



Energy optimization

Clorius
CONTROLS



SOLUTION 1



Ultra Low Leakage valve
ANSI class IV <0,01%

Leading manufacturer of control valves

REDUCED TCO AND ENERGY OPTIMIZATION

How to avoid fluctuating engine temperatures, lack of control and frequent breakdown

BROEN Clorius Controls is a leading manufacturer of control valves, actuators, and comprehensive control solutions supporting various marine and industrial applications. Our products are designed for energy optimization, CO₂ reduction and fuel savings.

We know of challenges such as high internal leakage rate, temperature controllers with frequent breakdowns and lack of controls, causing fluctuating engine temperatures and possible thermal stress on the engines and higher workload for the crew. Through our 120 years of experience in temperature controls we have helped owners overcome these problems by using our innovation solutions.

Take control with BROEN Clorius Controls solutions

BROEN Clorius Controls offers

- A broad program of control valves, designed for energy optimization and getting maximum efficiency out of your engine room applications
- Advanced PID control options by default for stable temperature control, also during maneuvering
- Ultra low leakage valves with less than 0,01% leakage
- Easy installation and compact design delivered as a plug n' play solutions
- Fast and easy supply of spare parts – no need to keep on board.

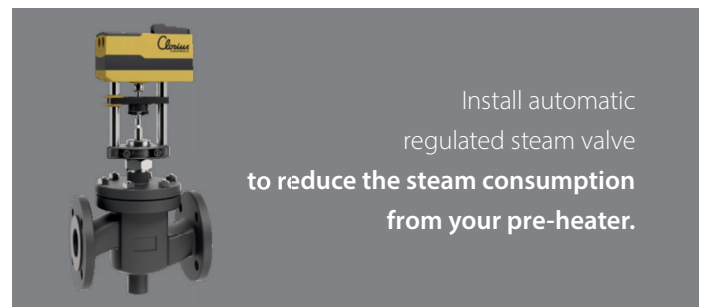
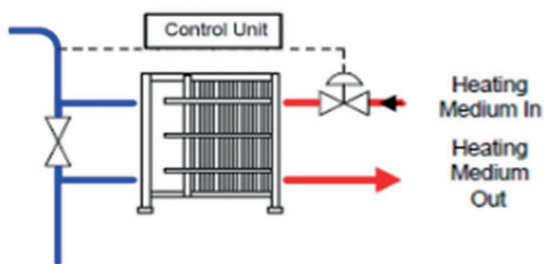
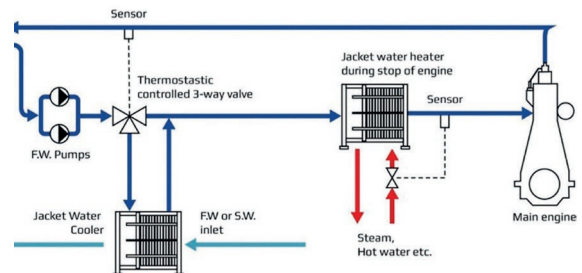
Benefits using our valves

- Minimal maintenance requirements
- Reduced fuel consumption and reduced CO₂ emission
- Easy access to spare parts reducing down time
- Simple and fast retrofit in dock – no special tools are needed
- Lower TCO – Ultra Low Leakage supports the CII.

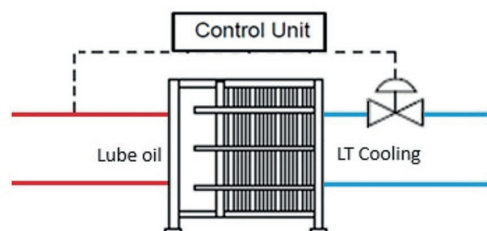
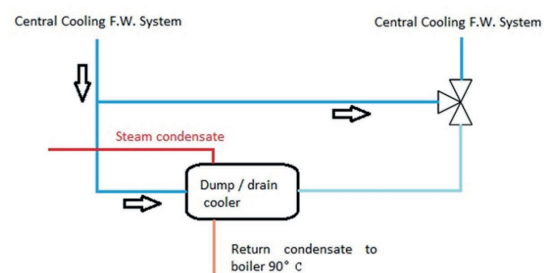
BROEN CLORIUS CONTROLS ENERGY OPTIMIZATION SOLUTIONS

Upgrade – Install – Control – Regulate

Upgrade your HT cooling system with our Ultra Low Leakage valve **to reduce CO₂ emissions and save fuel.**



Control the temperature of return condensate by using a 3-way valve **to reduce oil consumption from your boiler.**





