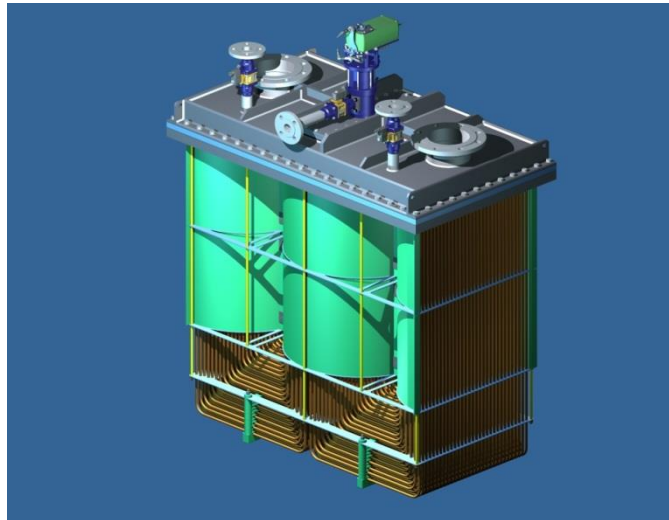


## Box cooler with TAS / iTAS



Better **COOLING** by **HEAT Nord**

[www.heat-nord.de](http://www.heat-nord.de)





## Box coolers save Energy 24/h

- No sea water pumps, filters, pipes
- Less LT-cooling water pressure drop
- Example ME-power of 2400 KW

Energy Saving = 86.260 kWh/a

Cost Savings = 8.400 €/a



Saving is 3,50 € per ME-KW and year!







# Box Cooler or Sea Water Cooling System

- More space in engine room
- Decentralized locations
- Less pressure drop in cooling system
- Energy savings
- No ice can block filters
- No sea water system → no corrosion in pipes, pumps, filters



iTAS - Integrated Thermal Antifouling System

[www.heat-nord.de](http://www.heat-nord.de)



# Fouling– The Performance Problem



Marine growth starts

→ from 10° C sea water



Fouling Protection starts

→ above 60...65° C

Use of waste engine water heat by **TAS / iTAS**





# Sustainability or Pollution?!

## Thermal Antifouling System



- ✓ **No** sea water pollution
- ✓ **No** galvanic corrosion
- ✓ **No** costs for spare anodes

## Copper Anodes

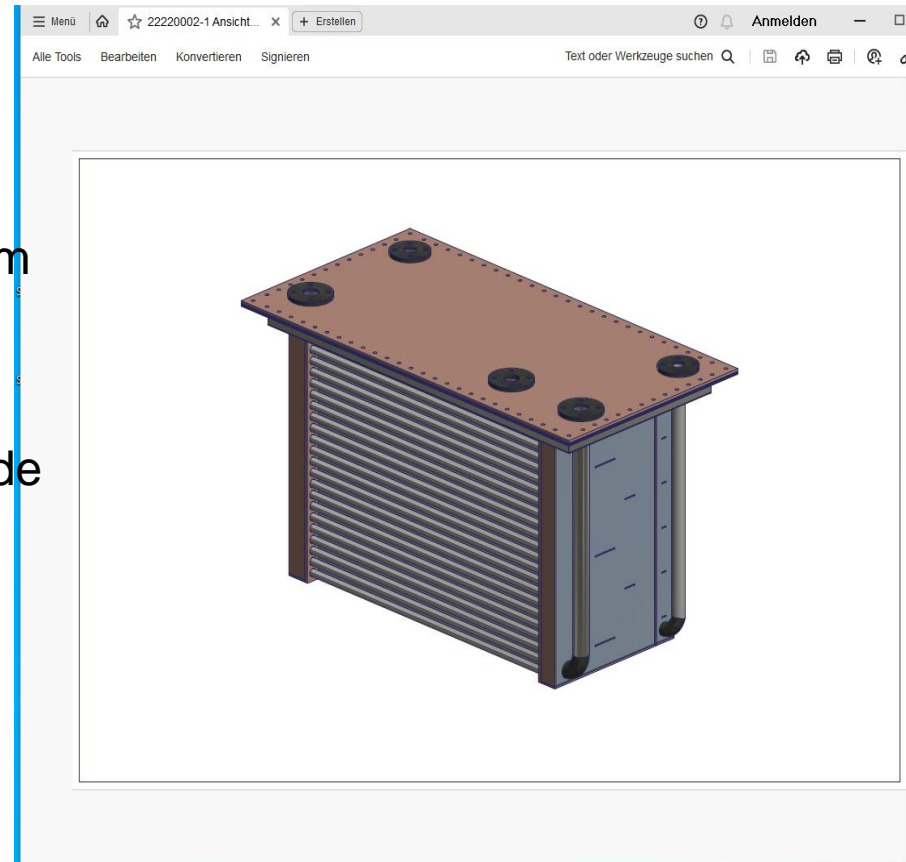
- ❖ Pollution of sea water by copper
- ❖ Steel corrosion in sea chest
- ❖ Frequently high spare costs





