

HEINEN & HOPMAN

# CASE REPORT MERCHANT

Contractor: Shipyard De Hoop  
Owner: Köln-Düsseldorfer Deutsche Rheinschiffahrt

> Rhein Fantasy



OUTSIDE 35°C  
HUMIDITY 90%

**22°C** Inside

PROVIDED BY  
HEINEN & HOPMAN



Heating



Ventilation



Air Conditioning



Refrigeration

## DESCRIPTION OF THE PROJECT

The MS Rheinfantasie is a multifunctional day passenger and event boat operated by the German cruise company KD. The ship is a monohull, four-deck vessel with 1600 m<sup>2</sup> in enclosed areas and a 900 m<sup>2</sup> sundeck. At 85 metres in length, Rheinfantasie has a capacity for 1000 guests in her interior spaces, from restaurants to bars and the event room.

Below deck are cabins to accommodate 31 crew members, all with their own sanitary unit. The vessel is designed for German inland temperatures, i.e., a maximum outdoor temperature of 32 degrees and inside temperature of 28 degrees with 50 percent relative humidity.

## CHALLENGES

Heinen & Hopman's brief was to ensure that the HVAC installation would be capable of maintaining an indoor temperature of 28 degrees in both the restaurants (event spaces) and the crew area at all times. Most important for the engineering were the large panoramic windows wrapping around the whole boat and the fact that up to 1000 guests could be staying onboard at any given time. This had the biggest influence on the HVAC system.

Since the ceiling height is 5.9 m and large air capacities were needed, the supply air design and ducting had to be chosen very careful. We also used sound dampers wherever possible due to noise requirements. Furthermore, we had to ventilate the main stage and make sure artists would not be inconvenienced by heat or draughts.

## SOLUTIONS

The three air handling units supply cold or warm air to all guests and staff. Designed for 100% fresh air, they are located outside on the top of the aft deck to save space inboard. As the cruise ship does not sail during winter, we designed the heating system to work with 100% recirculation air to keep the ship at a constant five degrees during this period.

## KEY FEATURES

Length:	85,14 m
Beam	14 m
Deck area:	240 m <sup>2</sup>
Power (total):	5420 bkw
Speed:	21 km/h
Crew:	31
Total number of passengers:	1000

Fifteen fans were used for mechanical ventilation, including closing devices & grills and weather louvers. These fans were mainly used for the engine room, bowthruster room, sanitary, stores, etc. The crew accommodation is equipped with fan coil units and re-heaters for independent room temperature control.



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### SCOPE OF SUPPLY

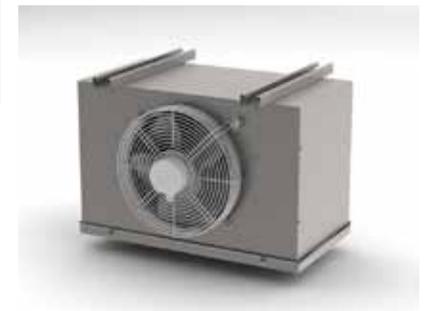
#### Accommodation, Hull & Crane

- Air handling Units 3x
- Fan coil units, including controls 23x
- Axial / centrifugal fans 15x
- Lot of ducting, including decorative grills
- Sound dampers
- Fire dampers and smoke dampers
- Chilled water unit, including controls
- Chilled water pumps 2x
- Chilled water piping, including insulation
- Central heating boiler, including oil-fired burner
- Central heating pump 2x
- Sanitary boiler, including controls
- Central heating piping, including insulation
- Water heaters
- Control panels



### SCOPE OF WORK

- Design & Equipment delivery
- Project management
- Commissioning of the HVAC system
- Installation & Implementation
- Service & Maintenance
- Engineering



**Brazil**

T: +5521 3587 4241/4244  
E: info@br.heinenhopman.com

**France - La Ciotat**

T: +334 4204 8685  
E: info@heinenhopmanfrance.com

**France - Grasse**

T: +336 3090 7786  
E: info@heinenhopmanfrance.com

**Germany**

T: +49 4073 1680  
E: info@drewsmarine.com

**India**

T: +9133 6499 1293  
E: info@heinenhopmanindia.com

**Italy**

T: +3901 8745 7970  
E: info@it.heinenhopman.com

**The Netherlands (HQ)**

T: +313 3299 2500  
E: info@heinenhopman.com

**The Netherlands (Rotterdam)**

T: +317 8890 8050  
E: binnenvaart@heinenhopman.nl

**Norway**

T: +47 6919 0900  
E: admin@teknotherm.no

**Peoples Republic of China**

T: +8621 3253 2896  
E: info@cn.heinenhopman.com

**Peoples Republic of China**

T: +86 510 8528 1763  
E: ivo.klaric@teknotherm.no

**Poland**

T: +489 1433 1800  
E: tmh@teknotherm.no

**Romania**

T: +402 3644 8222  
E: office@ro.heinenhopman.com

**Russia**

T: +7 (4012) 308 801  
E: info@heinenhopman.ru

**Singapore**

T: +65 6897 7879  
E: info@sg.heinenhopman.com

**South Korea**

T: +8270 4901 0000  
E: info@kr.heinenhopman.com

**Spain**

T: +349 3225 9668  
E: info@es.heinenhopman.com

**Sweden**

T: +46 3121 7500  
E: mats.uden@teknotherm.no

**Turkey**

T: +9021 6493 8118  
E: info@tr.heinenhopman.com

**UAE (Abu Dhabi)**

T: +971 2550 4147  
E: info@caspuae.com

**UAE (Dubai)**

T: +971 4263 5453  
E: info@caspuae.com

**USA - Fort Lauderdale, Florida**

T: +195 4463 0110  
E: info@arwmaritime.com

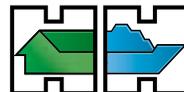
**USA - Houma, Louisiana**

T: +198 5876 7989  
E: leblanc@leblancandassociates.com

Heinen & Hopman encourages a more sustainable world. By providing eco-friendly solutions and services we offer our clients the option of reducing energy consumption and thus CO2 emissions. Visit [greenmanifest.info](http://greenmanifest.info) for more information.



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