

# Engineering Services



Wärtsilä are the leading ship designer in the industry. Our unique expertise, knowledge and global footprint allow us to turn our customers' vision into reality and maximize their profit and asset values. Over 4000 vessels built, including the most advanced LNG powered ships, prove the competitive edge we give our customers.

## WÄRTSILÄ EQUIPMENT INTEGRATION

- A single supplier for the entire design process is more efficient and the customer can relate to one single company for the whole design process.
- Efficient planning, coordination, execution and documentation.
- WSD can access technical information at an earlier stage than external designers, having better knowledge of Wärtsilä equipment due to experience and internal trainings.
- Possibility to influence the supplier scope in time if any adjustment is needed.
- Established good relations with the equipment supplier leads to better cooperation and communication.
- Feedbacks across different disciplines are more efficient when exchanged within the same company.

## SHIP DESIGN ENGINEERING SERVICES

- Wärtsilä Ship Design is flexible: depending on customer's needs our project scope can vary from a simple vessel's modification or equipment integration to a complete project.
- Wärtsilä Ship Design is able to manage the entire project – from FEED to class and flag approvals – to engineering the installation and supervising the construction.
- Upgrades
- Modifications
- Conversions
- Shipyard design support: e.g. engine room Basic and detail design.



## EXPERIENCE & RECENT SUCCESSES

### TARBIT VIKING



Designed by Wärtsilä Ship Design and built in 2007, Wärtsilä performed the entire conversion of the chemical tanker; the project consisted of the conversion of the diesel engines to dual-fuel; the installation of the entire LNG storage and handling system including the automation modifications. Tarbit Bit Viking is now sailing with very low NO<sub>x</sub>, CO<sub>2</sub> and zero SO<sub>x</sub> and PM emissions.

### WIND INNOVATION



Wärtsilä has converted a Research/Survey Vessel into a DP2 Walk-to-work Offshore Wind Support Vessel. The vessel has been upgraded with accommodation and hotel facilities for 125 people, and a heave compensated gangway. Our scope of supply was feasibility study, basic and detail design, yard specification, tender documentation and site supervision.

### ILE DE RE



RO-RO vessel converted to cable layer, suitable to handle any type of underwater cable. Wärtsilä Ship Design ensured the feasibility of the concept and prepared the basic design and tender documentation package, including the yard specification.

#### EVALUATION PHASE

##### PRELIMINARY PLANNING AND ADVICE

- Reviewing tender requirements for charter with owner
- Evaluating implications on the current design for defining WSD scope of work

##### FEASIBILITY STUDY/PRE CONTRACTUAL PHASE

- Conceptual/preliminary design engineering
- Evaluation of commercial and technical advantages/disadvantages of different options
- Preliminary specification/documentation for charterer tendering
- Support for GO/NO-GO investment decision

##### TENDER DOCUMENTATION FOR SHIPYARDS

- Tender-grade initial design
- Preparing technical specifications
- Preparing documentation for tendering
- Assistance with defining scope of work

##### PROCUREMENT DOCUMENTATION

- Preparing technical specifications for purchase purposes

##### PLAN APPROVAL /CONSTRUCTION/SUPERVISION

- Detail design
- Reviewing third parties documentation
- Plan approval, validation of the basic and detail design, as well as the production drawings
- Mid-life inclining/DWT tests
- Technical service and superintendent assistance

#### TENDERING AND DESIGN PHASE

#### BUILDING PHASE

##### APPLICATION EXAMPLES

- Lengthening
- Widening for capacity Increase
- Structural reinforcements
- Integration of new equipment — winches, towers, cranes, etc.
- Upgrade of propulsion and machinery systems:
  - for fuel saving or for environmental compliance: e.g. ducts, fins, propeller tuning, scrubbers, LNG/dual fuel propulsion
  - for higher demand: e.g. in speed, bollard pull, manoeuvring, dynamic positioning, etc.
- Shipyard design support: e.g. engine room basic and detail design

##### ENGINEERING SERVICES SCOPE

- Inspections, proposals, feasibility studies
- Shipyard tendering
- Basic design
- Detailed design
- Supervision, on-site support