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Simulation

- New Concept Evaluation (Hybrid)
- Fuel consumption
- Performance



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- Partner



Consulting Services

Crew Equipment

Console Design / Ergonomics

HMI – Boat Equipment

Vessel Simulation – New way of vessel optimization and concept evaluation

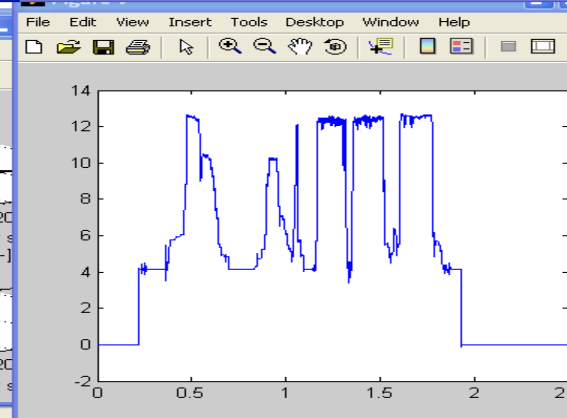
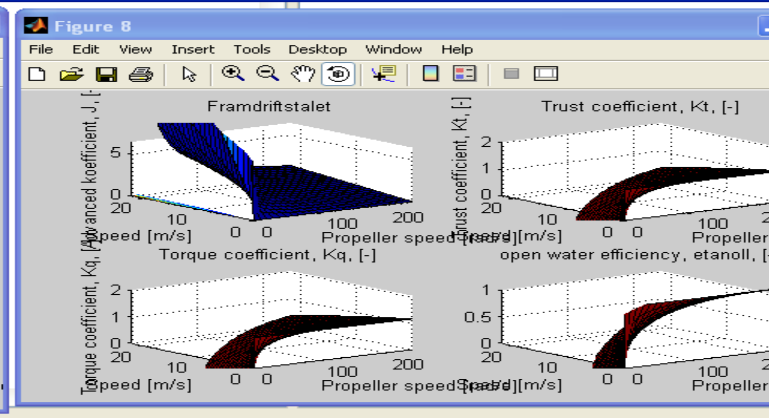
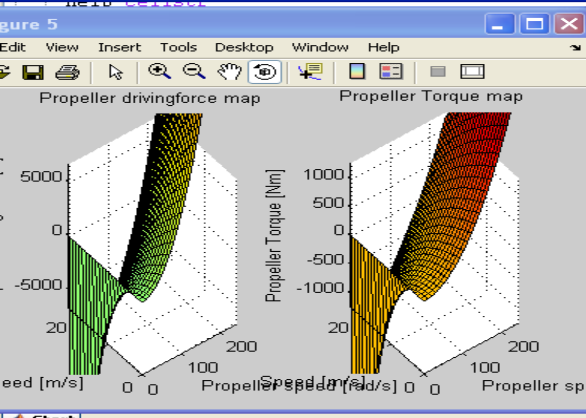
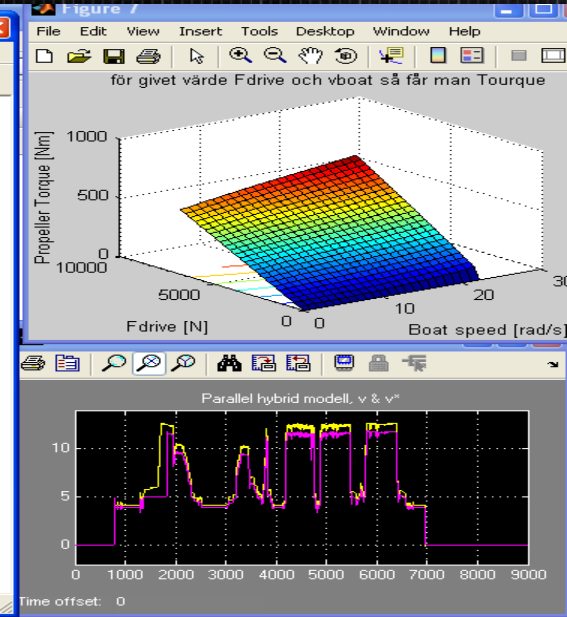
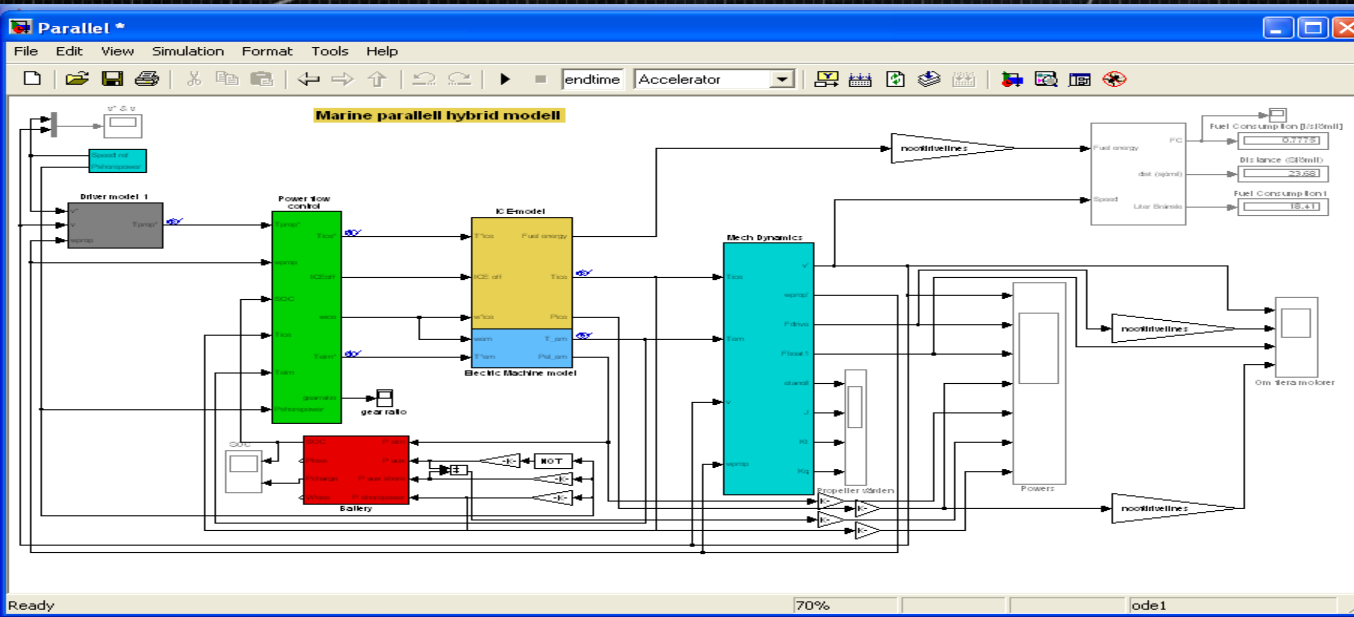


