

EDUCATION

M.B.A. in Magister Management (2009-2012)
MMUGM Yogyakarta, Indonesia
ST in Marine Engineering (2004-2006)
ITS Surabaya, Indonesia
Amd in Ship Building (2000-2003)
Surabaya Ship Building State,
Polythecnic ITS Surabaya, Indonesia

JOB POSITION

Manager of Marketing Product Development (2020-Now)
Division of Business and Marketing,
PT. PAL Indonesia (PERSERO)
Manager of Research and Development (2018-2020)
Division of Design,
PT. PAL Indonesia (PERSERO)
Manager of Basic Design (2016-2020)
Division of Design,
PT. PAL Indonesia (PERSERO)



R. JOZA EMERALD NOUVANTORO, MBA



“Experiences”



SHIP DESIGN PROCESS

R. JOZA EMERALD NOUVANTORO, MBA



ABOUT THE TOPIC

Penjelasan proses-proses desain kapal baru sampai dapat diproduksi di galangan kapal



DESIGN PROCESS SHIP BUILDING

Penjelasan proses desain di Industri Kapal



BASIC DESIGN

Penjelasan Basic Design sebagai bagian penting dari desain kapal baru



DESIGN OPTIMIZATION

Penjelasan optimisasi di dalam mendesain kapal baru pada lambung displacement



INTEGRATION DESIGN SYSTEM

Penjelasan integrasi sistem desain kapal baru, termasuk:

- Construction
- Outfittings

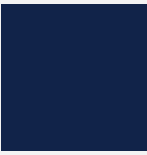


BUILDING STRATEGY

Penjelasan fungsi desain sebagai bagian penting di dalam membuat strategi untuk membangun kapal baru

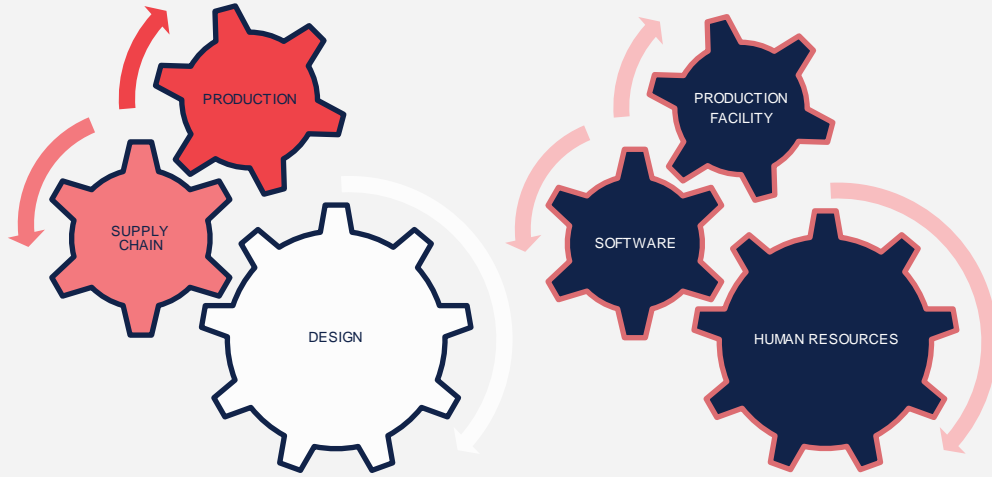


ABOUT THE TOPIC



Penjelasan proses-proses desain kapal baru sampai dapat diproduksi di galangan kapal

