



babcockTM



Sustainable Engineering & Fleet wide Solutions

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Objectives



- An introduction to Babcock's capability and sustainable engineering solutions
- Our collaborative approach to our customers projects
- Utilisation of innovation and technology

Marine overview: what we do



UK Defence

Surface Ship Support

Systems & Equipment

Training

- › Warship deep maintenance – 75% of fleet
- › Warship fleet time support
- › Design, build, assembly and support of QEC
- › Support and upgrade of future platforms
- › Supply and integration of OEM technology
- › Royal Navy training



International Defence

Submarine Support

Surface Ship Support

Systems & Equipment

Training

- › 100% Canadian submarine refits
- › Australian ship and submarine support
- › US-UK Common Missile Compartments
- › New Zealand and Oman dockyards
- › Weapons handling and launch technology



Energy and Marine

Systems & Equipment

Complex Assets Support

Design

Engineering Consultancy

- › Owned intellectual property in complex energy and marine systems
- › Through-life support of complex assets
- › Marine engineering and platform design
- › Advanced manufacturing

Technology products and solutions into all markets



Digitally enabled marine support solutions



Engineering and technical innovation



Global support solutions

Energy & Marine Capability



- Building on naval experience, we support clients with design at whole ship or module level, for subsea and onshore structures, offshore platforms and ships - from ferries to complex coastguard vessels.
- We bring energy to our customers' projects with our integrated design and manufacturing approach, providing a single point of focus for our customers and partners.
- Babcock has completed a number of successful dry dockings of NorthLink ferries at Rosyth, the most recent of which was MV Helliar in June 2020.



Our State of the Art Engineering Hubs provide engineering, design & lifecycle support on defence and merchant platforms around the globe.

Our Partnering Approach culture encourages a flexible resource pool which is developed and 'upskilled' to meet your requirements.

560 staff including naval architects, detailed designers, marine and electrical systems engineers



All UK based with **global reach** back into Brazil, South Africa, Oman, Australia and Canada

Delivered over
700 separate assignments, with tasks varying
200 to 10k hours



In 2019 our engineering team executed over
650k hours in engineering/design support



Global Presence



We have relationships with yards and partners around the world that enable us to deliver fleetwide solutions globally.



Sustainable Approach to Engineering



Traditional Engineering	Sustainable Engineering
Considers the object or process	Considers the whole system in which the object or process will be used
Focuses on technical issues	Considers both technical and non-technical issues synergistically
Solves the immediate problem	Strives to solve the problem for infinite future (forever?)
Considers the local context	Considers the global context
Assumes others will deal with political, ethical, and societal issues	Acknowledges the need to interact the experts in other disciplines related to the problem

(Penn State University, 2020)

Sustainable Engineering Solutions



Babcock is a founding member of Maritime Research and Innovation UK (MarRI-UK) – a collaborative organisation established to tackle innovation and technology challenges in the maritime sector.

Formed a consortium with the University of Warwick, Fuel Cell Systems and Plug Power to develop and optimise a zero emission propulsion system design for marine applications.



Sustainable Engineering Solutions

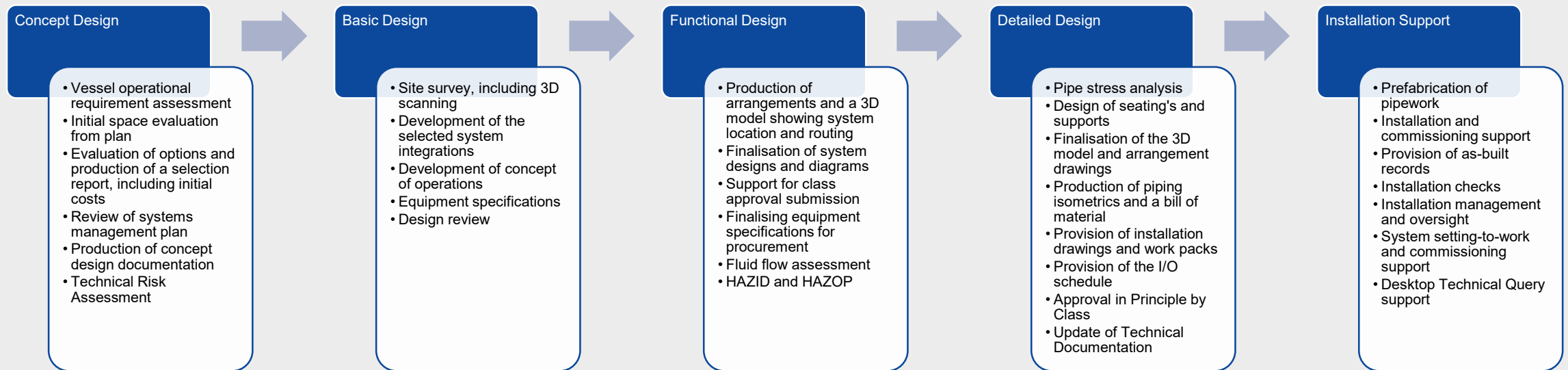
- Ballast Water Treatment Retrofits
- Scrubber Retrofits
- Environmental Consultancy

Integration Engineering for BWT (Ballast Water Treatment)



Babcock understand the importance of reducing the impact of shipping on the environment and so compliance with the Ballast Water Treatment Convention is one of the many ways we are supporting our customers to reduce their impact on the environment.

