Dry Docks key facilities in Smart Shipyards
Dry Docks tailored to your shipyard

Royal HaskoningDHV has over 70 years’ experience in shipyard planning and design. Our services address all types of development in dry dock facilities around the world, both for shipbuilding and ship repair. We drafted the British Standard for shipyard design, including dry docks and dock gates.

Our experts lead the world in the design of new dry docks and the modernisation of existing facilities. We have extensive experience of all components including gates, pumps, dock arms, hauling-in systems, and piped and electrical services. Our expertise extends across the whole life cycle of a dry dock project, from inception through to construction, installation, operation and ultimately upgrading and expansion to meet new operational demands.

Our project experience covers dry docks for both commercial and naval vessels. In shipbuilding multiple launches per year can be achieved, whilst in ship repair the annual throughput can be up to 50 vessels.

Any size and function in any location

We work closely with each of our clients so that we fully understand all operational requirements and deliver economical, innovative and state-of-the-art solutions to achieve your objectives.

Size
- Width from 10m to 180m
- Depth from 5m to 20m
- Length from 100m to 550m

Ground conditions
- Marine clay – very soft
- Sand – permeable
- Limestone – karstic features
- Granite – very hard

Locations
- Bahrain
- Brazil
- Canada
- Egypt
- Gibraltar
- Greece
- India
- Indonesia
- Iran
- Korea
- Malaysia
- Mexico
- Netherlands
- New Zealand
- Oman
- Qatar
- Saudi Arabia
- Singapore
- South Africa
- Spain
- Sri Lanka
- Thailand
- The Philippines
- Turkey
- UAE
- UK
- Min 0.2m – max 10m

Tidal range
- Min 0.2m – max 10m

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Designing key components

Gates – entrance and intermediate
At Royal HaskoningDHV, we’re proud to have designed over 150 gates worldwide in the past 70 years, often of unprecedented size and involving great innovation.

We have a proven track record across the full spectrum of gate sizes and operational features for both new and replacement gates. We combine the latest finite element analysis, in-house software and calculation methods to deliver complete confidence in each gate’s structural integrity and operational characteristics.

Our capabilities cover all gate types including:
- Dry Dock Entrance Gates
  - Flap Gates: box, cantilever, propped
  - Caisson Gates: spanning, gravity
  - Mitre Gates
- Dry Dock Intermediate Gates
  - Inverted ‘Y’
  - Lambda
  - Stop Log

Dock floors
We determine the most suitable, cost effective type of dock floor, addressing both the significant hydrostatic uplift pressure on the empty dock floor as well as the very large loads imposed during shipbuilding or ship repair.

We design all types of dock floor including:
- Drained floor (a reinforced concrete slab with a sub-floor drainage system)
- Gravity floor (a very thick mass concrete slab)
- Anchored floor (a reinforced concrete slab with piling or ground anchors)
- Hybrid floor (gravity/drained and/or anchors)

We also design dock block solutions to support the vessels tailored to suit the intended work in the dry dock.

Dock Walls
In addition to the structural retaining wall function, dock walls have to accommodate numerous operational components at the dock copes.

We determine the most suitable features in the dock cope structure including:
- Crane rails and power supplies
- Dock arm supporting rails, power supply and operator access
- Access towers for personnel to reach ships
- Mechanical piped services and take-off points
- Electrical distribution and power take-off panels
- Hauling-in system track
- Winches, capstans, sheaves and bollards
- Personnel access to and emergency egress from dock floor

Multi-purpose pumphouses
We determine the most economic type and size of pumps to be housed for every dry dock according to their size and function.

Pumphouses can be very large and complex structures containing very large dewatering vertical mixed-flow centrifugal type pumps and the ancillary pumps comprising drainage/striping pumps, fire, ballast, contaminated water and sub-floor drainage pumps.

Medium size dry docks might require submersible mixed flow ‘propeller type’ pumps, while small dry docks might only require submersible centrifugal type pumps.

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Operational features – increasing productivity

An efficient and sustainable dry dock requires operational features that are highly efficient, well-designed and fully integrated.

At Royal HaskoningDHV we can aid in the design and incorporation of a range of operational features, including dock arms, hauling-in systems, communications and control systems and much more.

These elements improve productivity, efficiency and even energy-saving.

Dock arms
We deliver performance specifications for the dock arms, or ‘travelling stages’, that provide a working platform alongside any section of a docked vessel to enable work such as blasting and painting.

Dock floor access
Vital for efficient operations is the access for personnel, materials and equipment to and from the dock floor. We design the most appropriate facility such as internal or external access ramps and lifts.

Hauling-in systems
A well-planned vessel hauling-in system is essential to the efficient operation of a ship repair dock, where speed of docking and un-docking is crucial. All aspects of the hauling-in system are addressed, including hauling-in winches, steel trolleys on rails built into the cope structure, capstans, bollards, and the winch control system.

Mechanical piped services
We design the piped services distribution system needed for efficient dry dock operation. This includes the sources of services such as pumphouses / pumps to feed fire and ballast water systems, compressors for the compressed air system and bottled gas compounds to feed the gas systems.

Electrical services, communications and control systems
We design electrical services’ distribution systems including substations, switchgear and transformers including the dock side power take-off points. An important focus is the provision of state-of-the-art communications and control systems for the safe and efficient operation of the dry dock.

Contaminated water treatment
We plan and design facilities and processes to capture, transfer and then treat contaminated water generated within a dry dock.
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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