MODERN INTEGRATION SYSTEM SHIP BUILDING

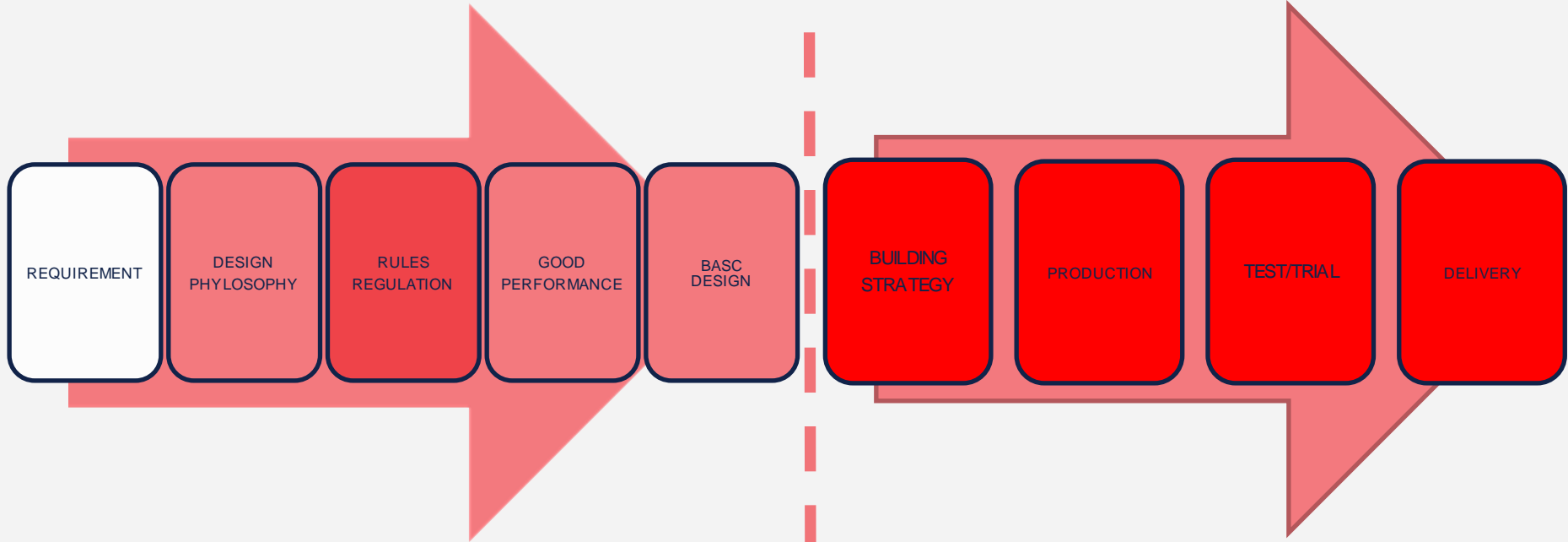


**GOOD
INTEGRATION SYSTEM**



APPROVAL DESIGN

PRODUCTION PROCESS



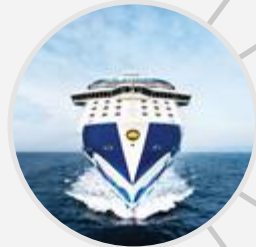
REQUIREMENT

MISSION

DESIGN
PHILOSOPHY

GOOD
PERFORMANCE

BASIC
DESIGN



ENERGY

OIL/GAS

CARGO

PASSENGER

DEFENCE
/MILITARY

OTHERS



BASIC
DESIGN

DESIGN
OPTIMIZATION

GOOD
PERFORMANCE

STABILITY

MANOUEVERABILITY

ECONOMICAL

EFFICIENCY

MAIN
DIMENSION

HULL FORM

POWER

CONSTRUCTION

DESIGN
OPTIMIZATION

MAIN
DIMENSION

CARGO/CONTAINER/
TANKER/LNG/PASSENGER
/OTHERS

RUTE
PELAYARAN

FUEL OIL

FRESH
WATER

OTHERS

DEADWEIGHT
(DWT)





DESIGN
OPTIMIZATION

MARPOL

OIL POLLUTION
ISSUE

DOUBLE HULL

Oil fuel tank protection

The Marine Environment Protection Committee (MEPC) at its 54th session in March 2006 adopted an amendment to MARPOL Annex I to include a new regulation 12A on oil fuel tank protection. The regulation applies to all ships delivered on or after 1 August 2010 with an aggregate oil fuel capacity of 600 m³ and above. It includes requirements for the protected location of the fuel tanks and performance standards for accidental oil fuel outflow.

A maximum capacity limit of 2,500m³ per oil fuel tank is included in the regulation, which also requires Administrations to consider general safety aspects, including the need for maintenance and inspection of wing and double-bottom tanks or spaces, when approving the design and construction of ships in accordance with the regulation. Consequential amendments to the IOPP Certificate were also adopted.

