



STX Advanced Technologies for Green Dream

Seung-Gyu Jeong

STX Offshore & Shipbuilding, Korea

1. Ship Design Trend based on Environmental Regulatory Requirement

1) Present Issues

: Emissions Control related with Green house Gases and Acidifying Substances

2) Green Design Trends

: One of essential factor for sustainable growth and guarantee the competitive power

3) Green Technology for Marine Industry

a. High Efficiency Design

b. Optimum Operation

c. Efficient Energy Production

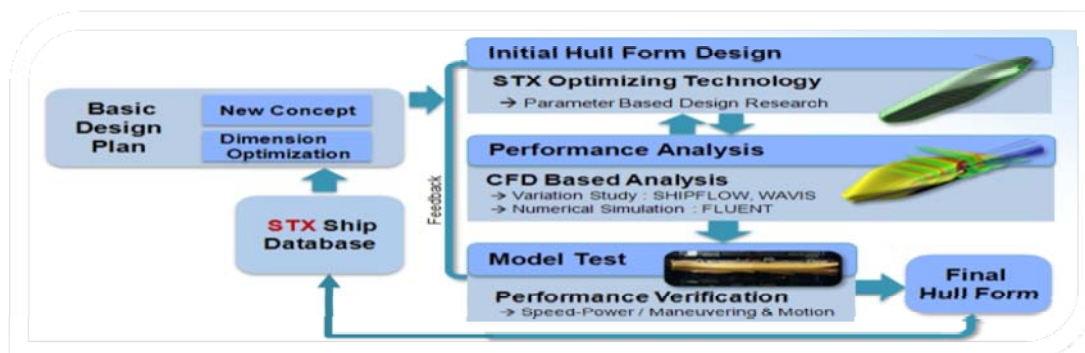
Innovative Green Ship Technology

2. STX Practical Green Technology

1) STX Actual Technology for Application

a. STX Optimum Hull Form Development

: New concept and Dimension Optimization for Vessels



b. STX New Concept for Tanker & Bulker

(a) Improving L/B Coefficient

(b) Reducing Blockage Coefficient

(c) Increasing Hull Sharpness

(d) Increasing Smoothness of Prismatic Curve

c. WCT : STX Low Vibration Design Technology

(a) Concept of the WCT for increasing the propulsion efficiency

(b) It has many excellent records related with low vibration characteristics and high efficiency in actual projects

d. New Technology of High Efficiency WCT Propeller

: 3% Power Saving comparison to 4 blades

: 3 Blades Propeller(High Efficiency) + WCT(Low Vibration)

= Improving Propulsion Efficiency with the Low Vibration & Noise Level

e. STX 174K CBM LNG Carrier Dual Fuel Diesel Engine & Electrical Propulsion System

(+ Waste Heat Recovery System)

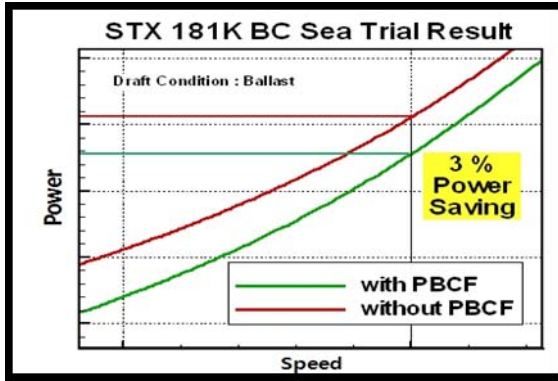
f. STX 13,000 TEU Container Vessel World's First EEDI Certification



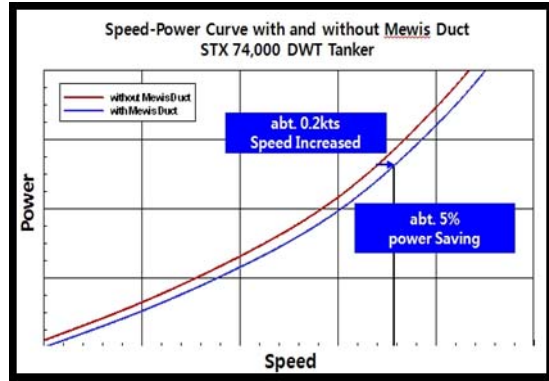
g. STX 320K DWT VLCC Waste Heat Recovery System : ECO-TG SYSTEM

h. STX 181K DWT Bulk Carrier PBCF™ Performance Comparison Test Project
 (Record : 65 Vessels)
 : 3% Power Saving comparison to 181K BC without PBCF

i. STX 74,000 DWT Tanker (Mewis Duct self-propulsion comparison test)
 : Power reduction of about 5% by PD in self-propulsion test
 : Speed higher about 0.18kts by PD in self-propulsion test



<Comparative result of PBCF>



<Comparative result of Mewis Duct>

j. INNOVELLA : STX Design Brand – Bacterial Activity 99% Reduction

3) STX Green Ship Technology

a. Applied Green Items of STX GD-ECO Ship

(a) 1st Generation

: WHRS, Rudder Bulb, 3Blades WCT Propeller, Mewis Duct, LFC Paint

(b) 2nd Generation

: CJ-HL Rudder, SRB-F, CRP, STWS, Air Lubrication Technology, LFC Paint, LNG Fuel System-WHRS, Optimum Trim, Aerodynamic Superstructure & Deck Cap

b. EEDI Position of STX GD-ECO Ships

c. Milestone of STX GD-ECO Ship



Seung-Gyu Jeong is presently working in the Shipbuilding Technology Division as Team Manager at STX Offshore & Shipbuilding. In this function he is, amongst others, involved in developing green technologies and technologies for ship performance. He left BUSAN University of Technology with a doctor's degree in naval architecture and graduated as Techno NBA at KAIST Business School in 2010.