



THE FIRST AIRBORNE TOWING FLEET

TOWAIR™: THE INNOVATIVE AIR SUSPENSION SOLUTION FOR TOWBOATS

ThyssenKrupp Veerhaven is one of Europe's most prominent inland shipping companies, operating a modern fleet of towboats. When the company was allowed to increase capacity in size and volume of each single tow, the use of more engine power caused harmful and annoying vibrations and noise on board. Strict local Health, Safety & Environment (HSE) regulations withheld the company from continuous operation.

ThyssenKrupp Veerhaven is responsible for the supply of base materials from ports at the North sea coast to Germany for the German steel industry in North Rhine-Westphalia. Based on the "Just-In-Time" principle, their fleet transports around 60,000 - 80,000 tons of dry bulk over the European waterways every day. It is done in a reliable, economical and environmental-friendly manner, 24 hours a day, 365 days a year.

Having a barge load capacity of around 2,800 tons and dimensions of 76.50m in length and 11.40m in width,

the increase of the cargo capacity of 50% required heavier use of the engine. With the total installed power of over 4000kW this in its turn led to a substantial increase of engine caused vibrations and noise. This effect was amplified by the shallow draught which is typical for towboats.

“ *Not only the working conditions improved, the whole Veerhaven fleet has become more competitive than ever.* ”

In order to comply with the applicable working & safety regulations, the deckhouses of all Veerhaven towboats needed an advanced suspension solution. The very low frequencies felt throughout the whole deckhouse and accommodations could not be isolated with conventional anti-vibration products. When it became clear that this case required specific experience in engineering and knowledge of advanced suspension solutions, Loggers was consulted for a solution.

For different frequencies, different solutions are required. The most optimal solution can only be defined if all the sources of noise and vibration and the frequencies they induce are determined. The specialists of Loggers' Center of Excellence have a systematic approach for developing new solutions for relatively simple as well as the most complex challenges: the Solution Development Methodology (SDM). By following the SDM, the specialists calculated the lowest natural frequencies needed to eliminate the vibrations on the Veerhaven towboats. They concluded that even the best rubber vibration mounts available can not isolate the low frequencies the Veerhaven and its crew are exposed to. So, the Center of Excellence developed an alternative based on... air!



TOWAIR™

To isolate all onboard noise and vibrations Loggers developed a revolutionary air suspension system, Towair™. The concept of this solution is about decoupling the entire deckhouse and accommodations from the vibrating hull. Harmful vibrations and noise are no longer transmitted to the towboat's deckhouse, as it is "floating on air". The isolation of vibrations already starts at frequencies as low as 1.5 Hz.

The Towair™ solution for the Veerhaven includes 21 tailor-made air springs placed just under the circumference of the deckhouse. The maximum travel inside the air bellows is four centimeters. A relatively simple but ingenious pneumatic system controls the air pressure inside the springs, keeping the deckhouse on a two centimeters floating level, independent of the load and other external forces like wind and ship movements. To provide stabilization for the deckhouse, additional hydraulic shock absorbers are mounted. This ensures adequate damping of movements in all directions.

The Towair™ solution contributes to the business success of ThyssenKrupp. The system enables full utilization of the Veerhaven towboats within the applicable HSE regulations. The company not only gained competitive advantage, but also improved working conditions for their crew at the same time.



Towair™ air suspension under the deckhouse

For example, inside the accommodations noise levels of only 45 to 50 dB(A) are achieved. In combination with the excellent levels of vibration isolation the noise reduction allows the crew to recuperate from their shift and start the next one fit and motivated.

The technology, knowledge and experience on which Towair™ is based are also widely used in other maritime applications. