

# FastShip

## Faster Freight – Cleaner Air

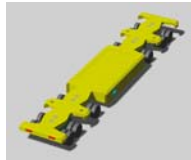
February 28<sup>th</sup>, 2007



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## What is FastShip? An innovation in technology and transportation

- The FastShip technology comprises a patented hull and propulsion system coupled with two dedicated loading systems that allow for the vessel to be used anywhere. This vessel and loading system **together** create the essential synergy for a new mode of transportation that exploits the middle market between sea and air freight.



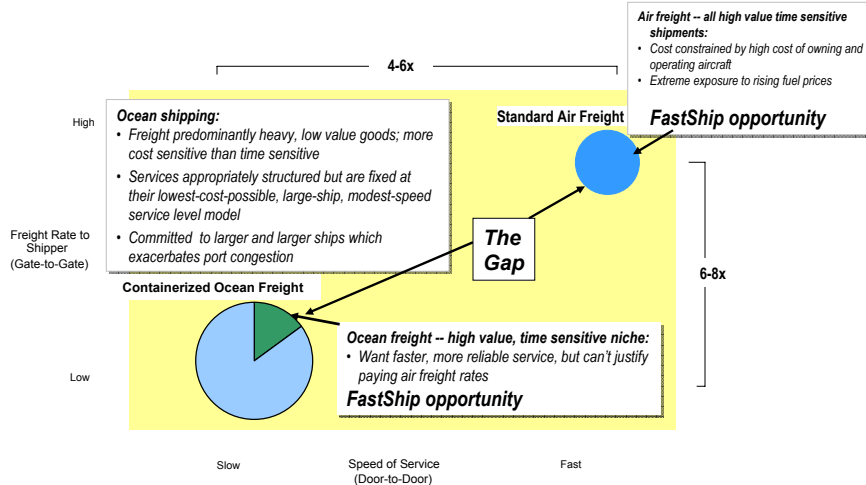
- The applications for the technology include:
  - Commercial
    - Intercontinental usage which facilitates global supply chains (Europe – USA; Asia-USA; others)
    - US intracoastal
    - European short sea
  - Military – Rapid strategic and humanitarian sealift for US and others
- All of the above is scalable – new markets and new demand are created, different designs are possible resulting in new ships, networks and services

***The design represents a step-change in transportation technology***



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## Two intercontinental freight modes available – but with huge differences in service and cost. FastShip bridges ‘The Gap’



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## FastShip is...

- *Revolutionary Application of Proven Technologies*, classified by Det Norske Veritas
  - Semi-planing monohull with deep Vee bow, high pressure under stern, wide beam. Result:
    - Heavy load capability
    - Outstanding performance in bad weather
  - Powered by marine versions of RR Trent engines driving highly efficient waterjet propulsors
  - No-crane loading for rapid turn-round

*Twice weekly Trans-Atlantic return service starts Q1 2010*



TG-770

- Carries 10,000 tonnes up to 40 knots even in rough seas
- Crosses Atlantic in 91 hours, cutting crossing times in half
- Absolute time-definite arrivals enable synchronization of terminal and inland operations around ship arrival

