MASS Trials in Singapore: Challenges, Opportunities and the Future

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MASS Pilot Projects – Harbour Tugs

Smart Maritime Autonomous Vessel
with ST Engineering Marine, POSH, ABS, M1, MPA

IntelliTug
with Wartsila, PSA Marine, Lloyd’s Register, TCOMS, MPA

Project MINERVA
with Keppel, ABB, ABS, TCOMS, MPA
IntelliTug
Wartsila, PSA Marine, Lloyd’s Register, TCOMS, MPA

- Supervised autonomous control with on-board Master
- Autonomous navigation with optimised passage planning
- Real-time collision detection and collision avoidance

*Picture provided by Wartsila and PSA Marine*
Smart Maritime Autonomous Vessel

*ST Engineering Marine, POSH, ABS, M1, MPA*

- Shore command centre capable of:
  - Remote control
  - Health monitoring of shipboard systems
  - Autonomous waypoint navigation
  - Real-time collision detection and collision avoidance

*Set-up of shore command centre*

*Picture provided by ST Engineering Marine*
Project MINERVA
Keppel, ABB, ABS, TCOMS, MPA

• Shore command centre capable of:
  • Remote control
  • Monitoring of vessel’s engine and thruster
  • Autonomous waypoint navigation
  • Real-time collision detection and collision avoidance

*Picture provided by Keppel Offshore and Marine*
Key Challenges

Connectivity

Communications
Opportunities
Singapore: Future Ready Port for MASS operations

A Diverse Port & Shipping Ecosystem

- Conventional Manned Ship
- Degree 1 Autonomy
- Degree 2 Autonomy
- Degree 3 Autonomy
- Degree 4 Autonomy
- Smart Port Infrastructure and Systems
- Test-bedding Guidelines
- New Con-Ops for Port Services
- Greater Connectivity in Port Waters
- Knowledge Retention via Academic Institutions
- Legal Support
- Technology Solution Providers
- Key Domain Expert Advice from Class Societies
- Insurance Coverage
- Regulatory Guidelines
- Shore Based Communication Infrastructure

Singapore: Future Ready Port for MASS operations