

# Pump Room Systems

Pump Systems

# Pump room systems

One supplier - one point of contact - one responsibility

Our experience is advantageous to customers. Today we offer the widest range of pumps and pumping systems for tankers based on more than 100 years of successful pump business. Thousands of ships equipped with our pumps are in daily operation worldwide – benefiting from our high quality products and widespread service network.

Our extensive experience, coupled with an ongoing research and development programme, mean our products all latest improvements in modern tanker design and operation. As a company we are in a unique position to accomplish all expectations in the market.

For crude oil and product tankers with few cargo segregations, traditional pump room systems have unmatched performances.

## System supplies – typical scope:

The Cargo Handling System may come as an integrated package consisting of:

- Cargo pumps
- Drivers – steam, electric or diesel based
- Steam condenser
- Stripping system
- Stripping pump
- Tank cleaning pump
- Ballast pumps
- Bilge pump
- Transmissions / deck seal units
- Valves / actuators
- Control and monitoring system

Important features of the system are compact and space-saving configurations for optimal pump room layouts – combined with high operational efficiency.

## Other potential Hamworthy deliveries:

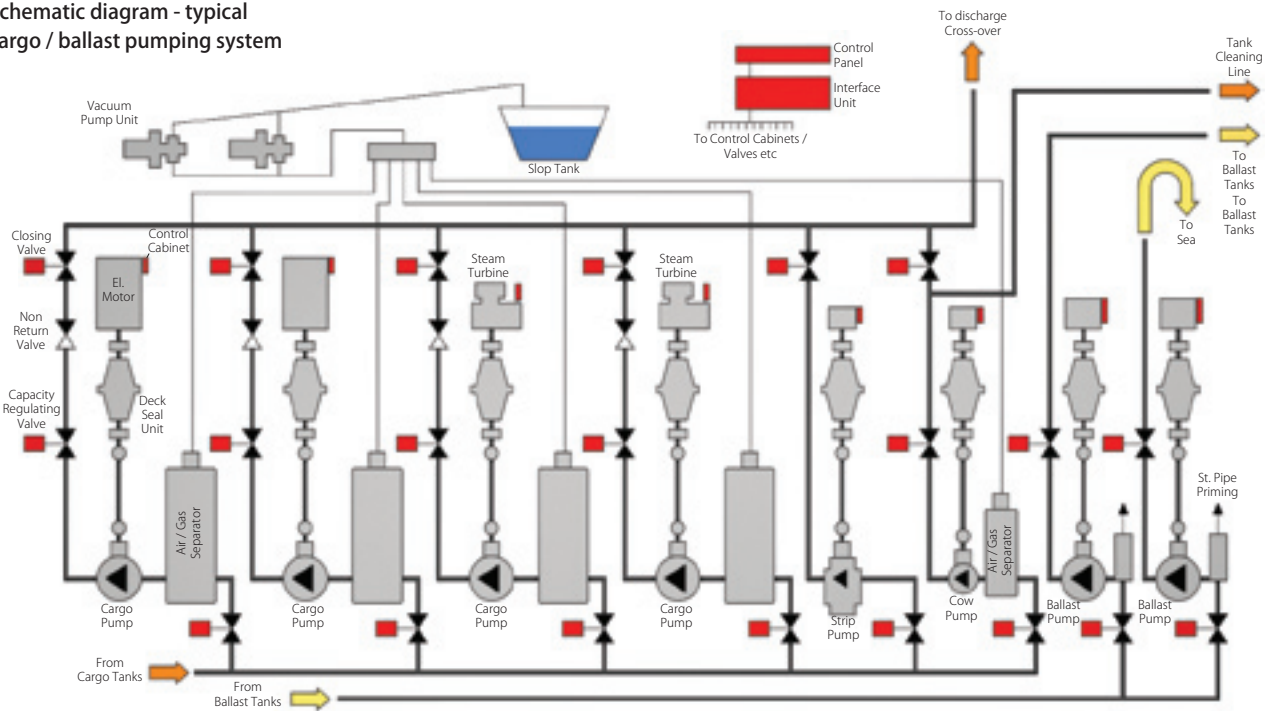
- Engine room pumps
- Gas and inert gas systems
- Sewage treatment plants
- VOC recovery systems

# General system description

The traditional Pump Room System (PRS) is characterized by a separate room for pumping equipment located between the engine room and the cargo hold – an arrangement that provides easy access to all key-components for regular inspection and maintenance.

