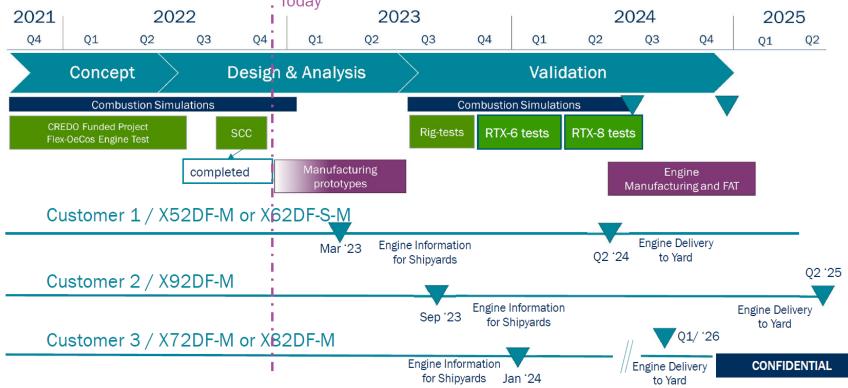
Safe Path Towards Pilot Application

SCC = Spray Combustion Chamber

SCE = Single Cylinder Engines MCE = Multicylinder Engine

FAT = Factory Acceptance Test





2. 2-Stroke Ammonia Engine Development Ships & Ocean Engineering 6





[MAN-ES] 2024 7S60 Engine 개발 후 2nd 모델 Announcing 예정

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 Full scale engine and emission

- ✓ Ammonia fuel supply & auxiliary systems established in Research Centre Copenhagen (RCC).
- · 1-cylinder engine and auxiliary system preparation at RCC.

test

- 1st engine confirmation at RCC.
- · Full scale design work.
- · Specification of emission aftertreatment.

1st engine delivery to yard

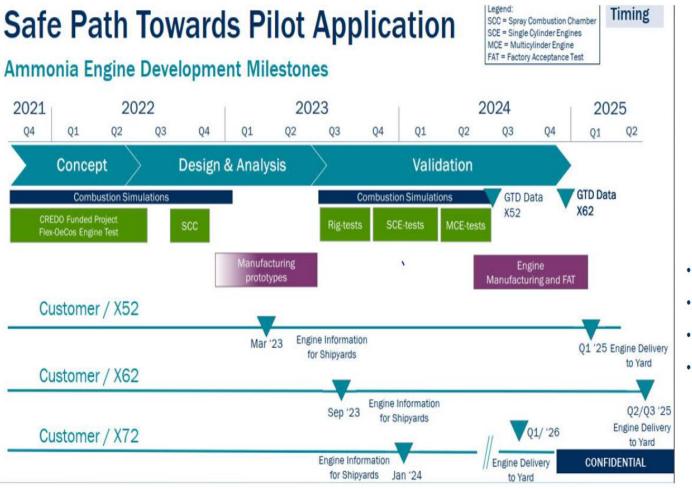
- · Full scale engine test at RCC evaluated for 1st commercial design.
- · First commercial design available.
- 1st ammonia fueled engine delivered to yard.

2. 2-Stroke Ammonia Engine Development 호황Institute of





[WinGD] 13K급 엔진(35 bore급) 개발 계획 없음



- Project name: 46k LPGC
- Engine type: 6X52DF-A-1.0
- PTO application
- Engine delivery : Dec. 2024

❖ Emerging Alternative Fuel 2-Stroke Engine Status

	MAN-ES	WinGD	비고
Methanol Engine	✓ 개발 완료 -4개 모델 적용 완료 -추가 4개 모델 설계 완료	✓ 5개 모델 개발 진행 중 -′24.2Q 1st 엔진 Delivery	13K급 모델 개발 계획 없음
Ammonia Engine	✓ 개발 진행 중 -'24 1 st 엔진(7S60) Delivery -이후 2nd bore Announcing	✓3개 모델 개발 진행 중 -′24.12 1st 엔진 Delivery (6X52DF-A-1.0)	13K급 모델 개발 계획 ?