

Maersk Maritime Technology

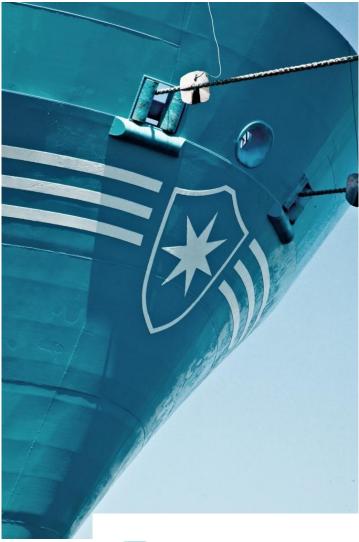
Contributing to our partners' competitiveness through sustainable and cost effective technology solutions





Agenda

- Introduction
- Our requirements for model test
- Comparison of test results between towing tanks
- Scaling of a large speed range
- Accuracy of model propellers
- Q&A





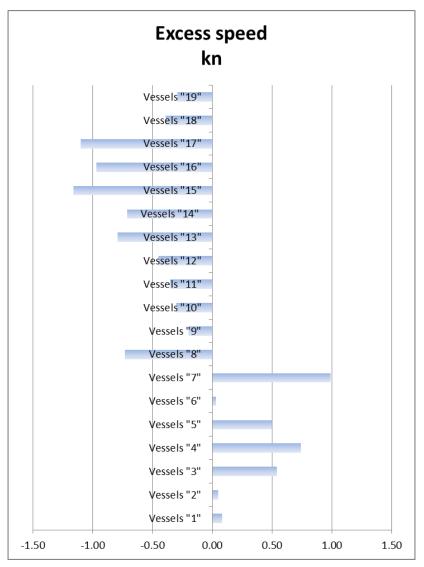
Why model test?

- EEDI requirement
- Fuel bill > USD 5.000.000.000 per year
- Planning / budgets for new vessels
- Optimizing on existing vessels



Why model test?

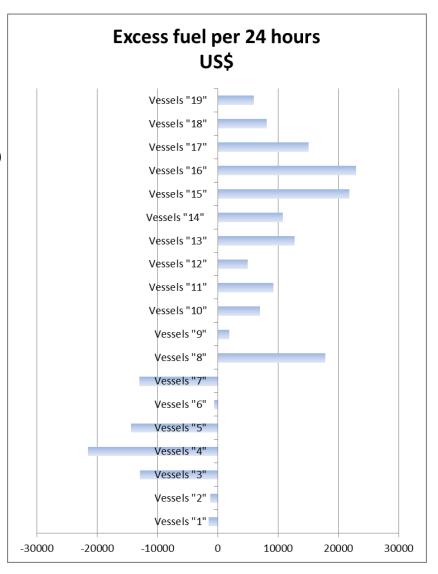
- Daily extra consumption = USD 75000
- Per Year = USD 15 mill.





Why model test?

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- Per Year = USD 15 mill.





More than 30 vessel class tested



Design speed



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10 October 2014

More than 30 vessel class tested



Design speed

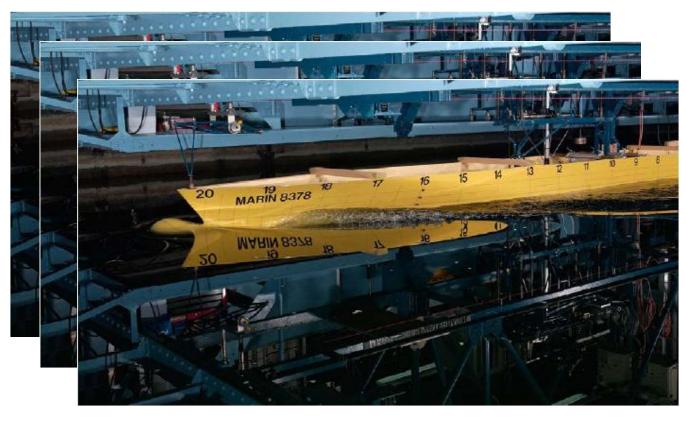
Design speed - 4 kn



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More than 30 vessel class tested



Design speed

Design speed - 4 kn

Design Speed – 8 kn



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More than 30 vessel class tested

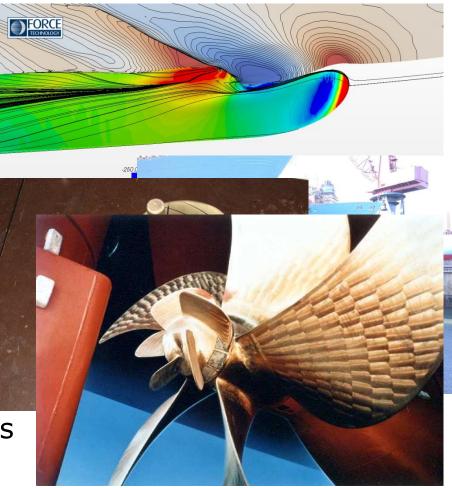
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Conversions of existing vessels