# Box cooler for Marine Tugs

- ✓ Heavy design → tubes 25,4mmx 2,6mm
- ✓ HT+LT-box cooler in one piece
- ✓ Tubes expanded and welded from inside
- ✓ Vertical water chambers
- ✓ No access from outside



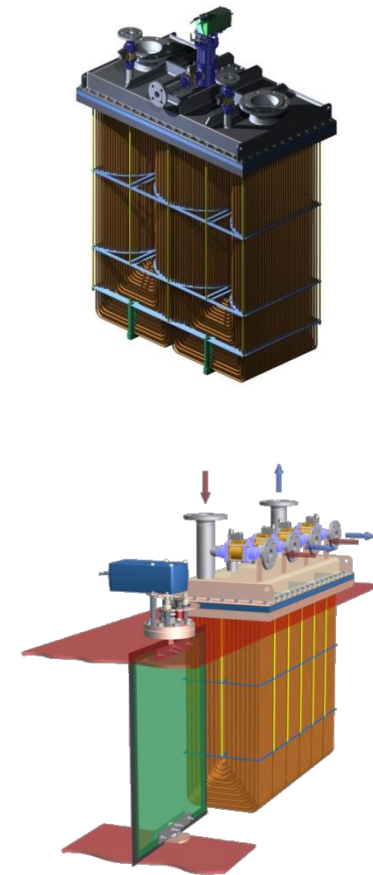
We improve your cooling systems!

[www.heat-nord.de](http://www.heat-nord.de)





# iTAS + TAS preserve our Oceans!



**16 iTAS- Box Coolers save tons of copper every year!**

[www.heat-nord.de](http://www.heat-nord.de)





# Newbuildings with TAS / iTAS



4000 t Crane-Ship  
"GULLIVER"



Emergency Towing  
Vessel



Heavy-Lift-Jack-up  
Vessel

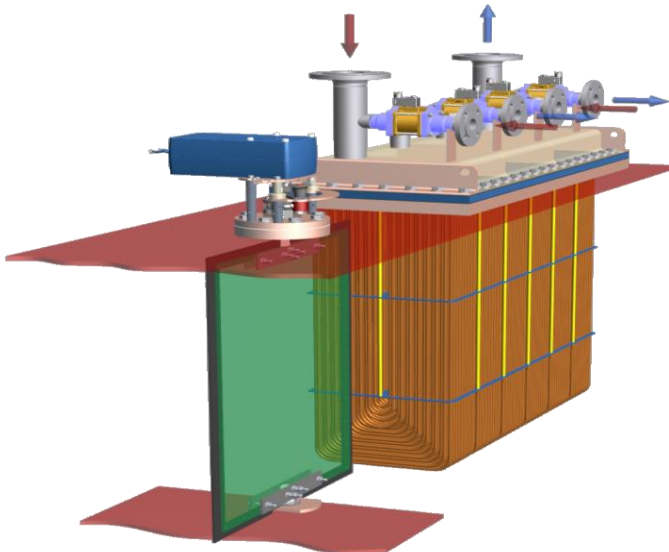
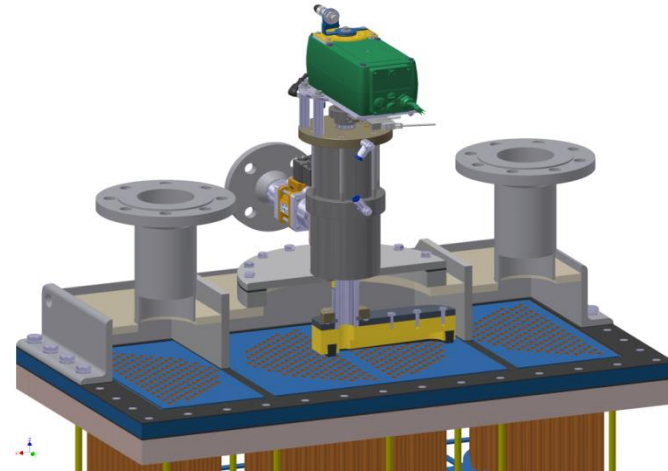




