



SIGMA 6610

SIGMA 9113

SIGMA 9813

SIGMA 10514

DAMEN SCHELDE NAVAL SHIPBUILDING, a member of the Damen Shipyards Group, has the capability and track record to produce and deliver quality, fit for purpose ships to the highest standard, on schedule, at competitive prices, giving customers the best value for money.

PERFECTION

The design, engineering, production and selection of equipment take place in agreement with the customer. This results in an optimal configuration and a practical and accessible layout with an exceptional proven system performance.

Our ships are characterized by:

- State of the art integrated combat systems
- High level of comfort with low inboard and underwater radiated noise
- Extremely low vibration levels even at maximum power
- Speed, silence and high manoeuvrability

APPLYING NAVAL AND COMMERCIAL STANDARDS

The inherent quality and the competitiveness of Damen Schelde designs are further enhanced by a vast experience in applying a clever mix of commercial and naval standards and specifications.

MODULAR BUILDING

Based on the modular design philosophy, DSNS also developed an innovative modular building strategy. Modules of the ship can be built in different locations around the world, depending on locally available manpower, knowledge and facilities.

LOCAL CONSTRUCTION

The modular design and building approach especially enables Transfer of Technology and in-country building programs, delivering proven performance through a controlled building process and thus reducing risks for the local shipyard as well as the customer.



NAVAL COMBATANTS

PLATFORM CHARACTERISTICS

The SIGMA designs are known for their excellent seakeeping in combination with high speed. The hulls are made up of an effective, robust and standardised structure. The repetitive effect in both the hull and the systems reduce the building complexity and the project risk correspondingly.

GENERAL ARRANGEMENT

A main passageway on the damage control deck enables unrivalled accessibility between both functional and living spaces. Standards for accommodation are high. Although standardised, the SIGMA design can be re-arranged and outfitted with a combat system of any size and make, depending on the customer's specification.



Corvette (4x)
1700 tonnes **SIGMA 9113**
Contract 2004 - last delivery 2009

Frigate (2x)
1950 tonnes **SIGMA 9813**
Contract 2008 - last delivery 2012

Frigate (1x)
2185 tonnes **SIGMA 10513**
Contract 2008 - delivery 2011

Frigate (1+1)
2365 tonnes **SIGMA 10514**
Contract 2013 - delivery 2017



DAMEN SCHELDE NAVAL SHIPBUILDING

Member of the DAMEN SHIPYARDS GROUP



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SIGMA SERIES

Damen Schelde Naval Shipbuilding (DSNS) is renowned for its highly successful series of SIGMA Naval Combatants. The shipyard designs, builds and delivers these ships on time and within budget. SIGMA Naval Combatants have demonstrated excellent operational performance to the full satisfaction of their owners. The proven SIGMA philosophy is now continued in a range of capable, high-speed, smaller ships with lengths and displacements ranging from 59 m to 87 m and 600 tonnes to 1500 tonnes respectively.

SIGMA PHILOSOPHY

Based on the experience gained by building seven generations of frigates, a systematic hull form series was set up and model tested extensively. Ranging from 50 to 150 meters in length and 9 to 15 meters in breadth, this optimized hull form series covers the whole spectrum of naval combatants, from naval patrol, to corvettes and frigates. Furthermore, SIGMA vessels are designed in a modular way, using standardised solutions with commercial off-the-shelf equipment where possible, enhanced by military standards where needed. This approach enables customers to compose their own SIGMA design based on proven solutions.



PROVEN PERFORMANCE



SIGMA ADVANTAGES

The SIGMA design philosophy has the following advantages:

- Standardised and proven design with sufficient flexibility to meet individual customer needs
- Use of commercial equipment reduces cost of building and maintenance or replacement
- Easy implementation of modifications or upgrades avoid premature obsolescence of the vessel
- Wide selection of hull dimensions and combat suites, all making use of proven product compositions
- Commonality across different ship types

MISSION PROFILES

The SIGMA platform can be equipped for missions ranging from Maritime Safety and Security up to Naval Warfare and Power Projection, such as:

- Constabulary and Police
- Search and Rescue
- Counter Drugs and Counter Piracy
- Intelligence, Surveillance and Reconnaissance
- Naval presence and Embargo operations
- Sea Denial and Escort operations
- Naval Combat and Sea Control

PROVEN HULL FORMS ACROSS A WIDE RANGE OF MAIN DIMENSIONS

SECTION TYPE	NUMBER OF HULL SECTIONS							
	7	8	9	10	11	12	13	14
BREADTH o.a. (m)	50.40	57.60	64.80	72.00	79.20	86.40	93.60	100.80
	LENGTH ON REFERENCE 2-DECK (m)							
Σ X-14 14 Sigma Type Length over all (m) Displacement (tonnes)					8414 83.51 1764	9114 90.17 1940	9814 97.91 2097	10514 105.11 2368
Σ X-13 13				7613 76.31 1408	8413 83.51 1563	9113 90.71 1701	9813 97.91 1939	10513 105.11 2175
Σ X-12 12				7612 76.31 1218	8412 83.51 1345	9112 90.71 1476	9812 90.48 1660	
Σ X-11 11			6611 66.01 925	7311 73.21 1039	8011 80.41 1151	8811 87.61 1321		
Σ X-10 10		5910 58.81 707	6610 66.01 806	7310 73.21 907	8010 80.41 1054			
Σ X-9 9	5109 51.41 519	5909 58.81 600	6609 66.01 679	7309 73.21 802				

NAVAL FEATURES

- Naval intact and damaged stability
- Enclosed gas-tight citadel and NBC filter installation
- Shock resistance and protection of vital systems
- Redundancy in essential services
- Naval damage control zones
- Reduced signatures through RCS shaping, noise control, degaussing and IR reduction