Example RIB console

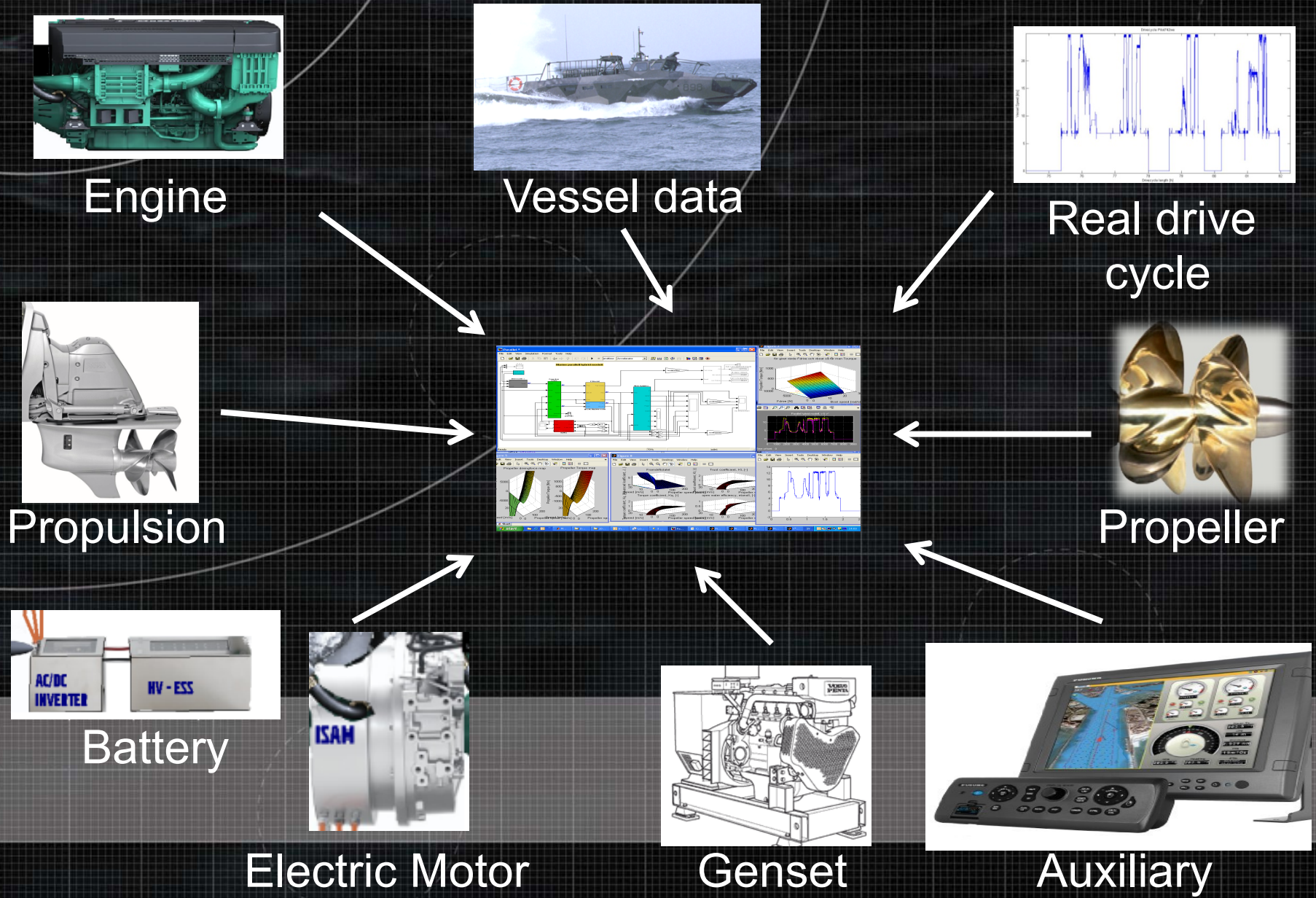


Vessel Simulation Software

Developed in cooperation with



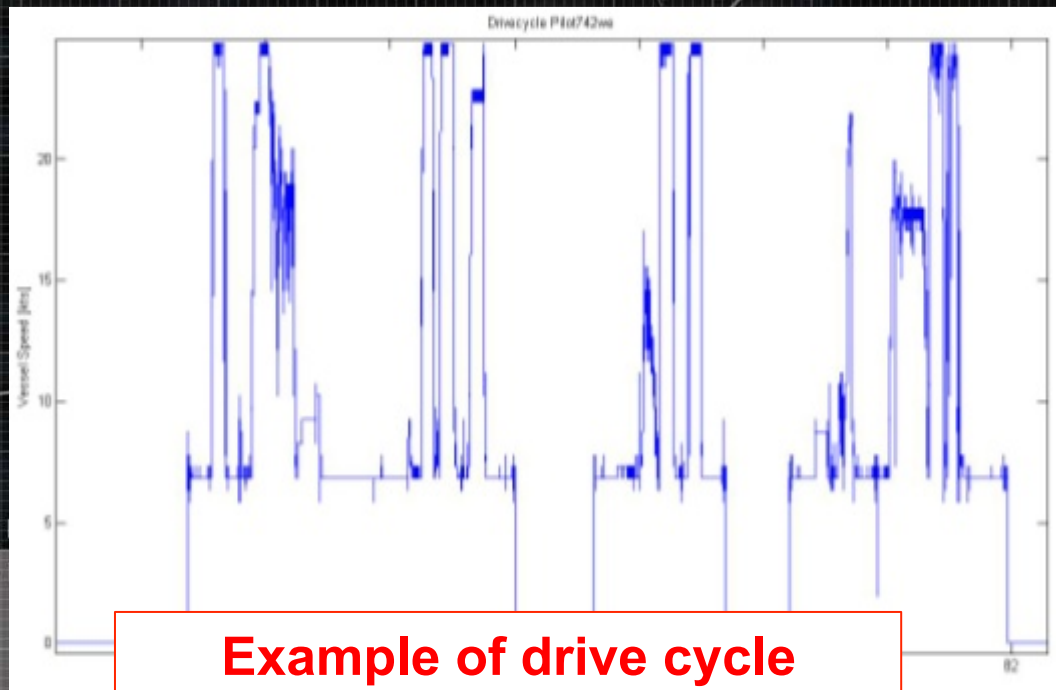
How does the simulation model work?



Vessel Drive Cycle

