



Arrowhead 120

CAPABLE. ADAPTABLE. FLEXIBLE.

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A general purpose frigate for modern navies

Capable

Arrowhead is capable of fulfilling and supporting your global maritime security requirements and representing your defence interests world-wide.

The design can accommodate a range of mission system configurations to meet your operational and capability needs.

Based on an open system, the mission system manages a suite of sensors and associated communications to provide essential situational awareness, the ability to operate organic or offboard assets and the ability to conduct offensive and defensive operations.

Designed to provide maximum capability at a world beating cost, Arrowhead uses proven and commercially available systems and equipment.

Furthermore, Arrowhead employs Babcock's iFrigate™ technology to reduce through life support costs.

Adaptable

Arrowhead's architecture can be configured to meet your specific requirements.

This general purpose frigate has in-built design margins to accommodate a variety of equipment choices for a broad range of roles, from low-threat security operations to task force deployments.

Flexible

Flexibility is a core element of the Arrowhead design philosophy.

With large re-configurable mission and payload areas onboard, Arrowhead can provide flexibility across a range of operational roles, from HADRO (Humanitarian Aid and Disaster Relief Operations) to unmanned systems deployment and operation.

Effective, whatever the task

Configurable to meet your current and future requirements. Flexible in design and capability to meet a range of roles.

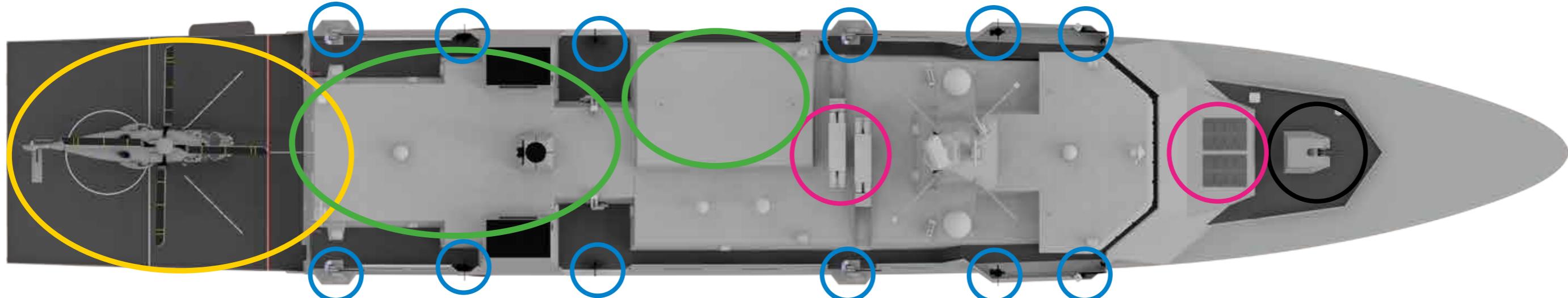
The baseline Arrowhead design can be configured to meet the broad range of operational requirements and profiles a general purpose frigate will be called upon to undertake.

The Arrowhead design acknowledges operational roles will change through the life of the ship and from mission to mission. Multiple mission bays have been incorporated into the design allowing for rapid reconfiguration and rerole to meet changing operational needs.



Principal characteristics

Length	120 m
Breadth	19 m
Displacement	~4000 tonnes
Speed	24+ knots
Range (15 knots)	6000 nm



Aviation

- Flight Deck sized for AW-101 Merlin/MH-60 Seahawk.
- Hangar capable of accommodating a medium organic naval helicopter (e.g. Seahawk or NH90), or a lighter helicopter plus an unmanned rotary (e.g. AW-159 Wildcat & MQ-8C Firescout).
- Design can accommodate all envisaged customer naval aircraft.

Aircraft	Flight Deck	Hangar
V22 Osprey	Yes	
AW-101 Merlin	Yes	
NH90	Yes	Yes
MH-60 Seahawk	Yes	Yes
AW-159 Wildcat	Yes	
MQ-8C Firescout	Yes	Together

Small calibre guns

Design provision made for SCGs up to 30mm with associated Electrical-Optic (EO) sensors and magazine arrangements.

Weapons can be fitted at a number of upperdeck positions.

