

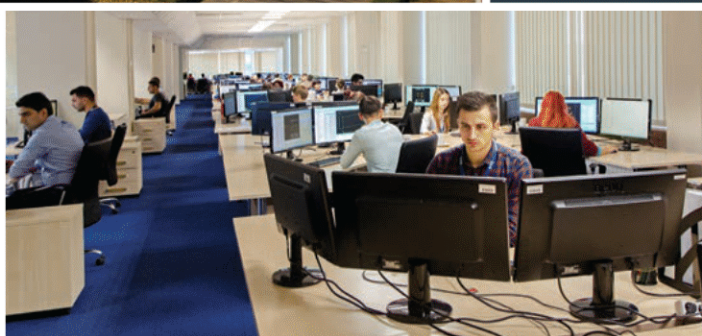
**COST-EFFECTIVE AND SUSTAINABLE
DESIGN & ENGINEERING FOR THE MARINE INDUSTRY,
WORLD-WIDE**



ICE Main Design Office



Aerial View of ICE's Laboratory and Design Office Complex



ICE's office in Croatia opened by HRH Prince Edward in May 2019



ICE's training centre opened by HE Leif Arne Ulland, the Norwegian Ambassador to Romania in 2007

Founded on British ship design and shipbuilding know-how, International Contract Engineering ("ICE") is one of world's largest independent ship design consultancies. Clients include energy industry contractors, naval shipbuilders and commercial shipyards building or converting a wide range of ships and offshore platforms.

ICE ensures quality and cost-effectiveness through experienced project teams, state-of-the-art software, modern IT technology and advanced project management skills. Most ICE employees have degrees in naval architecture or in engineering disciplines such as structural

analysis, mechanical engineering, EIT, HVAC, IT, etc. As owner of one of Europe's largest ITTC-recognized hydrodynamic test facilities, ICE has a wealth of experience in optimising ships' hulls and propellers to ensure a high degree of energy efficiency.

We welcome any opportunity to make ICE's expertise available to former and new clients. We have the capacity and experience to do even very large projects competitively and on time. Our many repeat clients are the best proof of the quality of our services. We deliver Engineering Certainty!

Steinar Draegebo, OBE
Chairman & CEO
s.draegebo@icedesign.info

Jason Nunn
Business Development Director
jason.nunn@icedesign.info

Renée Caley
Marketing Manager
renee.caley@icedesign.info

CRUISE VESSELS, YACHTS & FERRIES

ICE has participated in a number of passenger ship design projects ranging from the world's largest cruise vessels to fast ferries, RoPax ferries and luxury yachts. ICE has been awarded contracts for structural analyses, HVAC design, design of accommodation and public spaces, EIT design, etc., for leading shipyards in France, Germany, Finland and Japan.



Queen Mary 2 Ocean Liner



Passenger / Ro-Ro Ferry



Crystal Endeavor and Crystal Serenity

COMMERCIAL MARINE

ICE has huge experience ranging from conceptual design through basic and Class design to detail design and preparation of production information, for a wide range of ships for Owners and yards world-wide. ICE is familiar with the rules of most IACS Classification societies. ICE's senior management has hands-on shipyard experience.



8,000 cbm LNG Bunkering Vessel



84,000 m Fully Refrigerated LPG Carrier



7,500 cu.m LNG / Ethylene / LPG Carrier



40,000 dwt Oil / Chemical Tanker IMO Type 2



Ice-breaking Container/Cargo Vessel

NAVY AND COAST GUARD

ICE has provided basic and/or detail design for ships for several NATO and other navies and coast guards, including basic design of a missile corvette, detail design for air defence destroyers and aircraft carriers for the UK, OPVs for the Middle East and the Americas and basic design assistance for vessels for the US Navy.



Queen Elizabeth Class Aircraft Carriers (QEC)



Ocean Patrol Vessel (Oman)



Mid-Shore Patrol Vessel (Canadian Coast Guard)



Thames Class Offshore Patrol Vessel OPV (with and without optional hangar)



OFFSHORE ENERGY

ICE's experience includes 40+ FSO/FPSO projects (new construction, conversions and various studies), jack-up drilling platforms, drill ships, semi-submersible drilling rigs, self-elevating vessels for wind turbine installation, well intervention vessels, converter platforms, etc. We are familiar with Brazilian, UK and Norwegian (NORSOK and PSA) regulations.



The Ondina drill ship being assembled by Kawasaki Heavy Industries in Japan.



Drill Ship (Brazil & Japan)

APPROVAL IN PRINCIPLE



G-1600-SM/W Generic FPSO Hull



"Seajacks Hydra" serving the "SylWin Alpha" windfarm transformer platform. ICE contributed substantially to the design of both platforms.

