Developing Shipyards for smarter operations
Royal HaskoningDHV is an international engineering consultancy with over 100 years of experience in the planning, design and development of maritime facilities.

Our experts work closely with clients to create sustainable maritime developments – whether shipyards, naval bases, ports or terminals. We specialise in tackling the multitude of challenges facing today’s shipyards: from the ongoing pressure to reduce running costs and ensure appropriate security measures, to mitigating against climate change, to capturing, utilising and acting on the vast amount of data generated daily for Smart shipyards.

Within Royal HaskoningDHV, we have created a range of multidisciplinary shipyard services that pair our engineering design services with the shipyard technology excellence and market expertise of First Marine International: an integrated company within Royal HaskoningDHV.

As industry experts, we have the capability to support you through all the stages of the shipyard life cycle. Whether you’re building a new shipyard looking to navigate through market research and initial feasibility studies; or you’re looking to upgrade existing facilities and technology, introducing new digital innovations – we have a solution for every aspect.
A global history of excellence

With an unrivalled track record in the planning and design of shipyards spanning almost 80 years, our experts have pioneered a range of technologies that have shaped how shipyards are developed:

1960s
Development of the modern shiplift in the USA

1970s
Design of the world’s largest dry dock in Okpo, Korea

1980s
Drafting the first British Standard (BS 6349-3:1988) for the design of dry docks, shiplifts, dock gates and slipways

1990s
Development of the naval vessel CGT for the globally adopted system of shipbuilding production planning

2000s
Strategic planning and construction for one of the Middle East’s largest shipyards

2013
The expansion and revision of BS 6349-3:2013, ‘Code of Practice for the Design of Shipyards and Sea Locks’

2014
Design of the world’s longest spanning dock flap gate in Singapore

2019
Continued advice on the design of the world’s largest stand-alone shipyard

Smart Shipyards – Innovation backed by experience

Current global attention on the Fourth Industrial Revolution, or Industry 4.0, has sharpened focus on digital technologies in shipyard operations. Shipyards have been on a digital pathway since the 1970s, with some more advanced than others.

Recent acceleration in the availability of advanced technologies, cyber-physical systems and related technologies present a wide array of opportunities. Although some bring real benefits, the range of possibilities can be a minefield and there is no single universal remedy to improving shipyard performance.

To achieve best performance there needs to be a balance drawn between the implementation of digital and more conventional technologies, in the context of the shipyard cost base and product mix.

We have developed our Smart Shipyards toolbox to help clients navigate this potential minefield and develop a road map for the sequenced implementation of complementary technologies. We can also assist with implementation and provide related services such as shipyard modelling and the development of digital twins.
An approach tailored to you
Our independent expertise throughout your development process

At Royal HaskoningDHV, we work to understand your existing business processes before proposing a technical solution. With this information, we can identify the functional interrelationships and bottlenecks of your shipyard – whether that includes constraints that you face from statutory regulation, incorporating the needs of external stakeholders, or ensuring that existing business operations are smooth.

When there is a good understanding of your unique challenges, we can select the preferred technical solution – deploying it in a way that is tailored to you and the context of your shipyard.

Alongside this, our commitment to sustainable thinking is embedded in our culture. By providing you with options and information on the most appropriate environmental and social, economic and sustainable solutions, your development can progress with excellent credentials. This is vital to meet many funders’ requirements.
At Royal HaskoningDHV, our experts have made us one of the leading forecasters of maritime activity; developing innovative approaches to monitoring and analysing the shipbuilding and ship repair markets, continually surveying factors that impact shipyard development.

Our strategic planning service extends to the revitalisation of existing shipyards and we have extensive experience in carrying out strategic planning for shipyards and equipment suppliers.

**Our services include:**
- Market research, competitor analysis and customer targeting
- Product mix definition and target revenue
- International competitiveness and global market economics
- Identification of target markets, throughput and performance levels
- Cost structure review and business strategy
- Rationalisation and restructuring

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**Tim Walters**
**SHIPYARD MARKET RESEARCH**

With over 20 years’ experience including management positions in shipping and financial services, Tim Walters is a market specialist in shipbuilding, ship repair, offshore industries and ship recycling.