How are we actually driving?

Log vessels to develop real drive cycles!



Example of drive cycle

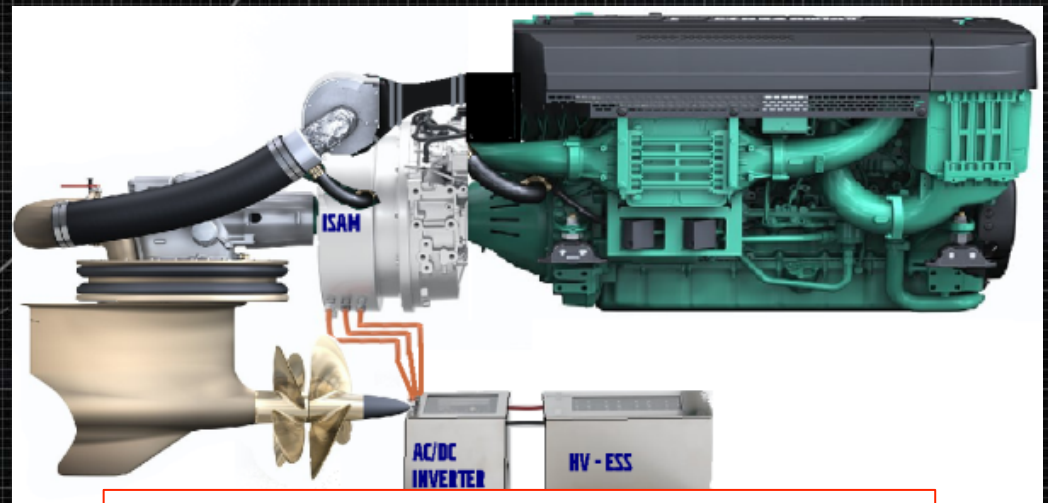


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Simulation example – IPS hybrid

IPS hybrid concept simulation in cooperation with 

800hp ICE
95hp EM
60kWh Battery



Result: -11% in FC

Increased Perf

Stealth

Environmental aspects

Genset possibilities

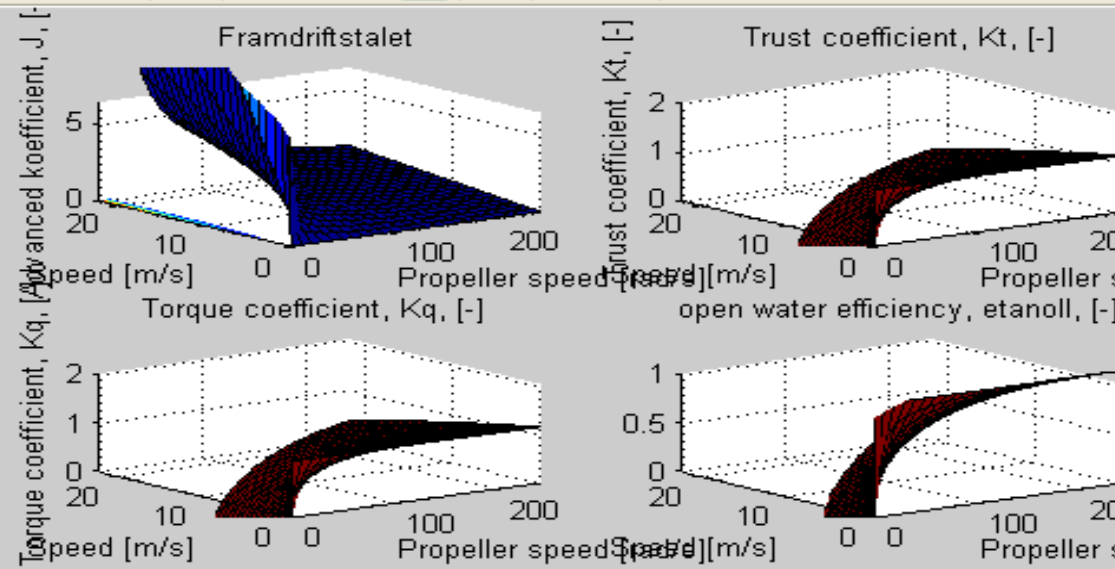
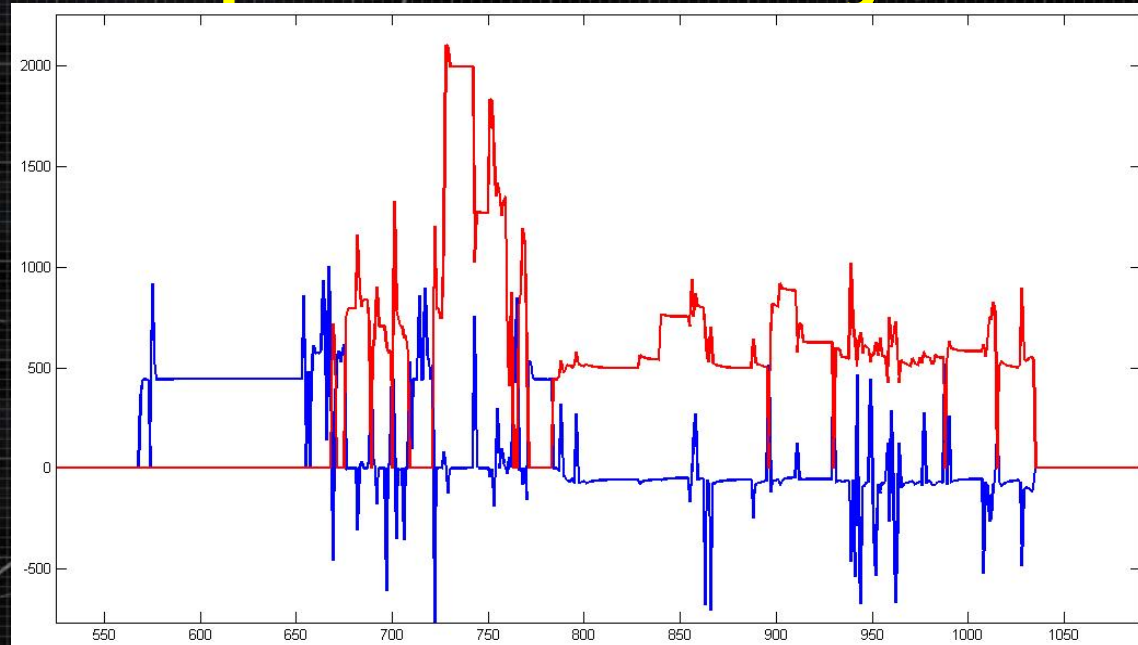
Simulation example – IPS hybrid