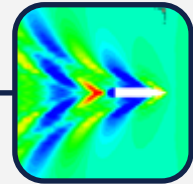
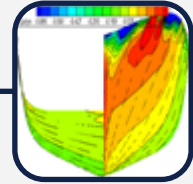
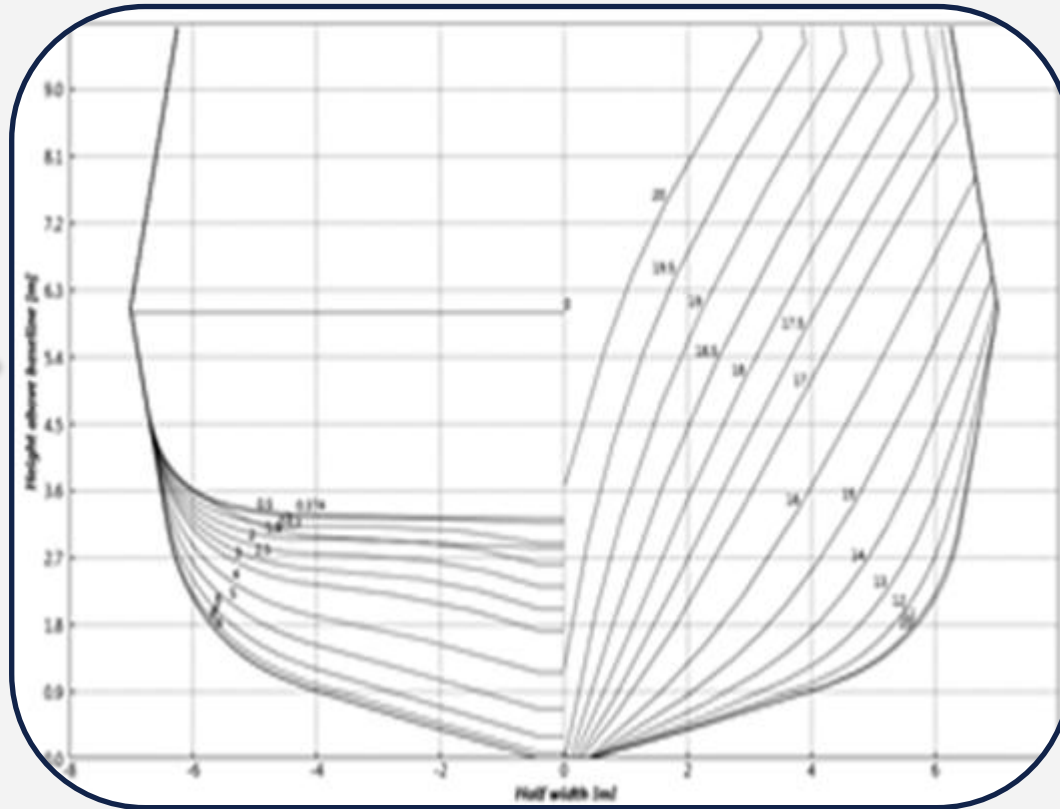
DESIGN
OPTIMIZATION

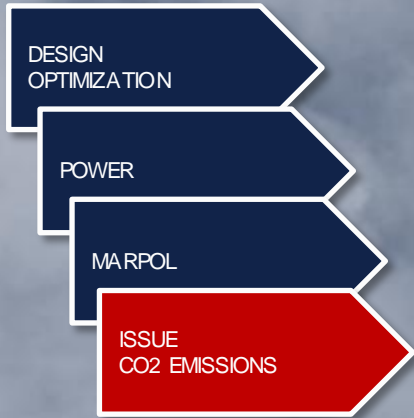
HULL FORM

CFD

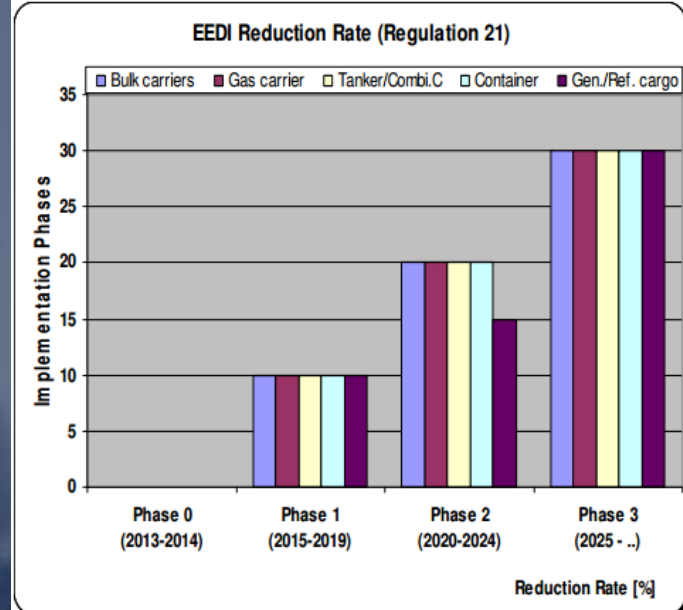
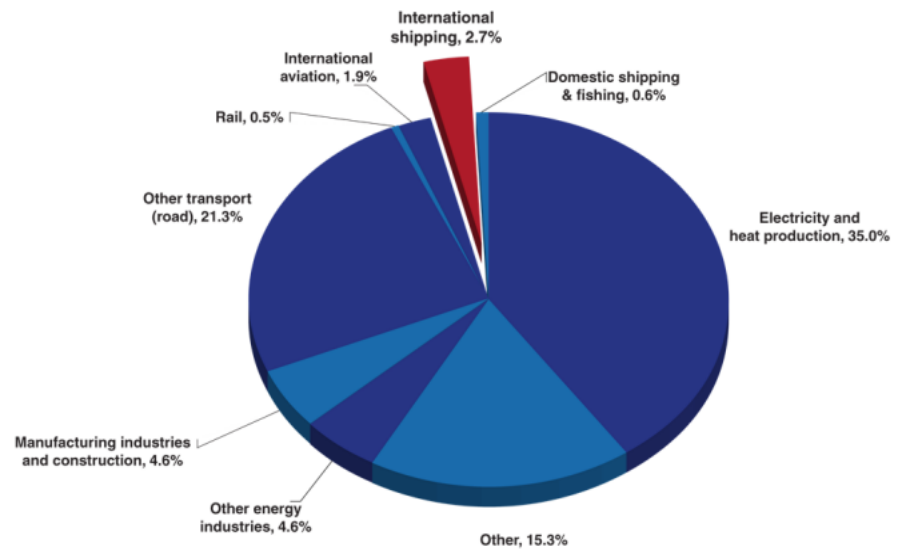
TOWING TANK

ISSUE
POWER

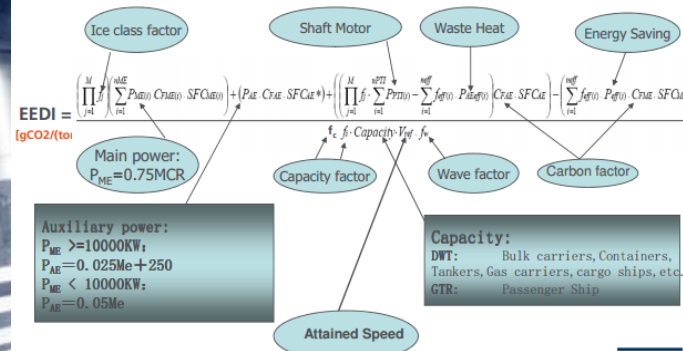




Shipping's Contribution to CO₂ Emissions



EEDI parameters

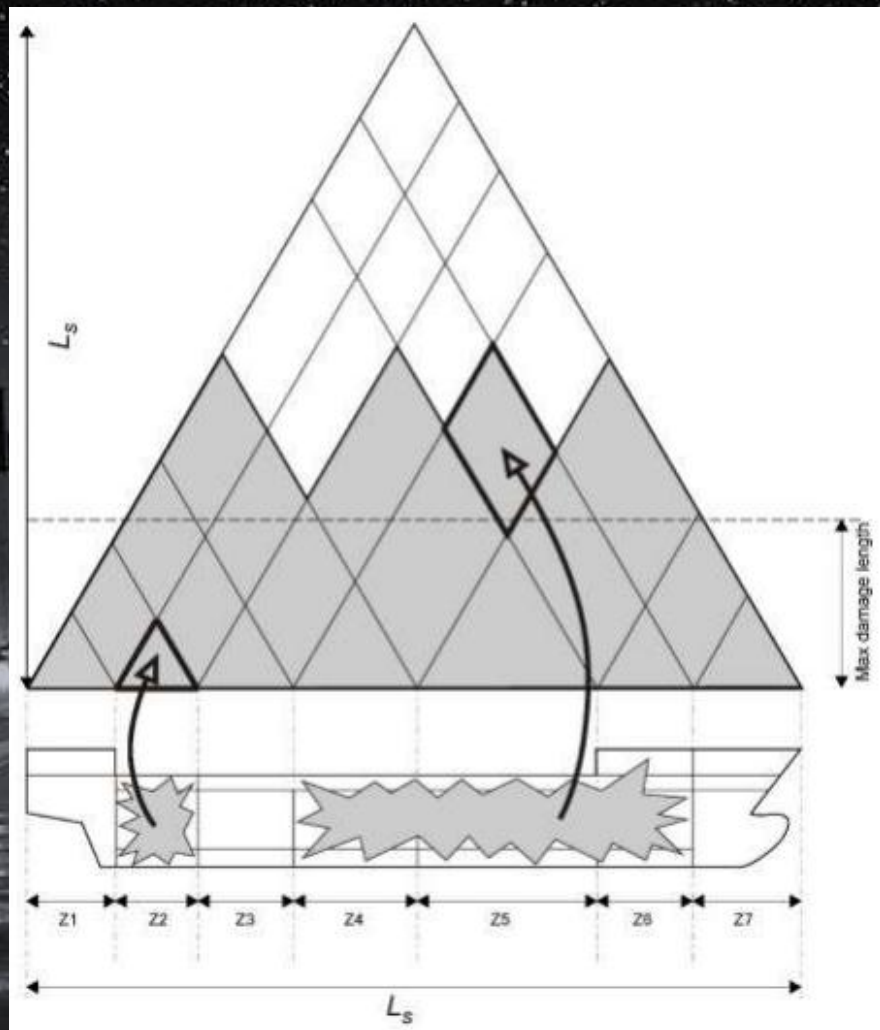


DESIGN
OPTIMIZATION

SOLAS

DAMAGE
ISSUE

LONGITUDINAL
SUBDIVISION



DESIGN
OPTIMIZATION

CONSTRUCTION

STRENGTH
ISSUE

MID SHIP
CONSTRUCTION

CLASSIFICATION

MODULUS FORMULA



2. Minimum midship section modulus

2.1 The section modulus related to deck and bottom is not to be less than the following minimum value:

$$W_{\min} = k \cdot c_0 \cdot L^2 \cdot B \cdot (C_B + 0,7) \cdot 10^{-6} \text{ [m}^3\text{]}$$

c_0 according to Section 4, A.2.2 for unlimited service range.

For ships classed for a restricted range of service, the minimum section modulus may be reduced as follows:

P	(Restricted Ocean Service)	: by 5%
L	(Coasting Service)	: by 15%
T	(Shallow Water Service)	: by 25%

$$\begin{aligned}c_0 &= \text{wave coefficient} \\ &= \left[\frac{L}{25} + 4,1 \right] c_{RW} && \text{for } L < 90 \text{ m} \\ &= \left[10,75 - \left[\frac{300 - L}{100} \right]^{1,5} \right] c_{RW} && \text{for } 90 \leq L \leq 300 \text{ m} \\ &= 10,75 \cdot c_{RW} && \text{for } L > 300 \text{ m} \\ c_{RW} &= \text{service range coefficient} \\ &= 1,00 \text{ for unlimited service range} \\ &= 0,90 \text{ for service range P} \\ &= 0,75 \text{ for service range L} \\ &= 0,60 \text{ for service range T}\end{aligned}$$

DESIGN OPTIMIZATION

CONSTRUCTION

STRENGTH ISSUE

MID SHIP CONSTRUCTION

CLASSIFICATION

MODULUS FORMULA

SPECIFIED OPERATING AREA SERVICE

5.2 Design vertical wave bending moments

5.2.1 The appropriate hogging or sagging design hull vertical wave bending moment at amidships is given by the following:

$$M_w = f_1 f_2 M_{wo}$$

where

C_b = is to be taken not less than 0,60

C_1 = is given in [Table 4.5.1 Wave bending moment factor](#)