- Some 10 classes tested
- Bulbous bow optimization
- New propeller design
 - Less # blades
 - Less area
 - New sections
 - New type (CLT, Kappel, ?)
- Energy saving devises
- Accurate estimate of savings and ROI required





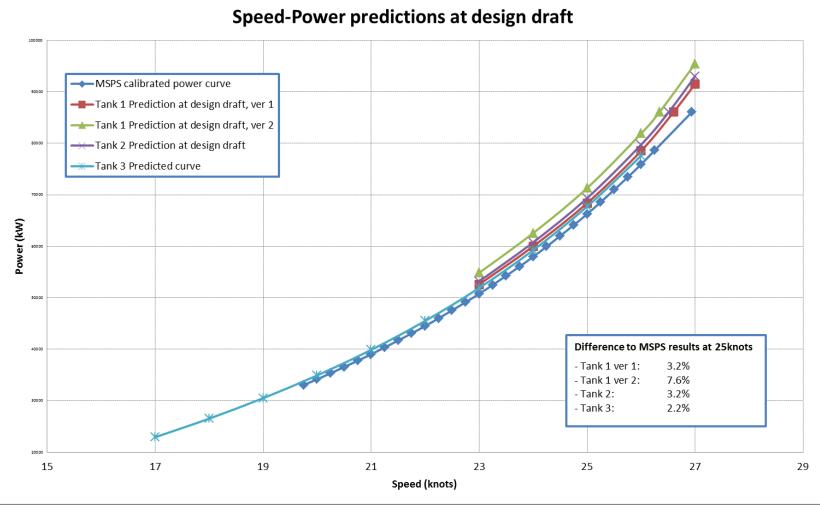
Newbuildings

- Some 8 projects within last 5 years
- Triple E contract included hydrodynamic optimization

AERSK LINE

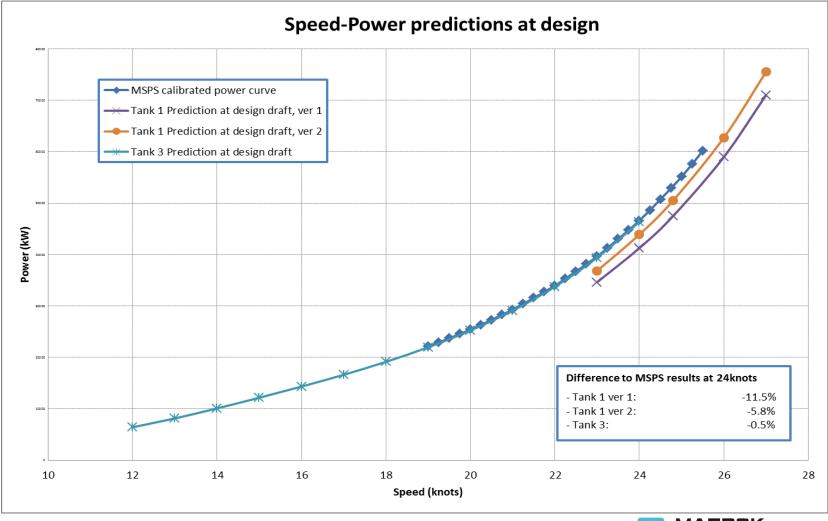
- # of propellers / Hull type
- Hull line optimization
- Rudder + Headbox optimization
- Propeller optimization
- Some 15% saved