The dry-installed pumps therein are driven by dedicated prime movers located in the engine room in a vertical or horizontal arrangement. Gas-tight shaft seals prevent any hydrocarbon gasses from entering the engine room.

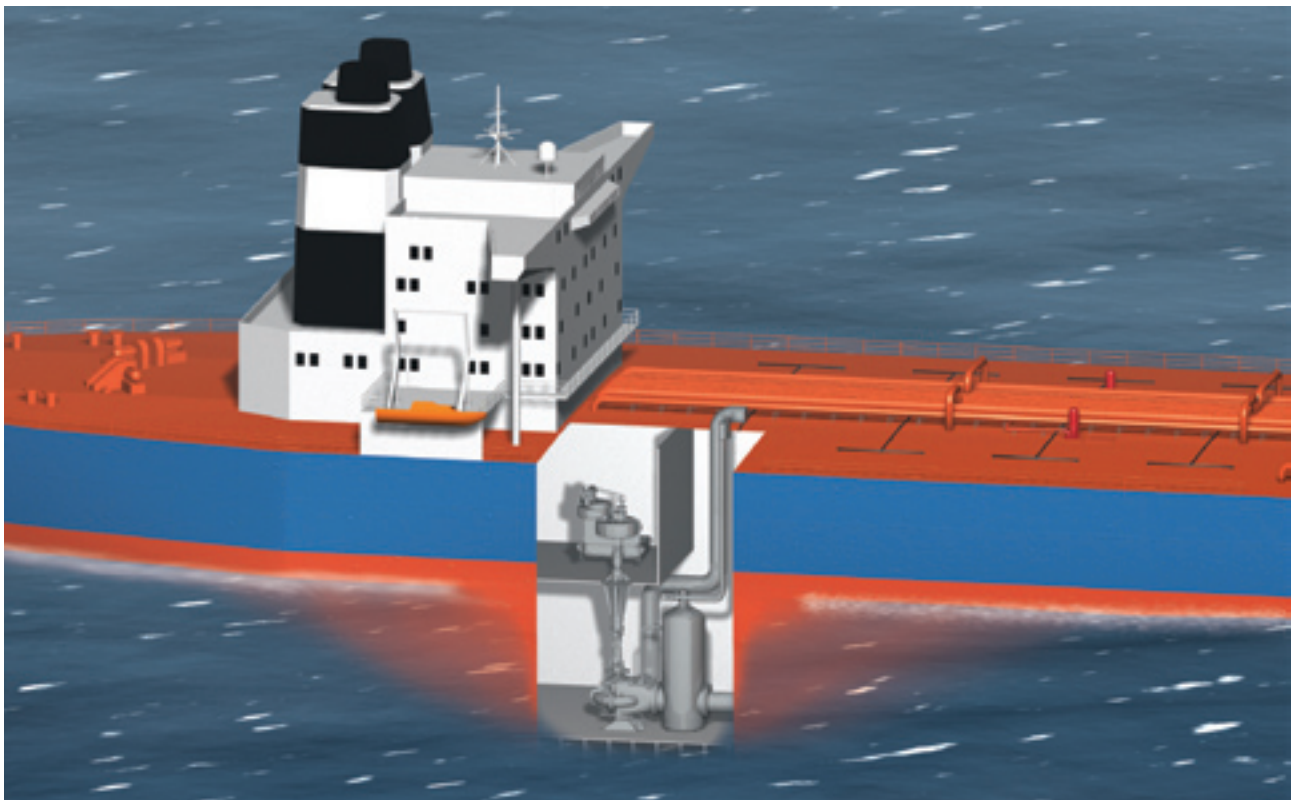
## Schematic diagram - typical cargo / ballast pumping system



An automatic stripping system is normally supplied with the cargo pumps and occasionally, also with the ballast pumps depending on duty. When required cargo and ballast valves with matching actuators can also be supplied.

The complete pumping process can be controlled and monitored either automatically or manually remotely from the cargo control room or bridge. The system is prepared for easy integration with other systems onboard.