Performance

Propulsion

Energy flow

Vessel info



Possible simulation evaluation

Authority want a new boat!

Develop drive cycle!

Many concepts, drivelines and hulls to choose?

Simulate & evaluate all concepts

Stealth with a hybrid powertrain?

Results:

FC , performance , top speed & range for individual user for all concepts



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Is fuel consumption important?

Cost

Fuel prices

Overall cost

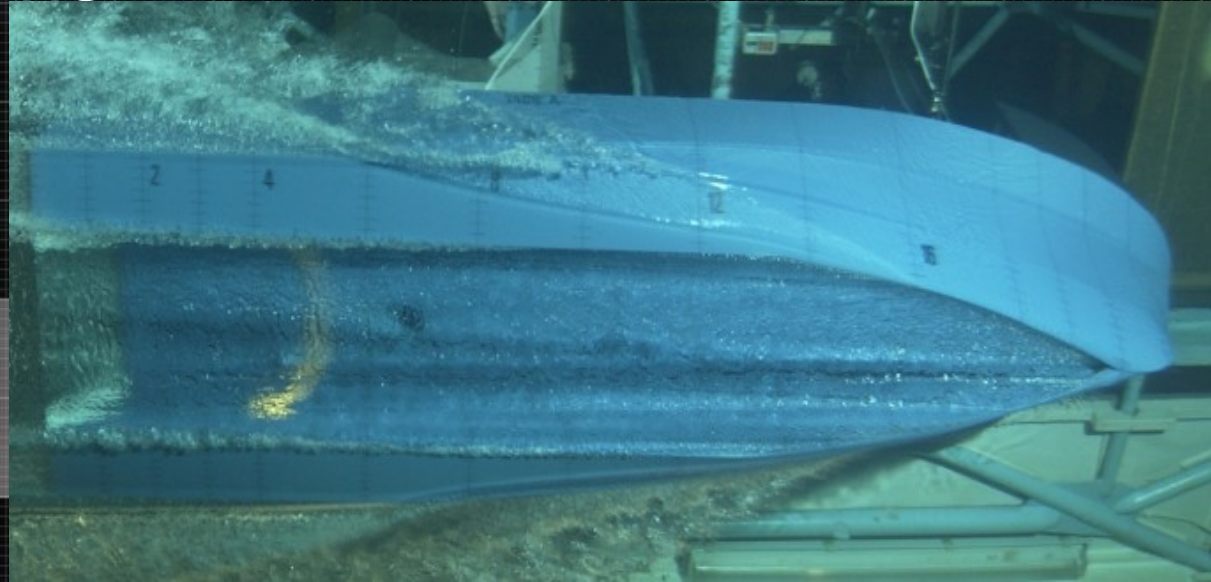
New materials, hulls, propulsions?

buying a “better” boat – decreased FC?

Laws & Regulations

NATO-Petrol?

Shortage of fuel?



Why Simulation?

Learn from Automotive industry

Fast

– Analyze many concepts

Cost efficient

– Less prototypes to be built

Flexible

– All types of vessels

New technology

– Stealth

Real drive cycle – How are we driving?

Individual driving evaluations



Best optimization for each customer!

Discussion

Can high speed boat operations be improved with this type of simulation?

Can we motivate a “better” boat (more expensive) with reduced fuel costs?

Is it important to understand our driving?

Can we improve our driving?



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