# TAS-Flap or iTAS-Unit ?

## Specialties of TAS-Flap

- ✓ Efficient Protection in harbor ( 2-3 hrs)
- ✓ Box cooler not in service
- ✓ Sea chest flap closes outlet slots



## Specialty of iTAS

- ✓ **24 / 7-** Protection during cooling
- ✓ Waste heat use of ME-HT-water
- ✓ **iTAS**-unit on box cooler cover



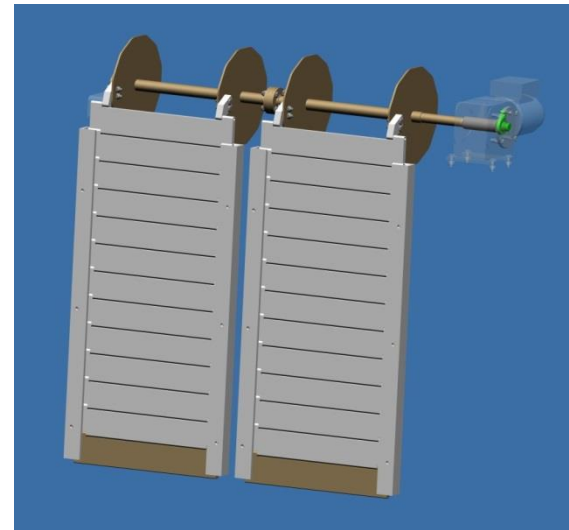


# First TAS-Retrofits



MV WEGA + MV DENE B

- Jalousie, flap, shutter close outlet grids
- Overheating each weekend in Northern and Baltic Sea
- 2x MTU8V396TC53, 545 KW