## The pump room



Panamax Crude Oil Tanker, Nanjing Oil



Delivered from Dalian Shipyard 2001

Aframax Shuttle Tanker, Teekay Shipping



Delivered from LCAF Group 1999

## Main pump room system components

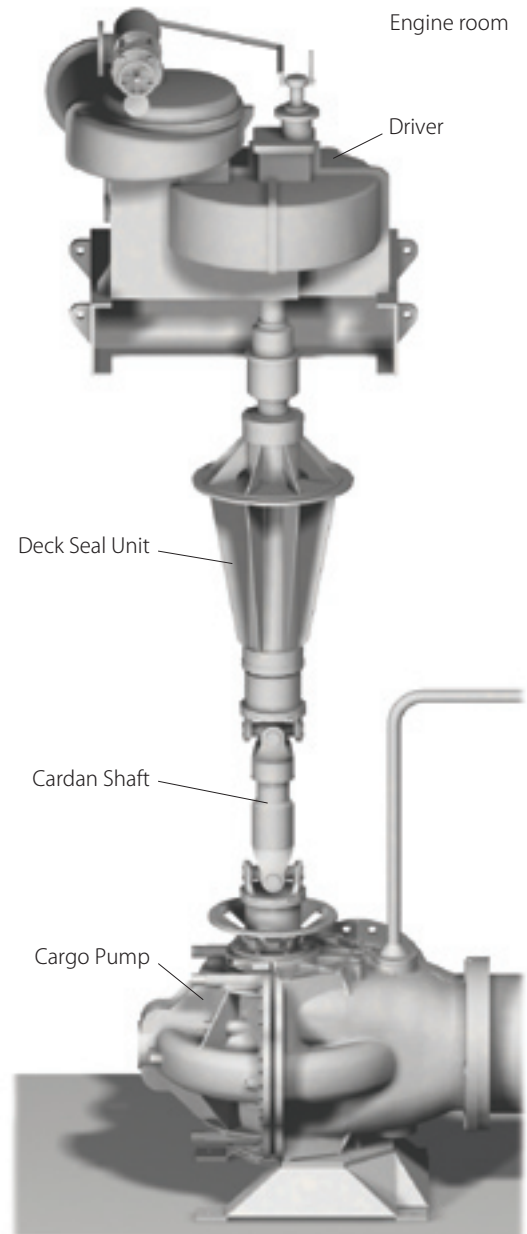
The **CB cargo and COW pumps** are specially designed for pumping crude oil and oil products at nominal heads and capacities from 400 to 6500 m<sup>3</sup>/h in vertical or horizontal orientations. The pumps are of exceptionally compact design and with various nozzle configurations. All components are sturdy and richly dimensioned to obtain long-life trouble-free operation. All rotary elements are properly balanced to ensure safe and reliable operation. The pumps are equipped with double seals and barrier fluid and on request, also leakage detection.

Standard materials:

Pump housing: Ni-Al-bronze / nodular cast iron / stainless steel

Impeller: Ni-Al-bronze / stainless steel

Shaft: Stainless steel (Duplex)





## Main pump room system components

**The CA ballast pumps** are specially designed for pumping seawater at capacities up to 6500 m<sup>3</sup>/h in vertical or horizontal orientations. The CS range benefits from the same design characteristics as the CB range.

Standard materials:

Pump housing: Ni-Al-bronze / bronze

Impeller: Ni-Al-bronze

Shaft: Stainless steel (Duplex)

**The stripping pump** of electrically driven screw type is intended for stripping pipelines, cargo pumps and separators only.

The TV and TH transmissions are designed for maximum safety and reliability - with built-in flexibility to compensate for structural variations. The gas-tight sealing units prevent hazardous gasses from expelling into the pump room.