Consulting, Supervision & Project Management

ICE is independent, with no ties to any shipyard, equipment supplier, classification society or EPC contractor. We are therefore ideally suited to give unbiased expert advice and assistance, including for cost-effective retrofit of exhaust gas scrubbers and ballast water treatment (BWT) systems.

In addition to design and engineering assignments on a lump sum or reimbursable basis, we support clients with a broad range of management, supervision and consultancy expertise and resources. These include project management, interface management, document control, technical translation, planning, progress monitoring and cost control.

We have also provided expert witness services to major international arbitration and litigation cases, and plan approval and yard supervision on behalf of Owners.

Calling on its substantial experience in managing complex projects, ICE assists clients with bid evaluations, contract negotiations, technical verification, risk analyses, and procurement support.

Harsh Environment Semi-Submersible Drilling Rig



Antarctic Supply Research Vessel (ASRV) RSV Nuyina –
yard supervision on behalf of Owner



Floating Production Storage and Offloading (FPSO) Vessel
During Commissioning in Dubai

PROTECTING THE ENVIRONMENT

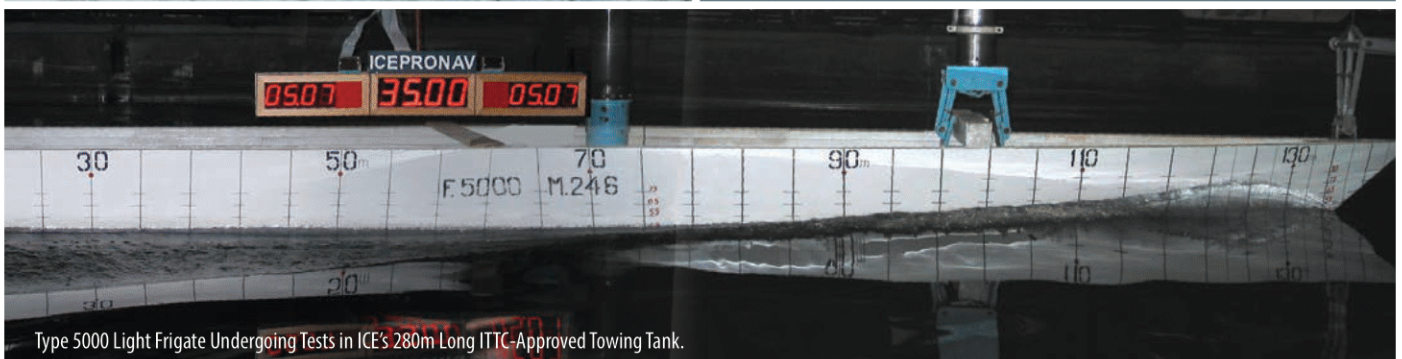
By designing vessels and platforms for offshore wind farms, optimising hull forms and incorporating fuel saving and low-emission fuel solutions, ICE's naval architects help its clients reduce pollution and save costs. Cost-effective selection and installation of scrubbers and ballast water treatment (BWT) systems also helps to protect the environment and meet the newest IMO regulations for ECA and world-wide trading.



Wind Turbine Installation Vessel Installing the First Offshore Wind Farm in US Waters



Service Operation Vessel (SOV) with Walk-to-Work capability



Type 5000 Light Frigate Undergoing Tests in ICE's 280m Long ITTC-Approved Towing Tank.



BWT Retrofit Project Performed by ICE - 147,000 cu m LNG Tanker



World-wide Services – Proven Capabilities

ICE has clients in most shipbuilding and offshore oil & gas regions, including in Asia, the Americas, the Middle East and throughout Europe.

ICE is a Corporate Partner of the Royal Institution of Naval Architects (RINA).

ICE's ISO 9001 Quality Management System is certified by DNV and has been successfully audited by several international energy companies and major EPC contractors.



The scope of our experience

Drill ships

Offshore wind turbine installation vessels

SOV and CSOV vessels

Plan approval & Yard supervision

Passenger cruise ships, ROPAX ferries and mega yachts

Oil and chemical tankers

Gas Carriers (LNG and LPG)