A low-risk, turnkey solution - from concept and procurement to installation and commissioning.

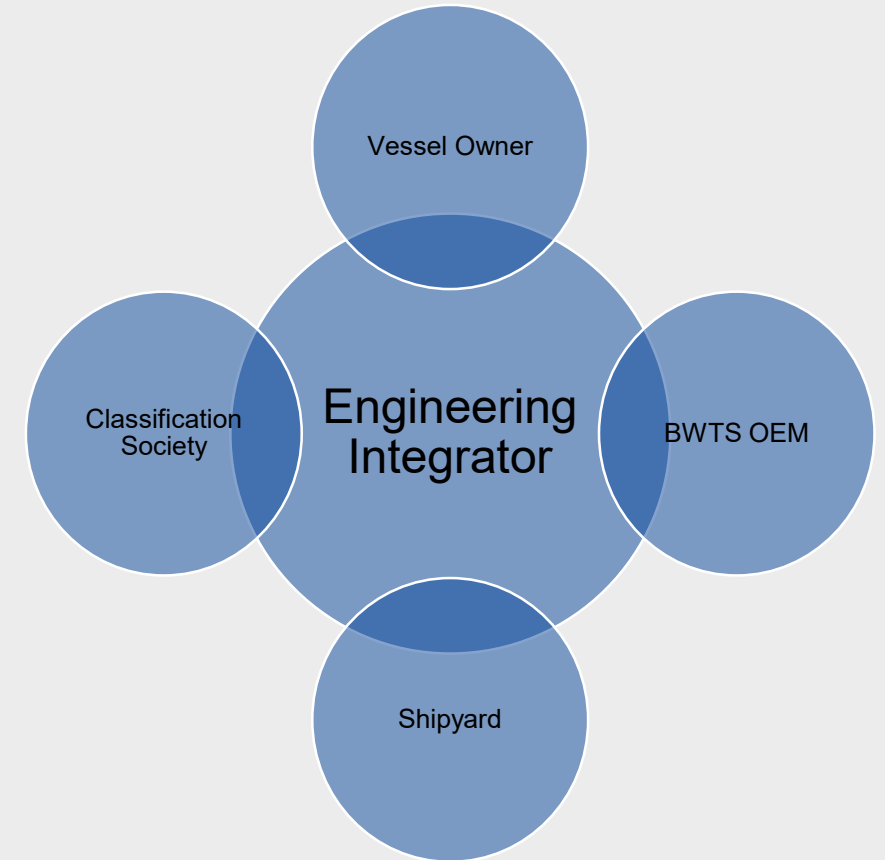


The role of an integrator – ‘Connecting the dots’



Ballast Water Treatment Systems (BWTS) are complex, technological and heavily regulated; therefore it is important that a suitable system is installed correctly to provide a solution that is: economical, reliable and safe.

- Highly experienced team with suitable technical expertise
- Manages the technical risk across the project lifecycle, reducing late changes
- Provides the design, documentation and drawings required by classification societies and the shipyard to ensure optimal design, smooth integration and full compliance
- Connects the dots between the vessel owner, class society, OEM and shipyard



Case Studies

DeBeers Atlantic



USCG Offshore Patrol Cutter Vessel



Royal Navy Ocean Survey Vessel



Utilisation of Innovation & Technology



Owned intellectual property:

complex systems/equipment design and development –
ecoSMRT, Weapons Handling and Launch Systems
(WHLS)

Through-life support of complex equipment:

warships, submarines, weapons and C4ISTAR

Design, engineering and management services:

supply and integration of OEM technology

Use of innovative support technologies:

enabling digital asset management (iSupport)

Advanced manufacturing:

exploiting innovative manufacturing technologies,
Common Missile Compartments



Collaboration and considering the global context



- Our significant design expertise means if a solution is not readily available, we will create it on the customer's behalf
- This uniquely flexible and fully bespoke approach has been honed over decades and continues to be our focus today
- As we are entirely equipment agnostic, we can work seamlessly with legacy systems to plan and manage an obsolescence programme if required
- Our strong partnering culture enables us to collaborate effectively within complex, fast moving organisations and in challenging environments
- Once equipment or systems are installed, we will provide comprehensive operational support for the full life of the asset and deliver world-class training across ongoing operation and maintenance



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