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CONTROLS

SISCO
VALVES & INSTRUMENTS

SOLUTION 2

RELIABLE
SUPPLIER WITH
+120 YEARS
OF EXPERIENCE IN
CONTROL VALVES

Retrofit valves

CONTROL VALVES FOR REPLACEMENT OF ALL 3-WAY VALVES IN THE MARKET

Control valves have been used in the maritime industry for many years and the valves have automated several critical temperature regulating applications such as ME JW Cooling, lube oil cooling and LT Cooling control. Challenges with fluctuating temperature control, difficulties acquiring genuine spare parts combined with no real alternative for replacing faulty control valves, have led to downtime, breakdowns, thermal stress and extra workload for the crew.

Control valves from BROEN Clorius Controls can replace all 3-way valves in the market and our plug n' play replacement packages are available from DN100 and up to 550.

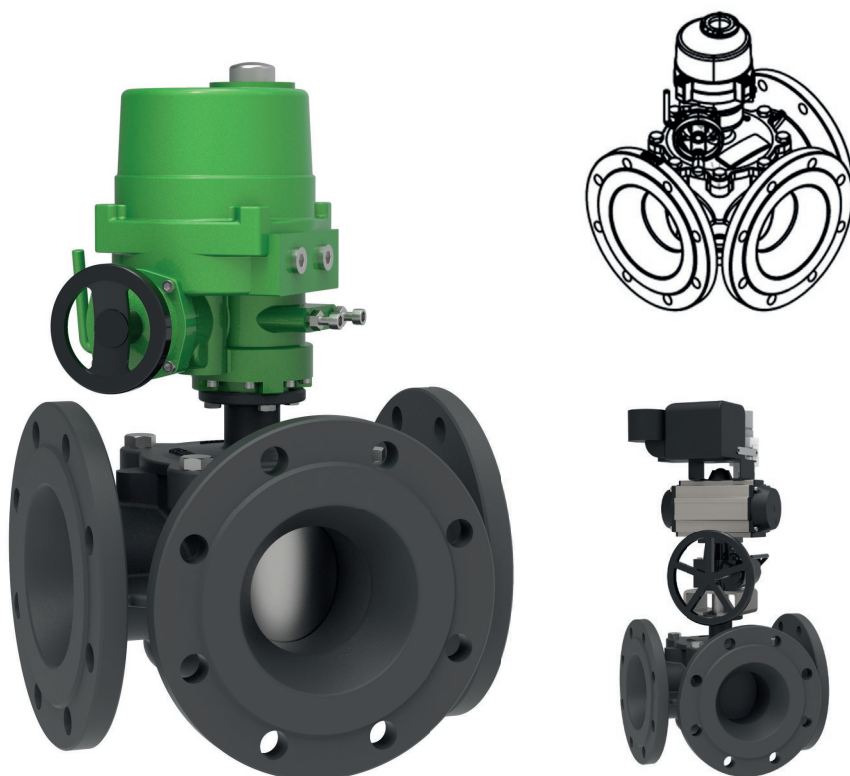
Take control with BROEN Clorius Controls solutions

BROEN Clorius Controls offers

- BROEN Clorius Control valves can replace all 3-way valves in the market
- Replacement packages range from DN100 and up to 550
- Most compact low leakage 3-way control valves in the market
- Easy to install - plug n' play solution
- Flexible design - suitable for all type of installations.

Benefits using our valves

- Controller with advanced settings for stable temperature control.
- Easy and quick access to spare parts
- Minimal maintenance
- Reduce thermal stress of engine components
- Improvement of the overall engine efficiency.



ER2022 Controller series

Controller with advanced settings which, in combination with our 3-way valves, reduces temperature fluctuations, thermal stress and maintenance.

Case samples of replacement and output

Vessel	Product	Output
Platform Supply Vessel	New Ultra Low Leakage valve, replacing wax (thermostatic) valve.	Preventing undercooling of auxiliary system during port stay in areas with cold water
VLCC tankers	New Ultra Low Leakage valve, replacing existing 3-way valve of other brand for ME JW Cooling control	Removing energy losses during port stay, reducing oil consumption from boiler and CO ₂ emissions
Container	Low Leakage valve replacing existing 3-way valve on LT-cooling control	Removing the leakage from cooler side when the port is closed to maintain correct temperatures on LT side. (cooler oversized)
Container	New Ultra Low Leakage valve, replacing existing 3 way valve of other brand for ME JW Cooling control	Old valve and controller caused temperature fluctuation during maneuvering, solved by replacing valve and controller with Clorius Controls replacement package



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SOLUTION 3



Ultra Low Leakage valve

ULTRA LOW LEAKAGE VALVE FOR CO₂ REDUCTION AND FUEL SAVINGS

Plug n' play solution for energy optimization

Internal leakage of control valves can cause energy losses during port stay on HT cooling system when pre-heater is in operation and additional consumption of oil by the boiler during port stay. Internal leakage leads to increased CO₂ emissions, increased CO₂ tax for the owner and worse CII rating of the vessel.