**Kayleigh Elliott**
**SHIPYARD RESEARCH ANALYSIS**

A specialist in all aspects of shipyard related maritime market research, Kayleigh Elliott has qualifications in both business with marketing and strategic marketing.
Our in-house experts specialise in carrying out feasibility studies for new and existing shipyard facilities, balancing the factors that will help you make the most of your proposed business model and costs.

Choosing the right location for your shipyard is key to the feasibility and long term economic viability of your shipyard business. Access to markets, accessibility for shipping, suitability of land surface and the marine environment are all factors to be considered and are crucial to the success of your shipyard development project.

Feasibility factors include:
- Market availability
- Site location
- Layout and design
- Capital costs
- Operating costs
- Potential sustainability enhancements
- Labour availability and accessibility
- Financial viability

Our experts explore and advise on the following site selection criteria:
- Shipping traffic pattern analysis
- Ancillary support industry
- Labour availability
- Marine access
- Transport links
- Environmental impact
- Wave climate
- Topography & Bathymetry
- Geology and Sedimentation

Our expertise

Adrian Arnold
MULTIDISCIPLINARY SHIPYARD INFRASTRUCTURE
With over 40 years’ experience in shipyard infrastructure developments, Adrian Arnold is a Fellow of both the Institution of Civil Engineers and the Institution of Shipbuilders and Engineers in Scotland.

Malcolm Bell
SHIPYARD PRE-PRODUCTION ORGANISATION
An expert in developing and implementing new shipyard technology for advanced production engineering practices and productivity, Malcolm Bell has over 40 years’ experience in state-of-the-art shipyards.
Initial concept designs help you make informed decisions before committing to the cost of final detailed facility design. With design components often being interchangeable, we combine attributes from two or more concepts, to arrive at the concept that’s tailored for you and your needs. We balance the forecast revenues with the CAPEX and OPEX.

Moving to the design stage, our capability includes process design and the necessary civil, structural, mechanical and electrical systems design. The financial success of your shipyard depends on the decisions made at the design stage. The size of the our shipyard design group means our project teams can be assembled to provide the necessary multidisciplinary input for complex shipyard infrastructure designs.

The elements of conceptual design include:
- Layout plan showing major facilities
- Sizing of production areas
- Sizing, arrangement and type of workshop buildings
- Sizing and locating docking facilities
- Routing of services and location of sub stations and compressor houses
- Overall manning levels
- Overall layout of the shipyard workflows
- Order of magnitude costs

The masterplan includes:
- Location and sizes of production areas
- Production workshop layouts, levels of technology and operations
- Pre-production equipment lists
- Civil and structural preliminary engineering
- Mechanical and electrical services arrangements
- Final budget estimates and shipyard operating cost estimate

Our expertise

**Andrew Pate**
SHIPYARD PRODUCTION PROCESS

A Chartered Mechanical Engineer, Andrew Pate is a specialist in shipyard layouts, production improvement strategies, international competitive benchmarking and technology transfer.

**Vasil Miladinov**
OFFSHORE FABRICATION YARDS

With 20 years’ experience in shipbuilding, oil & gas engineering, multi-disciplinary co-ordination and fabrication of offshore structures, Vasil Miladinov is a qualified Mechanical/Marine Engineer.
The strength of our shipyard design capability at Royal HaskoningDHV means that multidisciplinary teams can be assembled easily to tackle any problem. Our experts use their combined experience to provide the optimum solution to all shipyard infrastructure requirements, improving performance and reducing construction and maintenance costs.

We are also committed to digital transformation, creating Smart Shipyards that combine digital innovation and tools with production intelligence; enabling yards to work more efficiently.

The detailed designs include:

**Production process design**
- Equipment specification
- Detailed layouts of individual workshops and open production areas
- Specialised jigs, manipulators, access towers and services catenaries
- Production workstation operations
- Ship production process strategy and methodology
- Mechanical piped services and electrical points

**Infrastructure design**
- Dry docks including dock gates
- Shiplifts & Floating docks
- Ship launch systems
- Piers and quays
- Assembly and construction halls
- Workshops, stores and offices
- Breakwaters & dredging

Our expertise

**Stephen Davies**
**SHIPYARD MARITIME FACILITIES**
A Fellow of the Institution of Civil Engineers and with extensive experience in the design of all types of specialist shipyard maritime structures, Stephen Davies regularly acts as an expert witness.