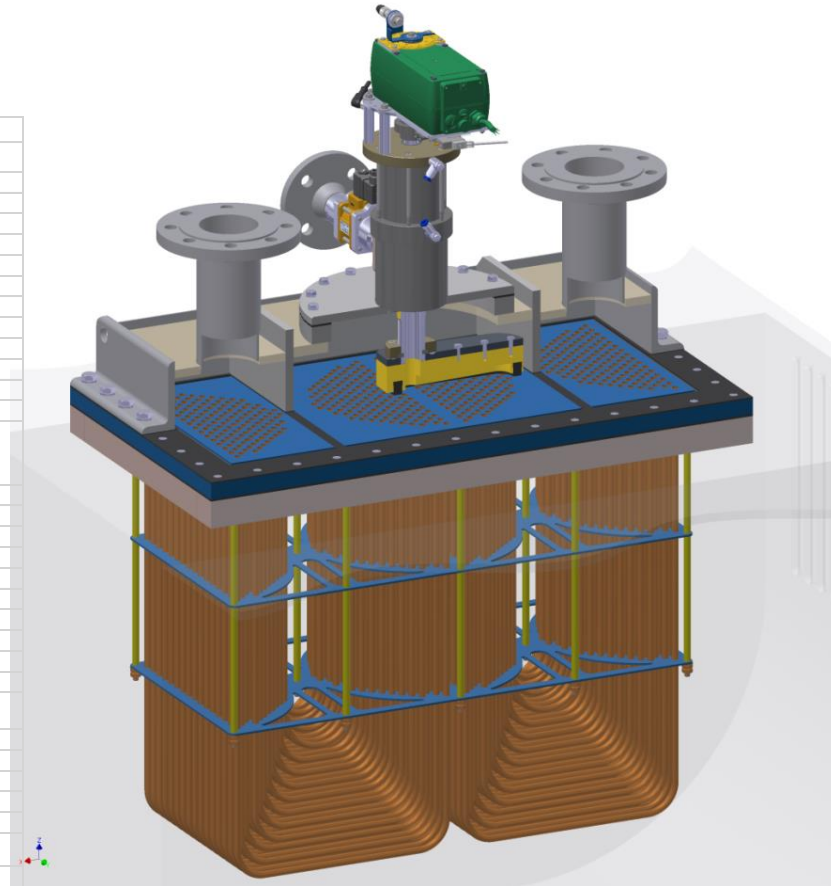
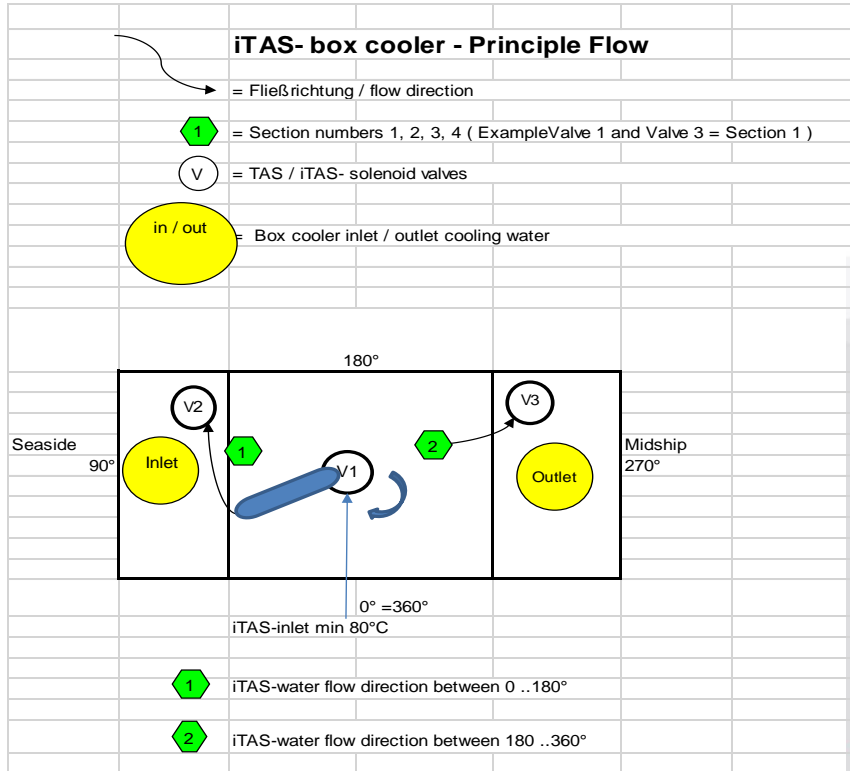
**No Fouling problems since 2003**

[www.heat-nord.de](http://www.heat-nord.de)