C_2 = 1, (also defined in [Pt 3, Ch 4, 5.2 Design vertical wave bending moments 5.2.2](#) at other positions along the length L)

f_1 = ship service factor. To be specially considered depending upon the service restriction and in any event should be not less than 0,5. For unrestricted sea-going service $f_1 = 1,0$

f_2 = -1,1 for sagging (negative) moment

$f_2 = \frac{1,9C_b}{(C_b + 0,7)}$ for hogging (positive) moment

$$M_{wo} = 0,1C_1 C_2 L^2 B (C_b + 0,7) \text{ kN m}$$

$$= (0,0102C_1 C_2 L^2 B (C_b + 0,7) \text{ tonne-f m})$$

Table 2.2.2 Environmental wave data for service area

Service Area Notation	Intercept factor f_1	Slope factor f_2
SA1	1,00	0,00
SA2	0,93	-1,15
SA3	0,70	-1,00
SA4	0,50	0,00
SAR	To be specially considered	

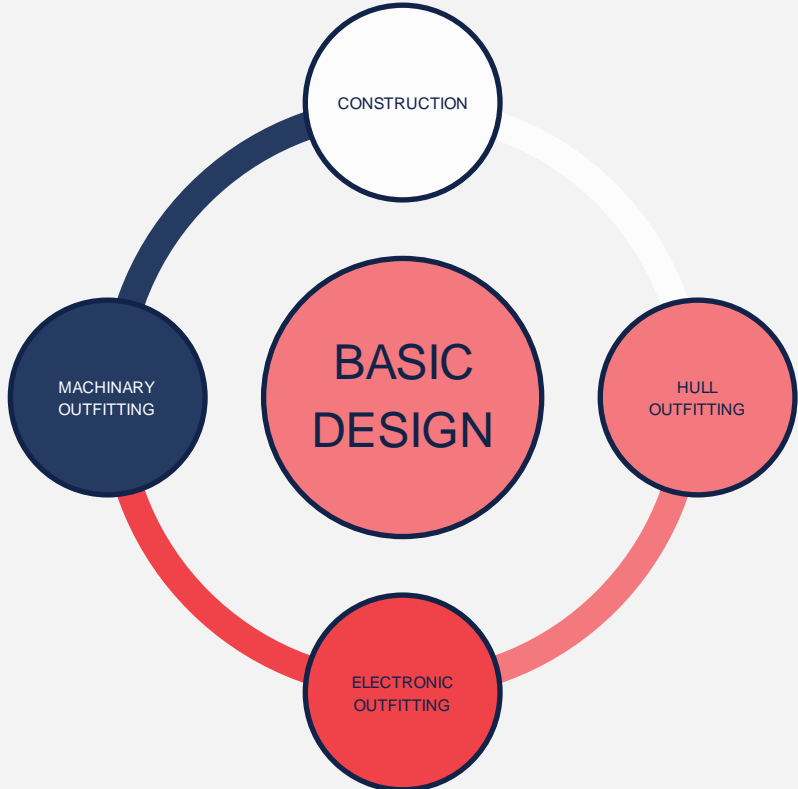
5.4 Minimum hull section modulus

5.4.1. The hull midship section modulus about the transverse neutral axis, at the deck or the keel, is to be not less than:

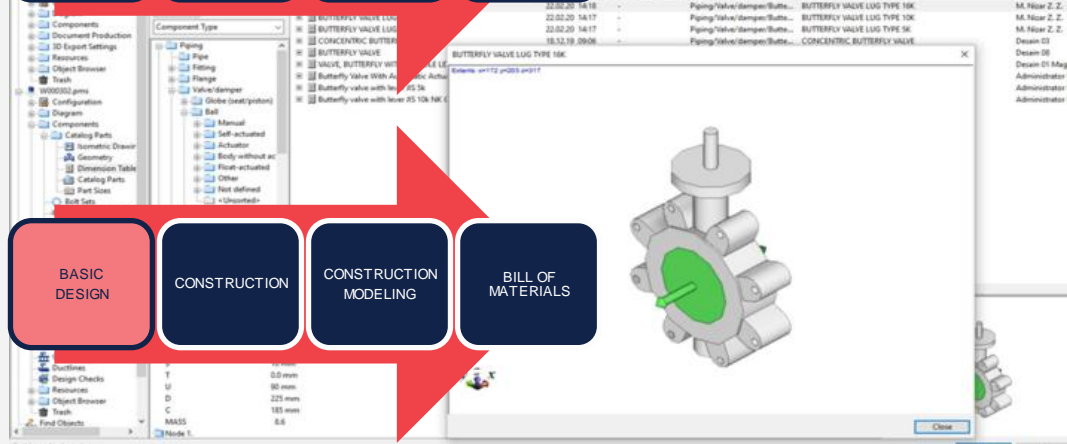
$$Z_{min} = f_1 K_L C_1 L^2 B (C_b + 0,7) \times 10^{-6} \text{ m}^3$$

and f_1 is to be taken not less than 0,5.