Comparison of tank results





Comparison of tank results



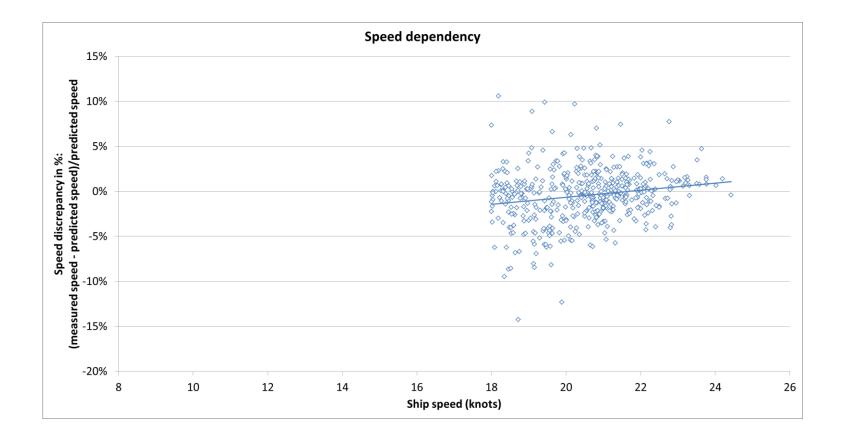


Model scale influence



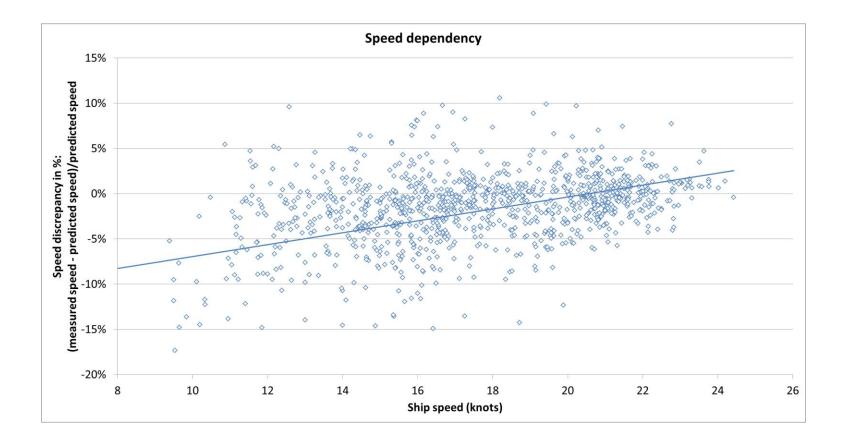


Scaling of Large Speed Range





Scaling of Large Speed Range





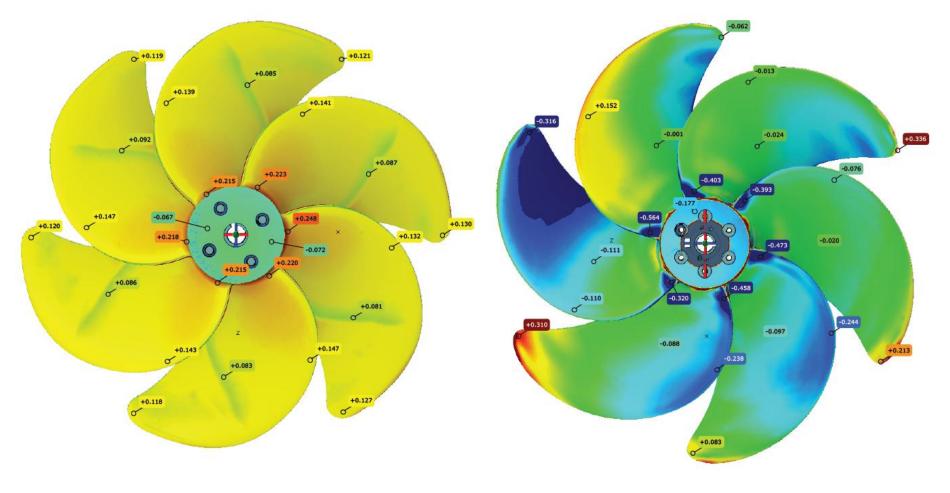
Accuracy of propeller models





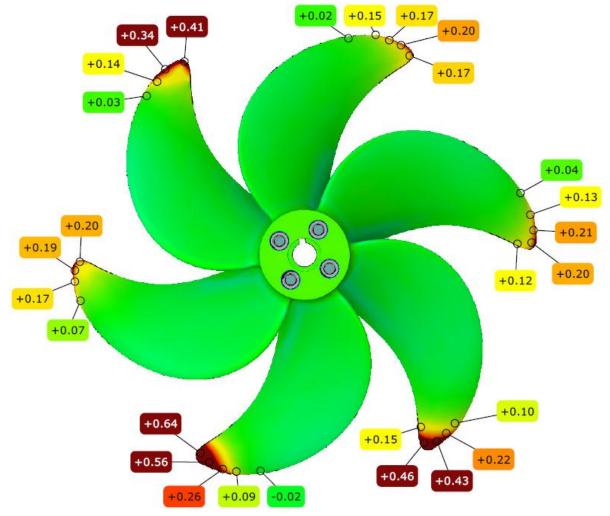


Accuracy of propeller models





Accuracy of propeller models





Summary - Our hopes

- Better alignment of results from all towing tanks
- Recommendations for model size
- Improved scaling for low speed
- Influence of model accuracy
 - Study
 - Recommendations