FSRU & FLNG Vessels

Floating Dry Docks

Oceanographic and seismic research vessels

Other commercial vessels ranging from fishing vessels to VLCCs

Frigates, corvettes, OPVs and other Navy and Coast Guard vessels

FPSO, FSO and FPU vessels

Semi-submersible and jack-up drilling platforms

Offshore production platforms

Retrofits for scrubbers, BWTS, dual fuel, air lubrication

3D Laser Scanning

Design and Engineering

Preliminary ship design

Hydrostatic calculations

Hydrodynamic calculations

Layout design

Hull design and 3-D modelling

Structural design

Weight calculations

Mechanical systems design

Stress analysis

HVAC systems design

Power balance and short circuit calculation

Classification drawings

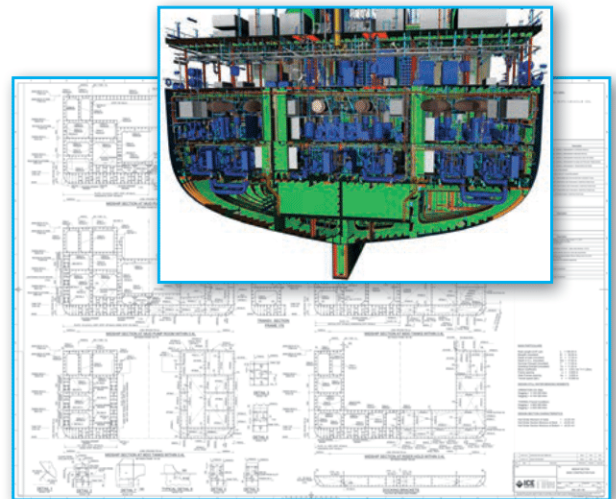
Detailed designs

Material take-off

Bills of materials

Pipe isometrics and sketches

N/C nesting and plate cutting details



Consultancy and Project Management

Conceptual design development

Project management

Cost analysis

Procurement assistance

Production methods advice and analysis

Test and test trials

measurement

Development of trim and stability books

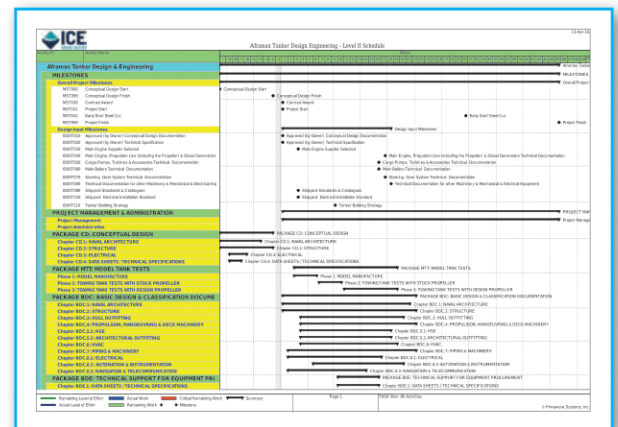
Commissioning assistance

Shipyard layout planning

Build strategy development

Expert witness services

Risk analyses



Research and Development

Resistance and power prediction

Lines development

Hull optimization

Sea keeping prediction

Manoeuvrability analysis

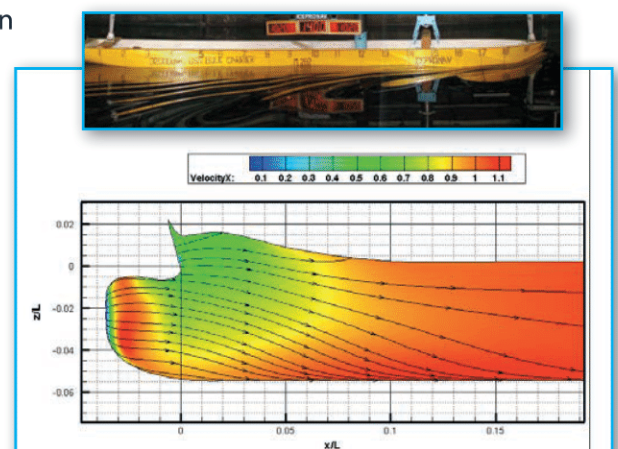
Cavitation analysis

Vibration analysis

Noise prediction

Sea trials assistance

Commissioning assistance



Contact us at:

ICE Marine Design Group

marketing@icedesign.info

contact@icedesign.info

www.icedesign.info

Tel: +44(0) 1624 623 190

Fax: +44(0) 1624 628 297

ICE Engineering Services UK Limited

A company registered in the UK

Reg. no. 05981929/2006

3rd Floor, 86-90 Paul Street

London, EC2A 4NE



International Contract Engineering Limited

A company registered in the Isle of Man

Reg. no. 115372C/2006

19-21 Circular Road, Douglas

Isle of Man IM1 1AF, British Isles



ICEPRONAV Engineering SRL

A company registered in Romania

Reg. no. J17/256/2006

19A Portului Street, Galati

800025 Romania



Also offices/companies in Cyprus, Croatia
and Norway.

International Contract Engineering (ICE)

www.icedesign.info



Passenger Cruise Vessel



Type 45 Destroyer



Floating Storage and Offloading (FSO) Vessel



ENGINEERING CERTAINTY