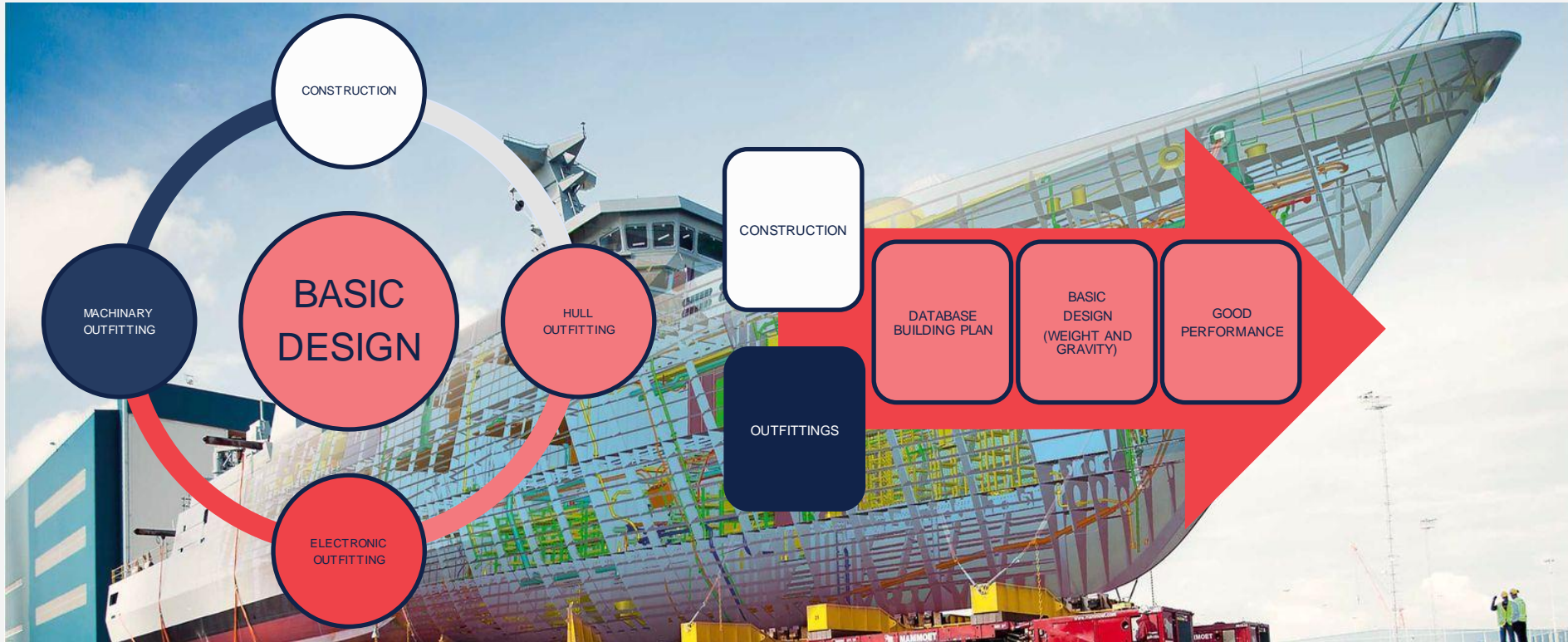
INTEGRATION DESIGN SYSTEM DETAIL DESIGN



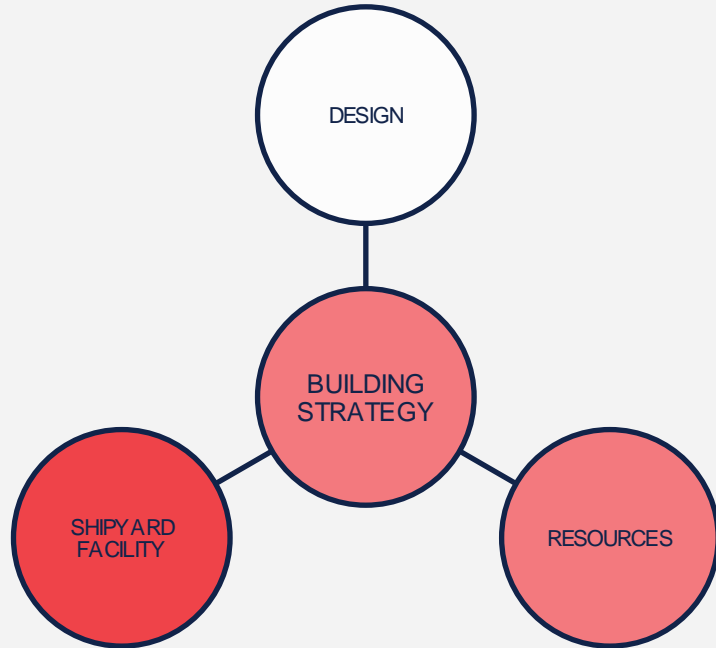
Zone	Block Name	Project Number	System Number	System Name	Pipeline	Material Number	Description	Standard	Weight	Weight/plate
CARGO HOLD	551A	W000302	4116792	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		26.3697	27.79 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		31.519	27.79 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		50.7408	27.79 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		34.3059	27.79 kg/mm
CARGO HOLD	551B	W000302	4116793	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		58.0889	27.79 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		1.1021	27.79 kg/mm
CARGO HOLD	551B	W000302	4116791	APR1116791	AP-27	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		50.2892	27.79 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		15.7131	27.79 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 40 STPG-37EJ5 G 3454		4.70362	27.79 kg/mm
CARGO HOLD	551B	W000302	4116793	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37R J5 G 3454		18.5592	41.80 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		5.47664	41.80 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		5.00062	41.80 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		26.9	41.80 kg/mm
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		15.468	18.47 kg
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		15.468	18.47 kg