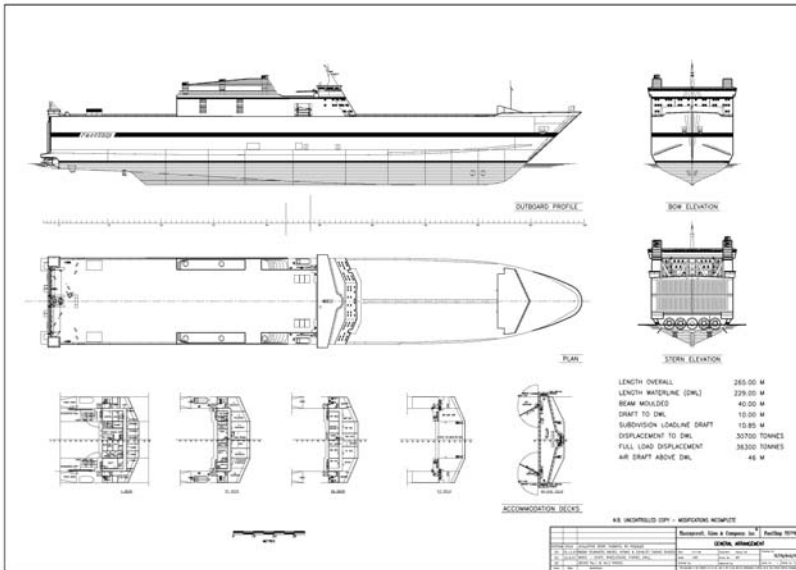


**AGV (Automatic Guided Vehicle) specialized load/unload technology**

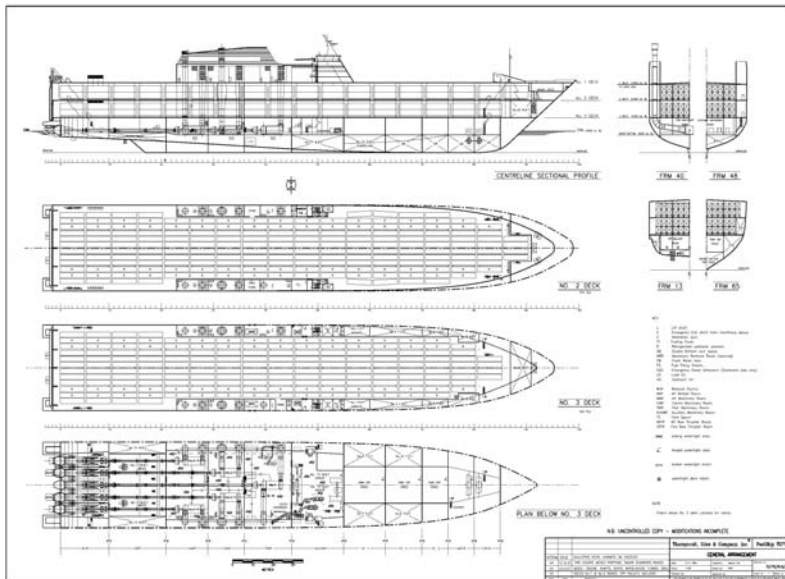
- Roll-on roll-off, integrated into ships and terminals
- Enables ship to be completely unloaded and reloaded in 6 hours
- Compares to 24+ hours for conventional terminal
- **Time gained in turnaround equates to additional 10 knots of speed on an Atlantic crossing - at zero cost and no environmental impact**



## FastShip: General Arrangement



## FastShip: Interior Layout



## **SUMMARY: FastShip is innovation in high-speed transportation with minimum environmental impact**

- What is the core intellectual property?
  - Patent on semi-planing monohull and gas turbine propulsion system for vessels over 200 feet
  - Patent on semi-planing monohull and CP Train loading system
  - Patent pending for drag reduction technology
  - Patent pending for automated AGV loading system with security scanning technology.
  - What does the design do?
  - Creates speed for the vessel almost double anything on the water
  - Allows vessel to maintain speed even in severe sea states, thus producing time-definite performance
  - Loading system enhances productivity and economics by loading and unloading in only six hours
  - Allows different locations for terminal
- Why are we certain it will work?
  - Testing has been voluminous
  - DNV Classification Society approval for worldwide ocean operation to highest commercial standards
  - Component technologies (marine gas turbines, water jets, loading system) already in operation
- What are the benefits?
  - Commercial/new market space is created between air and sea. Product is equivalent to air freight at half the cost; new demand will be created for the innovation
  - Environmental advantages – very low emissions per Freight Tonne-Km compared with airfreight. Alternative fuels: zero-sulfur 'ultra-clean' diesel; LNG. Application of drag-reduction technologies in development by US Navy could reduce fuel consumption by 20-30%. Use of smaller ports without cranes. Six-hour turnaround; smaller loads with reduced container dwell-time and smoother inland distribution network. All containers carried within the ship – none can be lost overboard in bad weather.
  - Military use for strategic and humanitarian uses



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