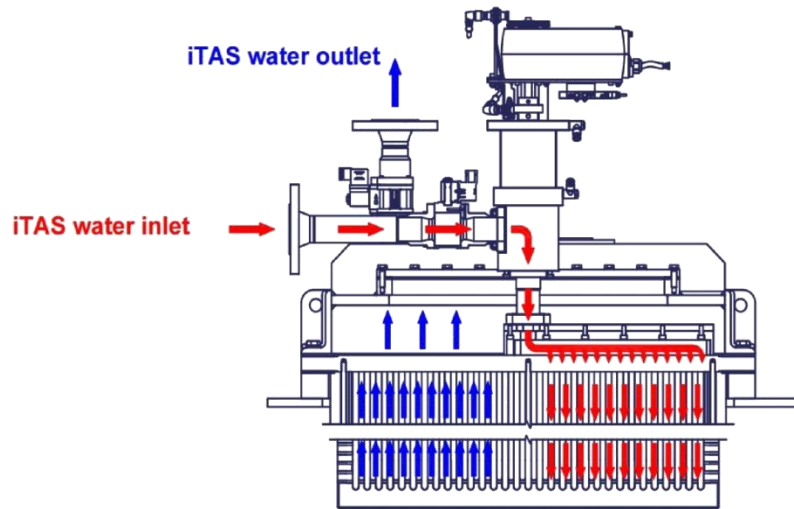
# Design of iTAS-Box Cooler



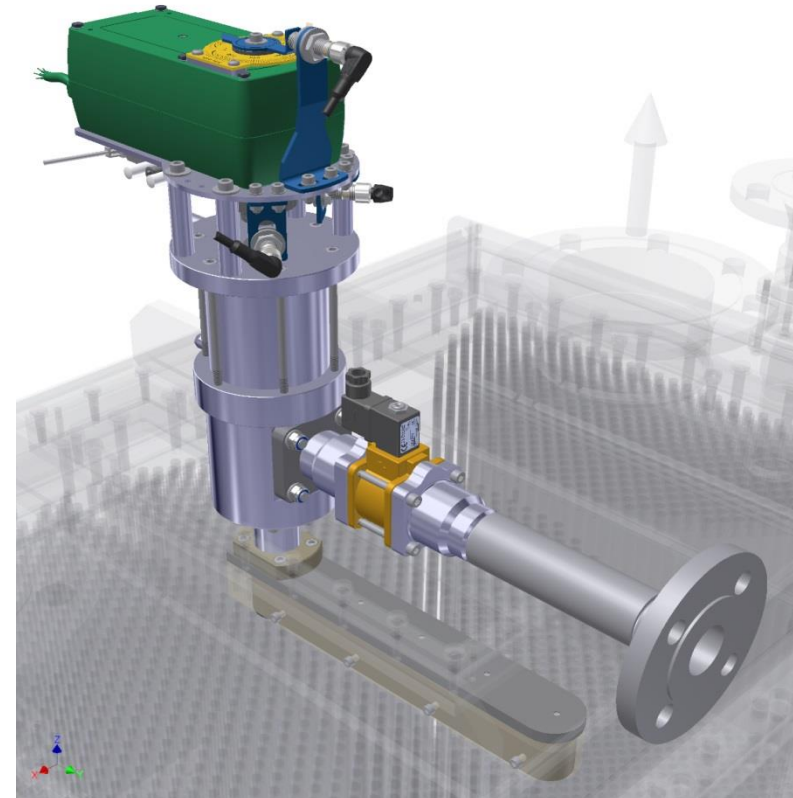
iTAS – The most environmental friendly Antifouling System



# The Heart of iTAS



Nozzle in lowered position



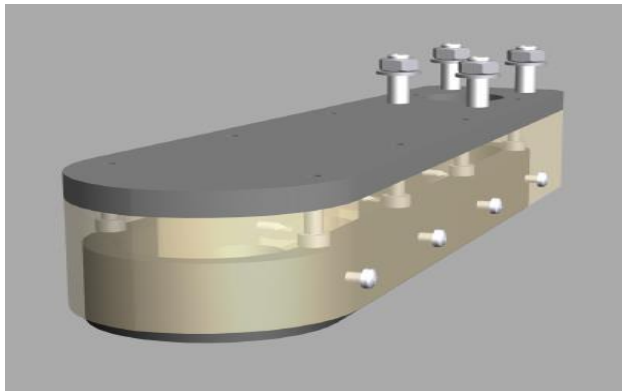
- hot water injection
- Installed on box cooler cover
- integrated turning and lifting device



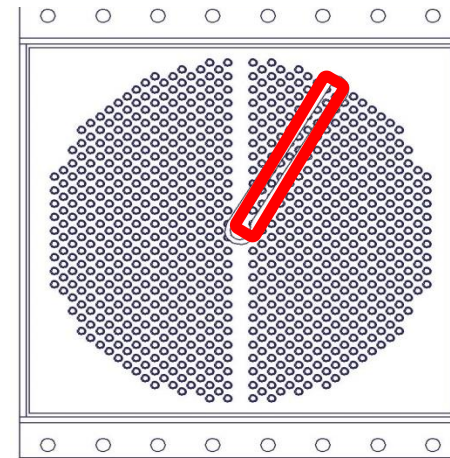




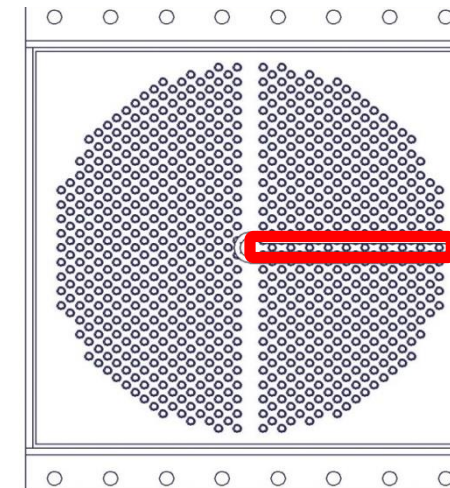
# 24/7- Operation of iTAS-nozzle



Rotation Angle = 30°



Rotation Angle = 90°





# Design to “INNOVATION”



## Impressive Facts

- Built 2012 in Gdynia
- 147,50m x 42,00m x 11,00m
- 8.000 t cargo load
- 6 MaK 9M32-engines
- each Engine 3.700KW heat load

25 box coolers with iTAS / TAS





# Savings by “INNOVATION”



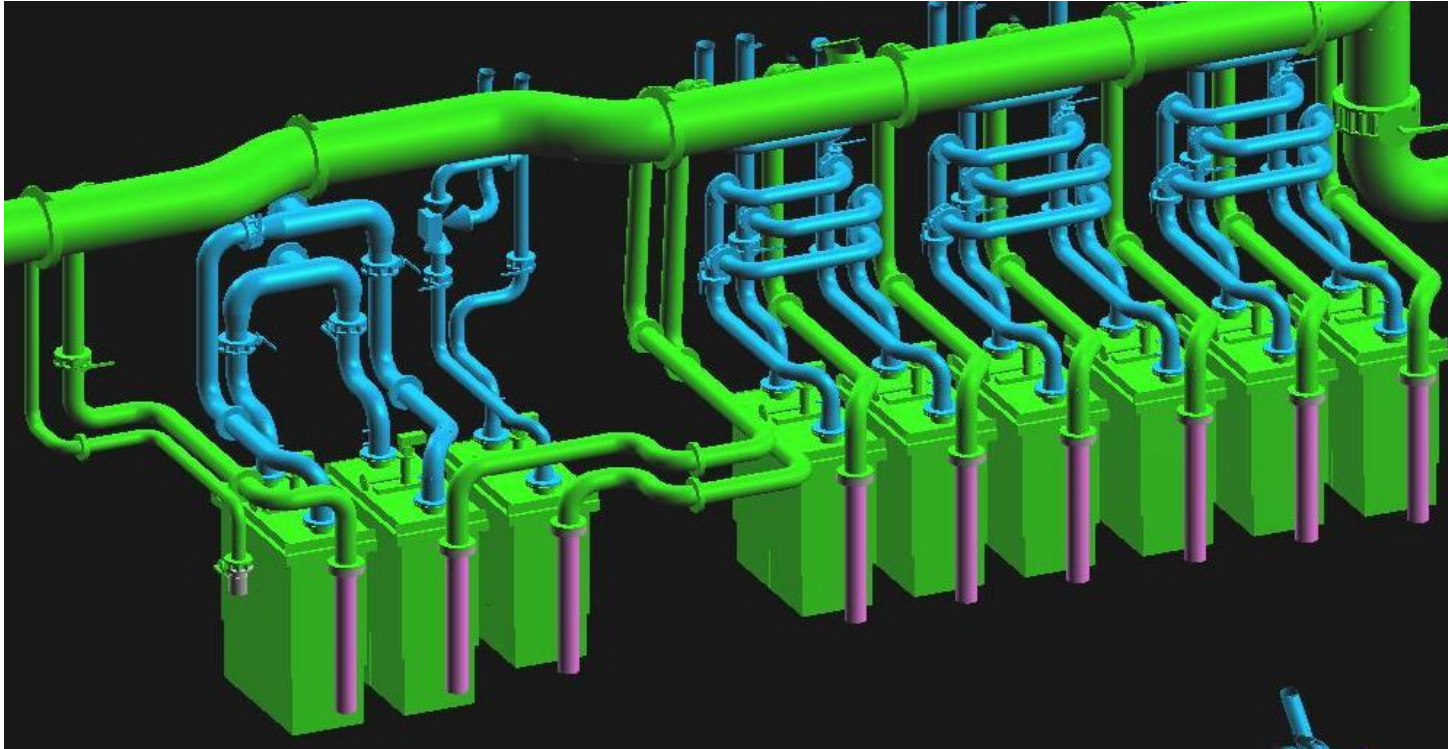
- 11 pcs. LT-water pumps were saved
- 25% Reduction of CW-pump power
- 0,7 bar lower cooling system pressure



Energy saving of 180 KWe in cooling systems!!!