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		6.36	6.36 kg
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		6.36	6.36 kg
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		18.61	18.61 kg
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		4.39	4.39 kg
CARGO HOLD	551A	W000302	4116791	APR1116791	A	47100ALJG345482	PIPE DN 150 SCH 80 STPG-37EJ5 G 3454		4.39	4.39 kg



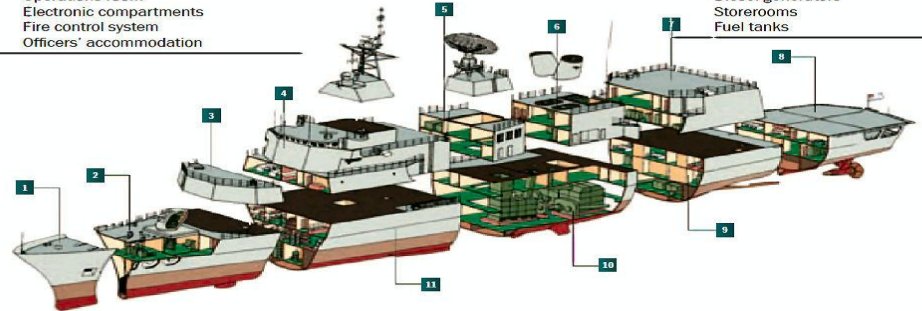
INTEGRATION DESIGN SYSTEM DETAIL DESIGN



BUILDING STRATEGY



- | | | | | | |
|----------|---|-----------|--|-----------|--|
| 1 | Module M6
Paint store
Rope store | 5 | Module A4
Radar compartments
Air intakes
Diving store | 8 | Module M1
Flight deck
Dining rooms
Storerooms
Quarterdeck
Helicopter fuel |
| 2 | Module M5
127 mm (5-inch) gun turret
Magazine
Anti-submarine sonar
Ventilation module | 6 | Module A3
Exhaust uptakes
Sea Sparrow anti-aircraft missile
RAS store | 9 | Module M2
Galley
Accommodation
Diesel generators
Fuel tanks |
| 3 | Module A6
Missile decoy (Chaff) launchers
Chart house
Replenishment-At-Sea (RAS) store | 7 | Modules A1&A2
Hangar
Helicopter maintenance workshops
Torpedo stowage | 10 | Module M3
Gas turbine
Diesel engines
Cross-connecting gear box
Stabilisers
Fuel tanks |
| 4 | Module A5
Bridge
Operations room
Electronic compartments
Fire control system
Officers' accommodation | 11 | Module M4
Accommodation
Diesel generators
Storerooms
Fuel tanks | | |





THANKS!