BROEN Clorius Controls offers a broad program of control valves, designed for energy optimization. Our unique Ultra Low Leakage valve solution has a leakage rate of less than 0,01%.

Take control with BROEN Clorius Controls solutions

BROEN Clorius Controls offers

- Ultra Low Leakage valve with an internal leakage rate of less than 0,01%, removing unwanted energy losses
- The Ultra Low Leakage valve can reduce the oil consumption from boilers, reducing the CO₂ emission
- The most compact valve on the market for easy retrofit without the need of hot work
- Retrofit solution – can replace all types of 3-way valves in the market
- Easy installation and delivered as a plug n' play solutions.

Benefits using our valves

- Removes unwanted energy losses during port stay
- 30 – 60T fuel savings annually on most vessels
- No annual maintenance required
- Low switching cost compared to other energy optimization solutions
- CO₂ and fuel savings.

Fast Return on Investment (ROI)

UPGRADE YOUR HT COOLING SYSTEM TO REDUCE CO₂ EMISSIONS AND SAVE FUEL

The maritime industry stands in front of major challenges to reach the IMO goals by 2050 and every step counts in reducing CO₂ emissions and save fuel.

With BROEN Clorius Controls Ultra Low Leakage valve solution, which can replace all 3-way valves in the market, your vessel will be a step ahead.

During port stay, the 3 way valve will close the port to the cooler side when the engine is shutdown.

Despite the closed valve port, valves with high internal leakage will not fully prevent the water from flowing to the cooler, leading to an unwanted cooling of the water which during port stay is heated by the pre-heater.

With BROEN Clorius Controls Ultra Low Leakage retrofit solution, you can easily upgrade the cooling control, and avoid energy losses during port stay, and save both oil on the boiler and lower the CO₂ emissions.

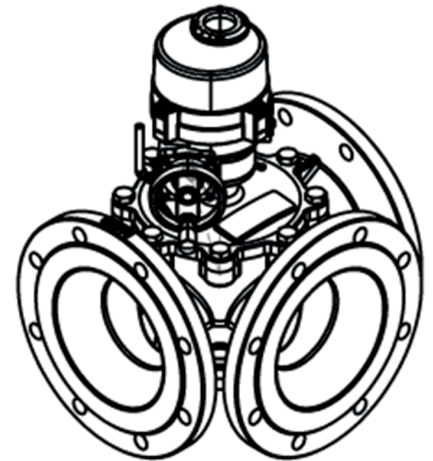
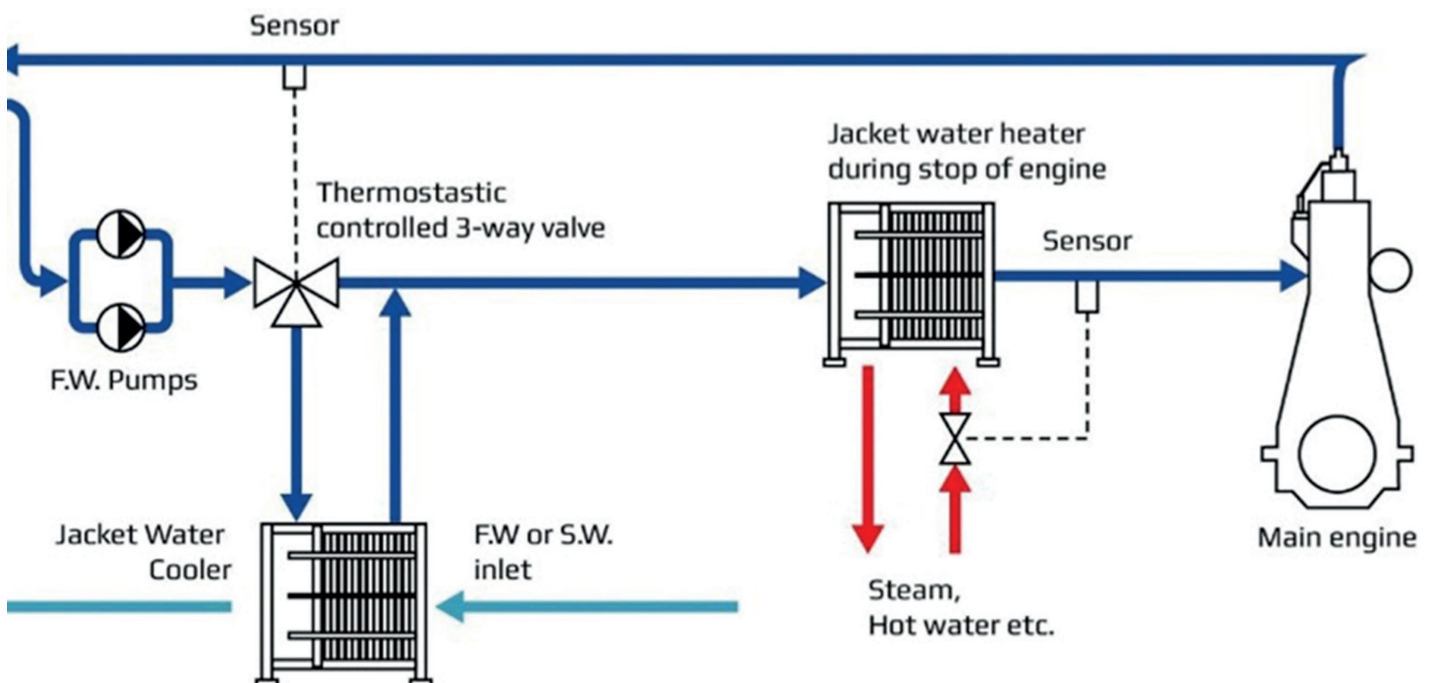


