



SCOPE OF SUPPLY

	NAVAL	CRUISE LINERS	OFFSHORE
Air distribution and extract systems	✓	✓	✓
HVAC systems	✓	✓	✓
Assessment of citadel pressurisation requirements	✓		
NBC filtration systems/CBRN Colpro	✓		
Refrigeration systems	✓	✓	✓
Service, maintenance and refits	✓	✓	✓
Post contract design support	✓	✓	✓
Summer and winter habitability trials	✓	✓	✓

CASE STUDIES

QUEEN MARY II

APPLICATION: CRUISE SHIP
LOCATION: FRANCE
EQUIPMENT: 4 PACKAGED CHILLERS

- ▶ Two low temperature freezium chillers cool secondary fluid to -33°C
- ▶ For freezers and stores to maintain temperatures of -25°C
- ▶ Two chillers cool propylene glycol to -10°C
- ▶ To cool chill stores, wine cellars and galley refrigerators
- ▶ Low temperature chillers provide 186kW cooling capacity
- ▶ Glycol chillers provide 1200kW and 600kW cooling capacity

FAST ATTACK CRAFT FLEET

APPLICATION: NAVAL
LOCATION: GREECE
EQUIPMENT: HVAC SYSTEM & CHILLED WATER REFRIGERATION PLANT

- ▶ Chilled water refrigeration plant
- ▶ 210kW chiller duty
- ▶ Three sets of compressors, condensers and evaporators
- ▶ Any two can be operational at one time with one standby
- ▶ Air treatment units, fan coil units, electric air heaters, steam humidifier units and air filtration units supplied
- ▶ Commissioned by J & E Hall
- ▶ Conducted Harbour Acceptance Trials, Sea Acceptance Trials and Habitability Trials



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J & E Hall MARINE SYSTEMS

J & E HALL'S MARINE SYSTEMS DIVISION PROVIDE MARINE SECTORS WITH PROFESSIONAL REFRIGERATION AND HVAC SERVICES FROM DESIGN AND SUPPLY TO SUPERVISION OF INSTALLATION, COMMISSIONING AND SEA TRIALS.

AS A **MEMBER OF THE DAIKIN MARINE GROUP**, WE CAN ALSO SUPPLY A PORTFOLIO OF PROVEN HVAC SYSTEMS, CHILLERS AND CONDENSING UNITS FOR ALL GROUP COMPANIES AS WELL AS OUR OWN.

J & E Hall has extensive experience in designing HVAC and refrigeration systems for a wide variety of marine projects including ships, submarines and offshore platforms. We provide accurate temperature control for operational spaces and accommodation areas and ensure suitable conditions can be maintained in cargo storage compartments and machinery spaces.

SERVICES PROVIDED:

- ▶ CONCEPT DESIGN
- ▶ EQUIPMENT SUPPLY
- ▶ SHIP INSTALLATIONS
- ▶ COMMISSIONING
- ▶ SUPPORT THROUGHOUT THE LIFETIME OF THE PLANT

CONCEPT DESIGN

J & E Hall has the engineering and technical expertise to provide a complete end-to-end marine HVAC and refrigeration design service. We develop innovative solutions using standard or bespoke technology and have established a reputation for overcoming complex HVAC and NBCD / CBRN challenges.

We have completed many of the world's prestigious naval contracts including Royal Navy Type 22 & 23 Frigates, Queen Elizabeth Aircraft Carriers, Hellenic Navy Roussen Class Fast Attack Crafts and Brazilian Navy Amazonas Class Offshore Patrol Vessels.

J & E Hall also provide a post contract design support service, used by MOD (UK). We were the original authors of the naval engineering standard for HVAC systems on surface ships – DEFSTAN 02-102.

DESIGN CAPABILITIES:

- ▶ HVAC SYSTEMS IN ACCORDANCE WITH RELEVANT REGULATIONS
- ▶ AIR CONDITIONING PLANT AND REFRIGERATION SYSTEMS
- ▶ NBCD / CBRN AIR FILTRATION SYSTEMS
- ▶ POST CONTRACT DESIGN SUPPORT



EQUIPMENT SUPPLY

J & E Hall supplies the marine sector with an extensive range of HVAC systems, chillers and condensing units.

All equipment is carefully selected and manufactured to provide exceptional durability and reliability and our products have been proven in applications world-wide.

EQUIPMENT PROVIDED:

- ▶ HVAC SYSTEMS INCLUDING AIR HANDLING UNITS, AIR FILTRATION UNITS, FANS, HEATERS, COOLING COILS, DUCTWORK, VALVES, FILTERS AND AIR TERMINALS
- ▶ CHILLED WATER REFRIGERATING PLANTS
- ▶ COMPRESSORS AND CONDENSING UNITS
- ▶ COLD STORE REFRIGERATION EQUIPMENT
- ▶ DOCKSIDE CHILLING UNITS
- ▶ PLATE HEAT EXCHANGERS
- ▶ SCADA SYSTEMS
- ▶ SPARE PARTS



COMMISSIONING & SEA TRIALS

Once installation has been successfully completed, our team of skilled engineers work together with customers to undertake rigorous harbour, sea and habitability trials in accordance with the most demanding standards whilst safely commissioning equipment.



NAVAL

J & E Hall supply HVAC and refrigeration systems for all types of naval vessels.

We understand the challenges faced in such a unique environment and systems are designed to operate in difficult conditions. Particular attention is given to the selection of equipment in relation to shock, vibration, space and noise requirements.

CRUISE LINERS

J & E Hall offer a full range of products and services for cruise ships including refrigeration systems for cold stores, freezer stores, galleys and cooling key electronic components.

We supply HVAC systems and chilled water refrigerating plant and can supply, install and commission domestic refrigeration systems on board major cruise liners.

OFFSHORE

J & E Hall provide a comprehensive range of products and services to the offshore and marine industries.

- ▶ Performance surveys
- ▶ Detailed design
- ▶ Supply
- ▶ Installation and commissioning
- ▶ Maintenance and repair of HVAC and refrigeration systems

J & E Hall also build and install zone 1 refrigerated containers.