Medium calibre guns

Design provision for MCG up to 5" (127mm) with associated infrastructure.

Flexible delivery of maritime security

Armament

Medium Calibre Gun options up to 5" (127mm) for maritime interdiction, self-protection and engagement of surface and land targets.
Small calibre weapons up to 30mm calibre can be located in pre-designated upper-deck weapon positions.

Capability options:

- Provision for up to 8 SSGW
- VL missiles (SAM/SSGW) up to 16 cells
- Close-In Weapons System (e.g. Phalanx)

Maritime surveillance and interdiction
Counter piracy
Military presence and deterrence
Humanitarian Aid and Disaster Relief
Task Group support
Consort protection

Accommodation

Crew 80, plus flexible accommodation for up to a further 80, which can include provision for Embarked Military Force.

Large flexible accommodation/mission/medevac spaces aft for Humanitarian Aid Disaster Relief or rescue operations.

Multi-role capability

Multi mission reconfigurable spaces in optimal positions for launch and recovery of personnel and UXVs.

Spaces can be rapidly and simply used for HADRO through to war fighting operations, with volume spaces able to accommodate role specific equipment in a modular form.

Intelligent layout

The key working and mission areas are situated to provide an optimal layout for operations in both peacetime and wartime. The key mission areas benefit from proximity to each other and protection through the relative location within the ship.

Clear demarcation of areas for operations and rest areas.

Supportability of major equipment identified through shipping routes and space envelopes.

Mission systems

Integrated communications suite for interoperability with own and coalition forces and civilian agencies.

Medium and Short Range Radars for situational awareness, safe navigation, fire control and helo control.

Radar ESM and Defensive Aids Suite to provide self-protection. EW capability upgrades available.

Radar and Electro Optical Trackers for gun fire control

Hull-mounted sonar for submarine detection/mine avoidance with capability options for towed array and torpedo defence.

Open architecture Mission System network and computing environment scaled for the mission/combat management requirement and upgradeable.

Mission flexibility

Linked reconfigurable mission spaces including hangar. Large and flexible with excellent size and scale, larger than other vessels in this class. Midships Boat/Mission Bay designed for up to 12m boats or equivalent UXV equipment. Mission System connectivity and ships services provided to reconfigurable Mission Bays. Flexibility and speed of rerole/reconfiguration.

Aviation facilities

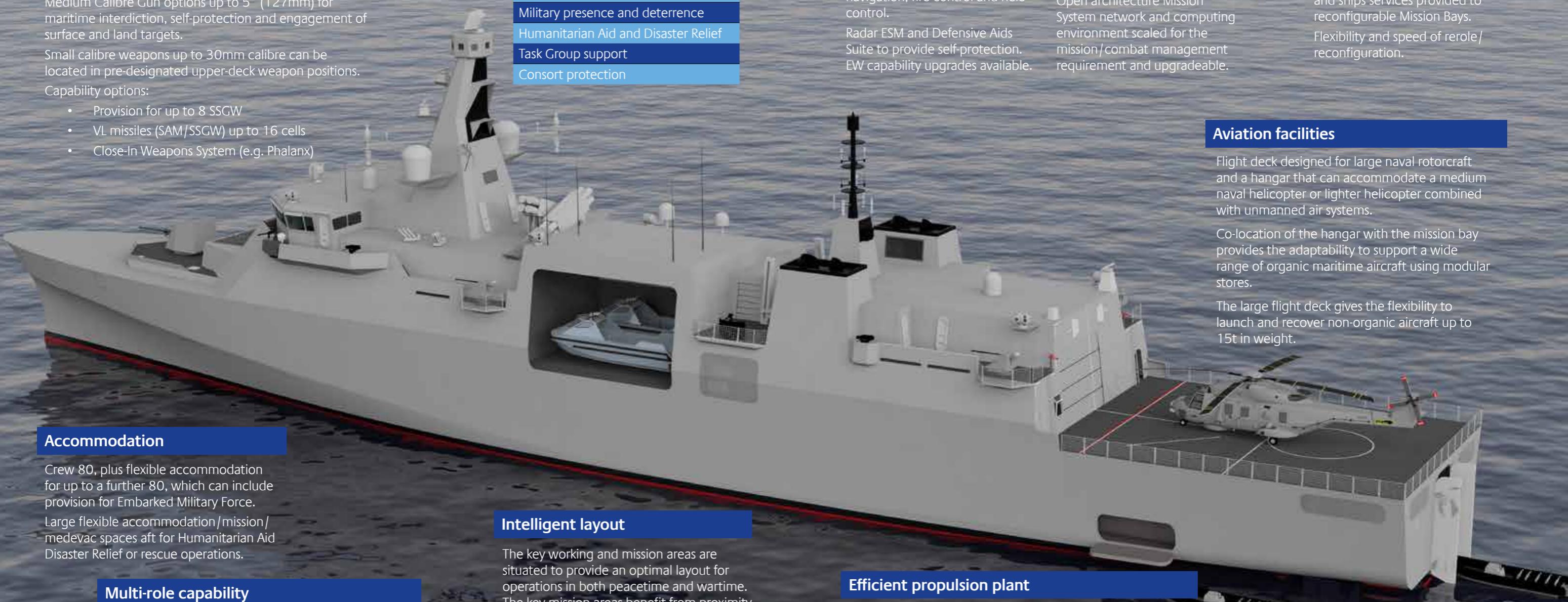
Flight deck designed for large naval rotorcraft and a hangar that can accommodate a medium naval helicopter or lighter helicopter combined with unmanned air systems.