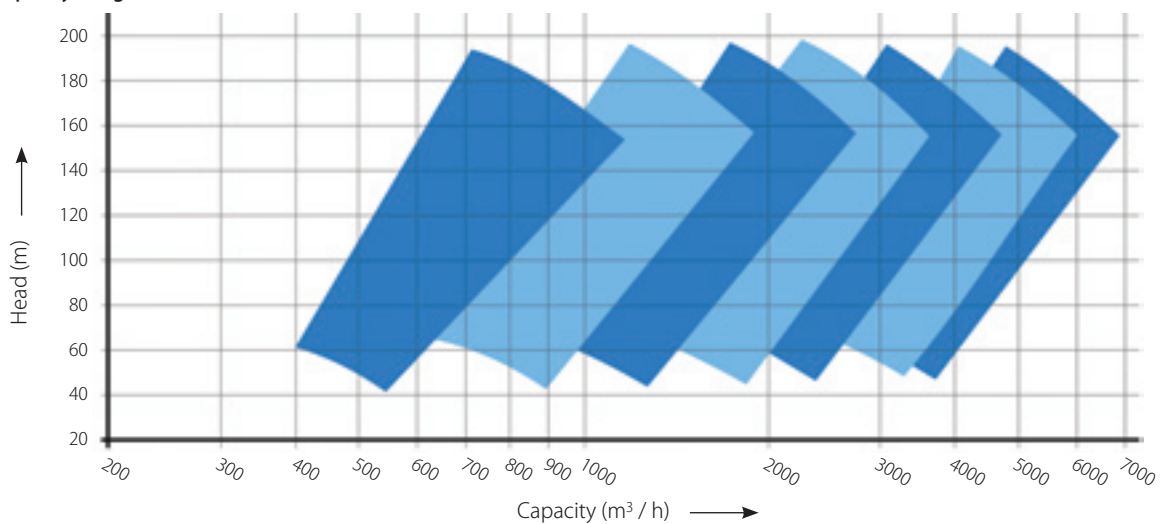
**The prime movers** are placed in the safe-zone of the engine room allowing free selection of alternative motors depending on power sources available onboard:

**Electrical motors** - flange or foot mounted of marine heavy-duty squirrel type of either single speed, two-speed or variable speed.