**Katherine Moore**
**SHIPYARD LANDSIDE INFRASTRUCTURE**
With over 20 years’ experience on a variety of shipyard projects covering all aspects of onshore shipyard facilities including complex major workshops, Katherine Moore is a Chartered Engineer.
Obtaining the wide range of specialist suppliers needed for the construction of your shipyard is complex. It involves tender and selection processes, price negotiation and contractual engagement. The success of delivering your shipyard development on schedule and to budget depends on choosing the right suppliers that can deliver.

Our experience in the procurement of equipment and construction services is unrivalled. Our in-house quantity surveyors and contract experts provide contractual advice, prepare bills of quantities, write tender documents and provide technical and financial evaluation of tenders.

On-site engineers representing your interests
The successful construction of a shipyard demands excellent site supervision to confront and resolve technical and contractual issues. Working on-site, our team of highly qualified engineers is there to look after your interests.

Experienced in managing supervision teams, monitoring workmanship and construction progress, our site engineers will be on hand to clarify drawings and specifications and confirm the valuation and quality of the work completed by the contractor.

Our construction supervision services include:
- Client representation
- On-site construction supervision
- Recruiting and training management and technical staff
- Establishing supply chain agreements
- Commissioning systems and equipment

Our expertise

Richard Parsons
SHIPYARD DEVELOPMENT PROJECT MANAGEMENT
A qualified project manager and a Fellow of the Institution of Civil Engineers with 20 years’ experience, Richard Parsons has specialist experience of major global shipyard developments.

Andrew Cook
PROCUREMENT CAPEX & CONTRACTS
A Fellow of the Royal Institution of Chartered Surveyors, with an MSc in Construction Law and Dispute Resolution, Andrew Cook has worldwide quantity surveying experience of shipyard contracts.
Benchmarking & competitiveness
Applying global best practice to your shipyard

Whether existing or new, our benchmarking and competitiveness systems and studies can be used to gauge the position of your shipyard against global best practice.

Our benchmarking system has been applied in over 150 shipyards worldwide – and has formed the foundation of major industry-wide performance improvement projects for the European Commission, the US Department of Defense and the UK Ministry of Defence.

Our competitiveness studies have established the correlation between the use of best practice, output performance and profitability – while our experts have scientific knowledge of shipyards and the industry that can help you invest or restructure to give you the competitive edge.

Our expertise

Damien Bloor
SHIPYARD PERFORMANCE COMPETITIVENESS
An expert in shipyard design, benchmarking, cost structure analysis and shipbuilding competitiveness, Damien Bloor is a Chartered Engineer and naval architect with specialist knowledge of super-yachts and warships.

Stephen Maguire
SHIPYARD PERFORMANCE IMPROVEMENT
A qualified Marine Engineer extensively experienced in shipyard production systems and the ‘Lean and Six Sigma’ efficiency philosophies, Stephen Maguire is a shipyard competitiveness specialist.
To stay competitive in the increasingly demanding commercial, military and leisure markets, shipyards must improve their overall performance and productivity continuously.

Our approach to shipyard design and development ensures the facilities, processes and practices will allow your shipyard to achieve the level of performance required for market success. We use the same tools to analyse existing shipyards and to help you develop effective performance improvement programmes.

Our services include:
- Cost structure review, financial analysis and business strategy development
- Industry benchmarking and technology profiling
- Operational benchmarking and identification of technology gaps
- Development and implementation of performance improvement programmes
- Implementation of modern shipbuilding and repair technology
- Management and staff retraining programmes

Our expertise

Adam Broughton
PERFORMANCE IMPROVEMENT
A naval architect with high performance shipyard production experience, Adam Broughton applies his expertise to achieve operational improvements in shipyards.

Sam Godding
INFRASTRUCTURE UPGRADE
A chartered civil engineer with a broad experience of entire shipyard developments, Sam Godding specialises in facility performance improvement and upgrades.
Due diligence (technical & financial)
Understanding the sector so you can act

For those looking to invest in the shipyard sector, due diligence is key. At Royal HaskoningDHV we offer technical and financial due diligence to clients seeking to appraise any shipyard investment.