Co-location of the hangar with the mission bay provides the adaptability to support a wide range of organic maritime aircraft using modular stores.

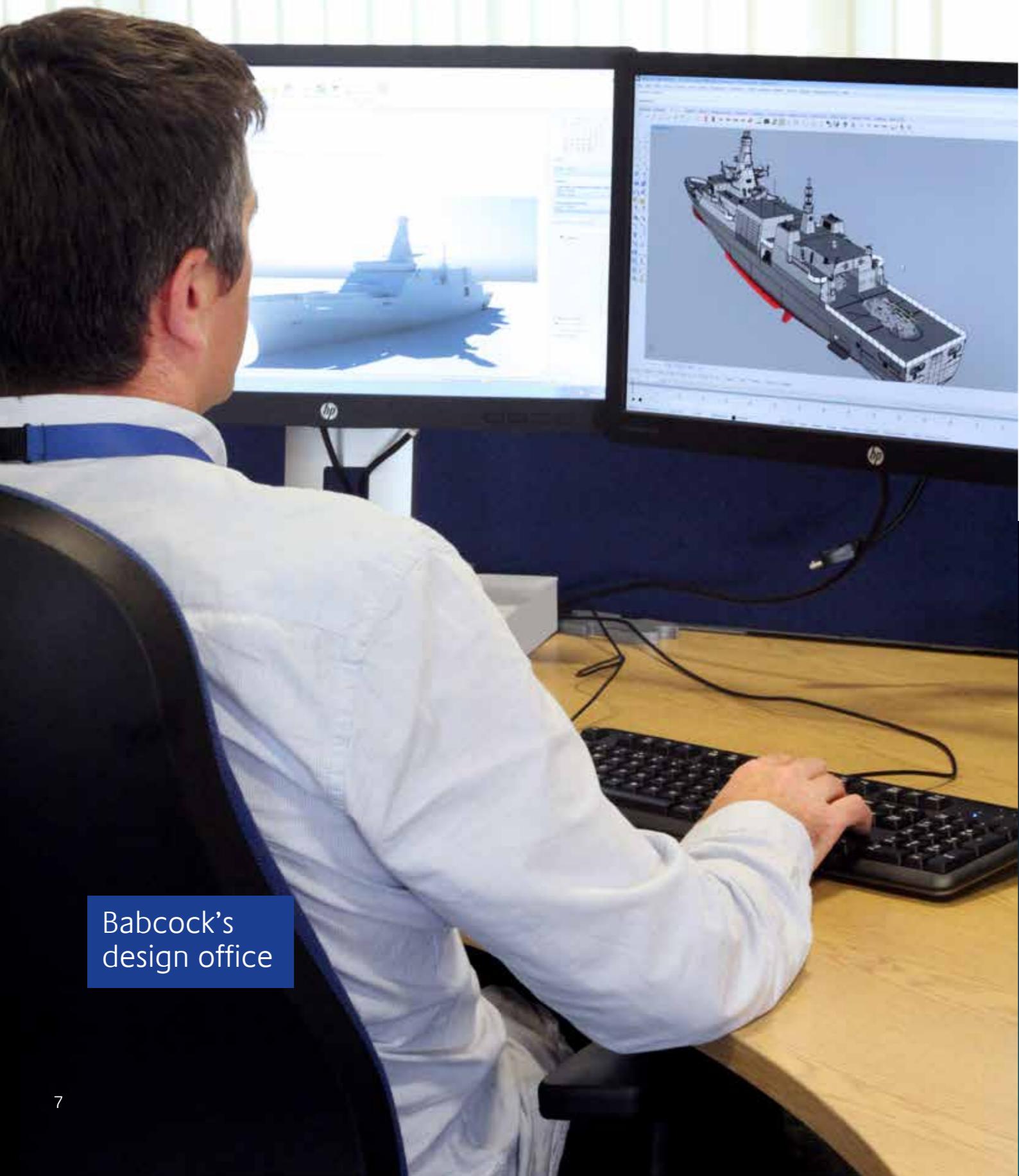
The large flight deck gives the flexibility to launch and recover non-organic aircraft up to 15t in weight.