# Sea Channel Installation



- Individual sea water supply on board of “INNOVATION”
- 13 pcs. engine +5 pcs. Aux-system iTAS-box coolers
- 30% higher cooling capacity by forced sea water flow





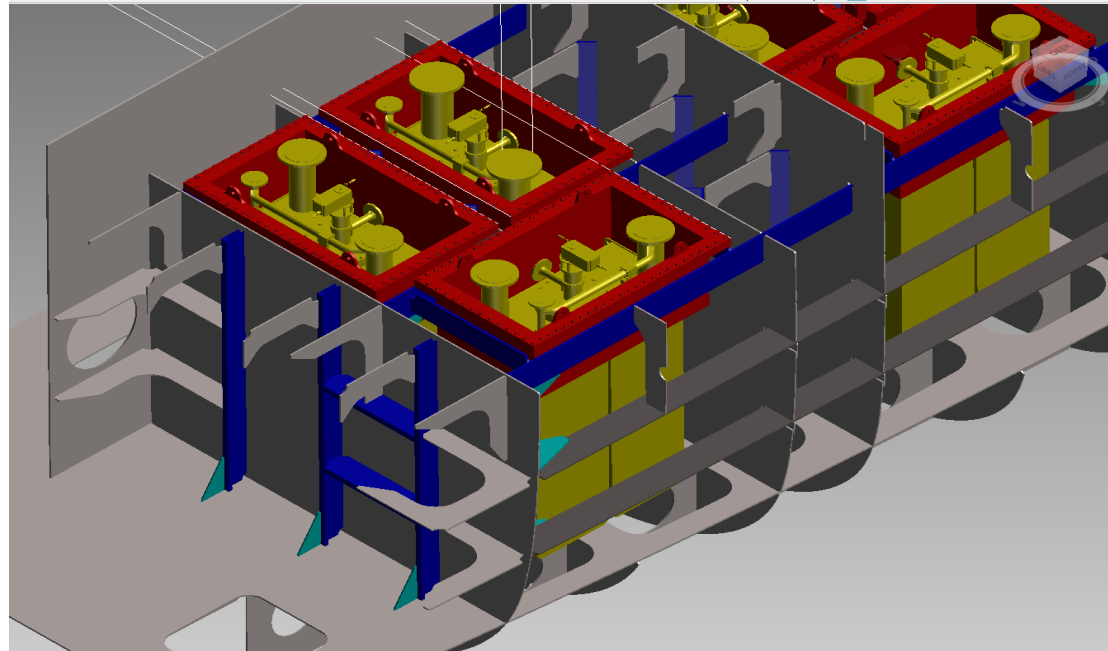
# Box cooler arrangement



- ✓ On Gulliver → HT-water via plate cooler in LT-box cooler circuit
- ✓ iTAS- Box coolers for Propulsion + power generation
- ✓ TAS by flap for aux-system → 3 pcs. Box coolers



# Consultancy and Engineering



- ✓ Flow-Star installations on running vessels
- ✓ Heat recovery from HT-water and cooling management
- ✓ Energy generation from exhaust gas





# Conversions + Replacements



Coastway



Waterway

- On two Suction dredgers of Boskalis
- Retrofit of eight box cooler with TAS / iTAS
- Worldwide Operation since 2012





# Flow-Star - Retrofits

FSD160

Installation in sea chests

- Turbulent sea water flow
- Bigger cooling capacities
- Against higher sea water temperatures



Return of cooler  
performance!!!

[www.heat-nord.de](http://www.heat-nord.de)







# Box cooler Installation



- ✓ Pull-out possibility on board
- ✓ 0,85mm tube wall thickness
- ✓ Massive support plates in the bundle

We improve your cooling systems!

[www.heat-nord.de](http://www.heat-nord.de)





# Services and Technology Made **in** Germany



Emergency Towing Vessel

Pulling TUG of Fairplay



- Higher Reliability
- Cost Savings
- Environment Protection

[www.heat-nord.de](http://www.heat-nord.de)