**Steam turbines** - of impulse single or multistage type with step-less adjustable speed assembled as one unit.

**Diesel engines** - of 2 or 4 stroke marine type with clutch.

Capacity Range



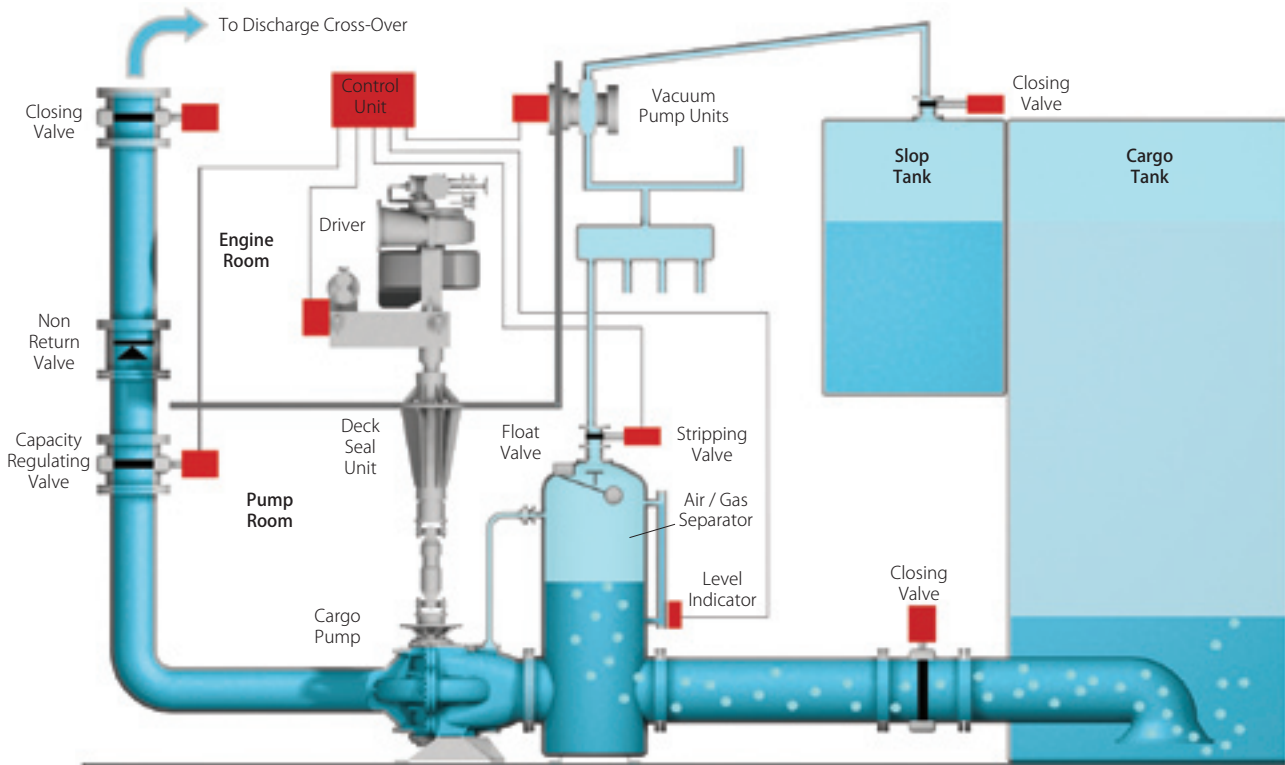


# The stripping system

PA Priming and capacity regulating systems convert any centrifugal pump into a self-primed unit. This ensures optimal discharge capacity and stripping performances to reduce total discharge time to an absolute minimum. As the system is capable of emptying the cargo tanks entirely no separate stripping pump is needed. The complete process is automatically or manually remotely controlled.

## Main components:

- Air/gas separator with built-in strainer
- Vacuum pump units
- Capacity regulating valve
- Control unit



4.2k DWT Product Tanker, China Shipping



Delivered from Guangzhou Shipyard 2005

Aframax Shuttle Tanker, Knutsen OAS



Delivered from Samsung 2004

# The control system

Type HCCS is a new generation of ship automation systems - with modular design prepared for expansions. It controls and monitors the complete cargo and ballast handling process as well as takes care of all alarm and shutdown functions for maximum safety. Control panels can be included for installation in the cargo control room. The system is prepared for easy interconnection at various levels with other control systems onboard. This forms an integrated total system onboard.

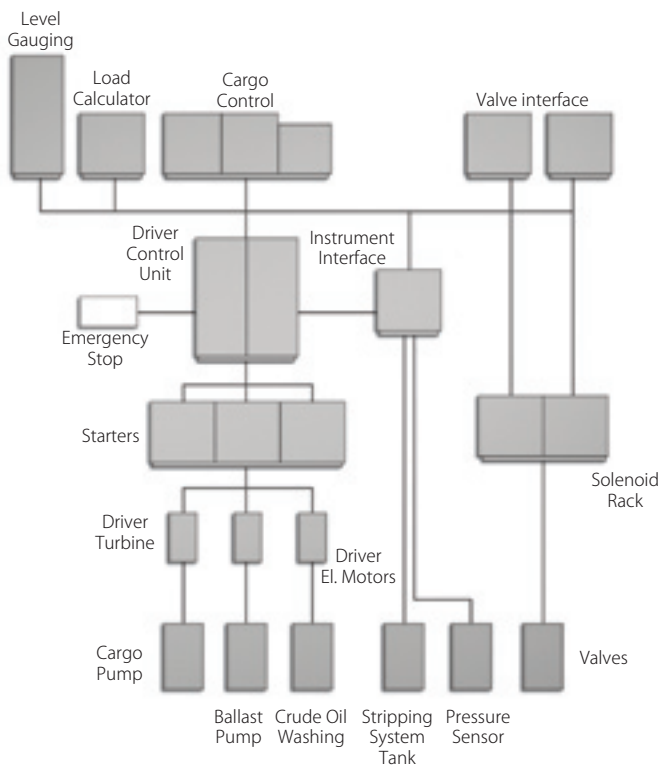
The Hamworthy valve control system ensures reliable operation of valves by controlling the volumetric flow. Automatic calibrations during operation ensure correct valve positioning without any costly wiring.

### Complete through-life support

With a worldwide support and service network Hamworthy is able to respond to breakdowns within a matter of hours.

From installation to in-service operation, Hamworthy is supported by dedicated and highly mobile engineers to ensure through-life operational security and support.

### Control system diagram





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