Illustration of Main Engine jacket water cooling system





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SISCO
VALVES & INSTRUMENTS

SOLUTION 4



Steam Control valve

OPTIMIZE STEAM CONTROL FOR PRE-HEATING - AND SAVE FUEL

Avoid energy losses on your HT reheating system with automatic regulated steam valves

Replacing manual steam valves with electric-controlled valves can reduce fuel consumption for steam generation, mostly produced on Aux-boilers when the ship is at port.

BROEN Clorius Controls offers a complete valve & controller set allowing easy replacement of manually controlled steam valve with automatic controlled steam valves.

Take control with BROEN Clorius Controls solutions

BROEN Clorius Controls offers

- Complete valve & controller set, easy to install
- Automatic regulated steam valves ranging from DN15 up to DN300
- Can be delivered with actuators for electrical or pneumatic controls
- Sized based on actual system pressure & flow data
- Low investment cost with good savings to be achieved.

Benefits using our valves

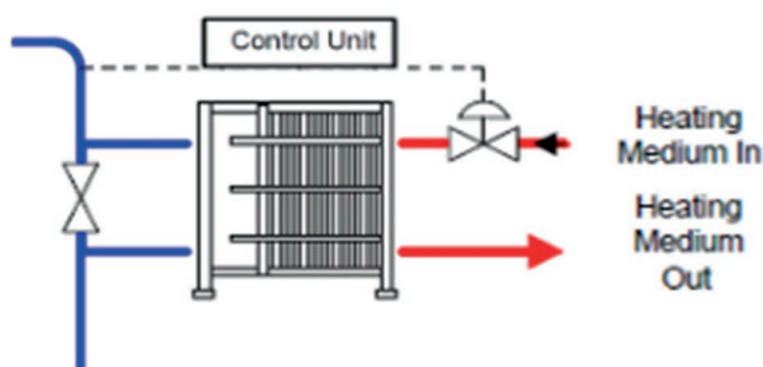
- Energy optimization on steam and boiler systems
- Reduces fuel / oil consumption for steam generation
- Accurate temperature control of engine pre-heating
- Easy access to support and spare parts
- Avoid energy losses on your HT cooling system.

Up to 40% savings measured by shipowner

FROM MANUALLY TO AUTOMATIC CONTROLLED STEAM VALVES

Test result on a test vessel showed a fuel consumption of 100 kg/h with a manually controlled valve. After installing an electrically controlled valve, the fuel consumption was reduced to approximately 60 kg/h.

Test result
Significant reduction of fuel consumption with an electrically controlled valve.



Jacket Water Heater with steam heating medium



Install automatic regulated steam valve to reduce the steam consumption from your pre-heater.

Leading manufacturer of control valves

BROEN Clorius Controls is part of BROEN Valve Technologies in Denmark.

BROEN A/S is owned by Aalberts N.V.

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