COST AND BENEFITS OF AUTONOMOUS SHIPS IN SHORT SEA TRANSPORT

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We need a sound business case!

- Lower emissions
- Improved operations
- Some reduced costs

More complex ship systems
Sea Star Lines
Reliability and safety
Shore Infrastructure
Tailormade for the application – change the transport system

But with standardized ship systems
How can we reduce the costs?

Standardised ship designs tailored for the application!
How much can we reduce the cost?
ASTAT – Autonomous ship transport at Trondheimsfjorden
Autonomous Ship Transport at Trondheimsfjorden (ASTAT)

- Short voyages
- Inland, sheltered
- 12-50 TEU
- Batteries
- Constrained autonomy
Case 1: Bulk transport inside fjord (Lumber) - Today

- Old bulk ships
- Trucks to Orkanger
- Stored at port
- Transport storage to quay
- Manuel labour in all steps
- Cheaper to work at day time
Case 1: Bulk transport inside fjord (Lumber) – New transport system

- Remove storage
- Reduce lifting
- Reduce transport
- Tailor made
- Reduced (or no) manual labour
- Any time of day has same cost
Focus in ASTAT – develop improved method for CBA

• Make it easier to perform CBA
• Increase accuracy of cost estimates
Tool for ship CBA

User interface

Route planner → Route
Harbour configurator → Harbour with charging
Ship configurator → Ship with machinery type (battery...)
CAPEX → Cost
OPEX → Cost
Results

Simulator

Weather
Position
Power
Battery or machinery sizing
Total cost
Optimization
Flow of goods
Cost elements and benefits

- Hull
- Machinery (battery/diesel-electric etc)
- Sensing and control-systems
- Shore control centres
- Periodic maintenance
- Port fees
- Storage and handling
- Manning
Standardisation projects
OpenBridge

Project partners

Associated partners

Co-funded by
Open Simulation Platform (OSP)

- Maritime model standard
- Open source simulation platform
- Main Partners: Rolls-Royce, NTNU, SINTEF and DNV-GL
- JIP: OSC, VARD, Kongsberg, Hyundai
Conclusions

- Autonomous ships should be tailor made for the specific transport system
  - But ship systems should be standardized
- We need better tools for CBA
- Standardisation will be essential to reduce costs

Full speed ahead!

... but with care!
Technology for a better society