Stern ramp

Provision for a stern ramp for boat and UXV deployment up to 11m.



Engineering design to meet your needs



Arrowhead employs Babcock's iFrigate™ technology. This in-built technology monitors platform performance in real-time, optimising support requirements, delivering improved availability and reducing customer through life support costs.

The Arrowhead concept draws upon Babcock's significant design experience and cutting edge developments for UK and international clients. It has combined our expertise in commercial vessel design - from superyachts to FPSOs (Floating Production and Storage Vessels) - with our proven complex naval ship design skills in the delivery of patrol boats and aircraft carriers.

We have worked with industry partners and key suppliers of propulsion machinery, electrical generation and combat systems and with MARIN, a world leader in hullform development, to refine the design.



Tank testing

Together we have created a platform optimised for a maritime security role and capable of the launch and recovery of onboard assets in the severest of sea states using both davit and stern ramp systems.

The result is a design which brings together our in depth knowledge and those of our industry partners to offer a vessel with performance which builds on the experience of previous naval and commercial vessels that have been built and are currently in service.

iFrigate™
Babcock intelligent design
› Data acquisition › Data release control
› Data distribution › Shore side analysis
› On board analytics





Effective technical collaboration

Babcock can supply vessels from its own shipyards or assist with building vessels locally via a technical collaboration.

The Arrowhead design allows for either a single build strategy, using the maximum of pre-outfitting for efficiency, or a cross-site build strategy utilising modules. The latter approach has been successfully adopted by many naval programmes using a technical collaboration model to deliver completed ships at a lead yard.

Babcock can deliver the whole build package, including licences, design and materials and provide assistance with infrastructure upgrades and construction support if required.

Our collaborative capability is proven in the success of the Queen Elizabeth Class aircraft carriers. Babcock is a key member of the Aircraft Carrier Alliance responsible for the delivery of these ships to the Royal Navy.

Similar collaborative work is being undertaken for the US Coast Guard in the development of the design for a new Offshore Patrol Cutter with Eastern Shipbuilding in the USA.

Babcock is working collaboratively with a number of key organisations in developing Arrowhead 120 including:



Eastern Shipbuilding Group Offshore Patrol Cutter



QEC aircraft carrier bow section being transported from Appledore to Rosyth



Lloyd's Register



MSI™
MSI Defence Systems Ltd



L3



M|ES
Marine Electronic Systems



WÄRTSILÄ



THALES



MBDA
MISSILE SYSTEMS



SAAB
Defence and Security



AGI



Build quality to be proud of

INS LÉ Samuel Beckett
on sea trials

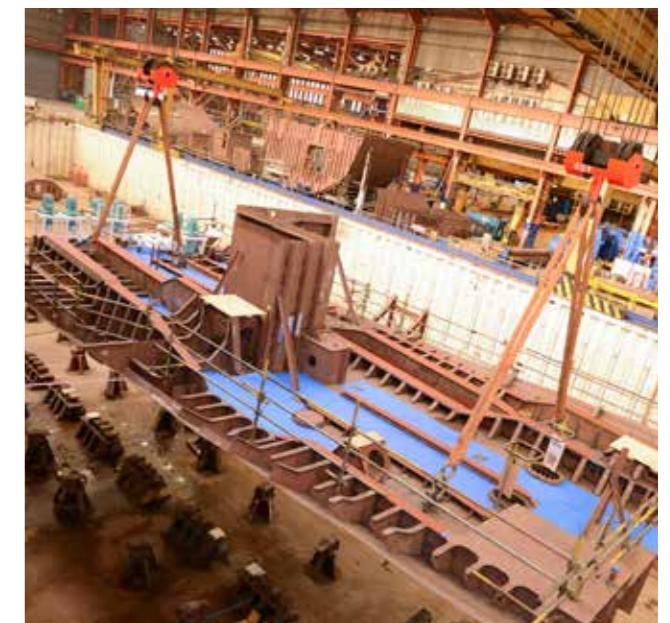


Babcock has an established history of designing, building and managing the integration of some of the world's most complex ships across our three sites at Appledore, Devonport and Rosyth in the UK.

We have delivered over 200 ships of commercial and naval design standards along with patrol and rescue craft, including:

- HMS SCOTT - RN Ocean Survey Vessel.
- HMS ECHO and HMS ENTERPRISE - RN Survey Vessels.
- Róisín Class Offshore Patrol Vessels for the Irish Naval Service (VARD design).
- Samuel Beckett Class Offshore Patrol Vessels for the Irish Naval Service (VARD design).

Arrowhead (Babcock design) can be built and supported within the UK or at international facilities with Babcock's technical support packages.



Keel laying of INS LÉ George Bernard Shaw Offshore Patrol Vessel



HMS Scott and
HMS Echo

Keeping your fleet mission ready

Babcock takes great pride in being trusted to deliver products and services that exceed the expectations of our customers.

Supporting this commitment to dependable excellence is steady investment in our facilities, safety culture, processes and, most importantly, our people.

We have over 35,000 people who design, build, manage, operate and maintain assets that are vital to many key public services, both in the UK and overseas.



Project management

Global reach

Babcock has a presence in mature and emerging nations aligned with UK and NATO allegiances and strategies meaning we can react swiftly to meet operational demands and deliver timely and flexible support worldwide.

Keeping warships safe, capable and available requires a collaborative joint approach between the operator and the support partner. From the day your ship enters service, we can work with you to provide continuous and consistent support around the world.

We understand platforms, systems, and how they operate and can take a holistic view of your through-life support requirements; helping you to reduce costs and ensure capability.

Equipment Management

Babcock manages an extensive supply chain to deliver quality materials and services to the right place at the right time for both planned and unplanned maintenance.

For our UK Fleet Support operations alone, we procure over £600M of materials and services per year and manage large inventories of equipment under



Logistics and warehousing

performance based, asset availability contracts for the UK Ministry of Defence.

Training

Babcock is the leading supplier of personnel training to the UK's Ministry of Defence and has over 20 years experience of delivering these services to the Royal Navy, Royal Air Force, Army and many international military organisations.

We provide world-class training for officers, ratings and other maritime customers across a wide variety of naval and maritime subjects including warfighting, engineering, logistics and all elements of sea survival and safety. We provide the full breadth of training design and delivery from initial analysis of training needs through to the final development of blended learning solutions and effective implementation.

We have trained over 50 military and merchant crews from over 15 nations, including basic and technical English language training.



Babcock training services

Our training solutions apply Royal Navy principles, align to North Atlantic Treaty Organisation (NATO) standard operating procedures and can be strengthened where appropriate through Royal Navy endorsement and support.

**DUQM Naval Dockyard
- an Oman Drydock and Babcock joint venture**



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For more information, contact:

~marine.marketing@babcockinternational.com

Babcock International Group

33 Wigmore Street
London
W1U 1QX
United Kingdom

info@babcockinternational.com

babcockinternational.com/arrowhead