In addition to our industry expertise, we also draw on the financial expertise of our in-house investment services, environmental and civil engineering teams, with whom we have developed close working relationships across a range of shipyard projects.

We are able to undertake most aspects of shipyard due diligence including:
- Market appraisal
- Equipment appraisal
- Facilities condition survey
- Business plan validation
- Shipyard valuation

Our expertise

Mark Spicknall
SHIPYARD BUSINESS APPRAISAL
A naval architect with over 35 years’ experience of shipyard management and business practices, Mark Spicknall has the breadth of knowledge necessary to assess the value of ongoing shipyard businesses.

Cliff Ohl
INFRASTRUCTURE APPRAISAL
A Chartered Civil and Structural Engineer with 25 years’ experience in marine works design and construction, Cliff Ohl covers all aspects of specialist shipyard infrastructure necessary for due diligence.
Business case development & funding
Advice backed by industry knowledge

Throughout shipyard development we provide financial advice services – ranging from initial analysis of potential projects and determining whether you should proceed with the opportunity; to structuring a bankable business case and sourcing funding. We work on green field investments and assess defined projects requiring an independent opinion.

As a signatory to the FAST Standard for Financial Modelling, we provide financial modelling services that meet the international standards of the financial sector.

Our expertise

Patrick van Dijk
BUSINESS CASES AND TRANSACTIONS
With over 20 years as a financial advisor structuring large privately financed projects plus PPP, Patrick van Dijk has experience of bankable shipyard business cases and project financing.

Stuart White
SHIPYARD ENGINEERING OPTIMISATION
A chartered civil engineer with 20 years’ experience across the full spectrum of shipyard infrastructure, Stuart White is a specialist in shipyard development scheduling to maximise early revenues at minimum investment.

Services we provide include:
- Financial feasibility analysis
- Business case structuring
- Cost benefit analysis
- Bankability analysis
- Investor and financier engagement
- Project valuation
- Transaction advisory
- Financial modelling
For shipyards, there are great benefits in environmental sustainability, not least the economic benefit in being an attractive partner of choice for your customers, who require a socially responsible supply chain.

As an organisation whose values centre on enhancing society, our teams at Royal HaskoningDHV incorporate solutions to environmental and sustainability challenges throughout our planning and development processes – delivering day-to-day operational cost savings.

Key environmental and sustainability challenges for shipyards and naval bases:
- Air quality, noise, light pollution, contamination
- Energy and water efficiency
- Transportation and traffic
- Waste management and recycling
- Safety risks to third parties
- Dredging
- ‘Beyond the gate’ – social and community initiatives
- Optimal environmental location and aesthetics
Our expertise

Sian John
MARINE ENVIRONMENTAL IMPACT ASSESSMENT
An acknowledged expert in EIAs for coastal developments, Sian John has over 30 years’ experience in multi-disciplinary maritime projects including as specialist advisor to the UK’s Marine Management Organisation.

John Drabble
EMISSIONS AND PERMITTING
With over 30 years’ experience in the management of emissions from infrastructure and transportation sources, John Drabble is an expert in air quality, occupational safety and environmental permitting.
Royal HaskoningDHV is an independent, international engineering and project management consultancy with more than 137 years of experience. Our professionals deliver services in the fields of aviation, buildings, energy, industry, infrastructure, maritime, mining, transport, urban and rural development and water.

Backed by the expertise and experience of 6,000 colleagues across the world, we work for public and private clients in over 140 countries. We understand the local context and deliver appropriate local solutions.

We focus on delivering added value for our clients while at the same time addressing the challenges that societies are facing. These include the growing world population and the consequences for towns and cities; the demand for clean drinking water, water security and water safety; pressures on traffic and transport; resource availability and demand for energy and waste issues facing industry.

We aim to minimise our impact on the environment by leading by example in our projects, our own business operations and by the role we see in “giving back” to society.

By showing leadership in sustainable development and innovation, together with our clients, we are working to become part of the solution to a more sustainable society now and into the future.

Our head office is in the Netherlands, other principal offices are in the United Kingdom, South Africa and Indonesia. We also have established offices in Thailand, India and the Americas; and we have a long standing presence in Africa and the Middle East.

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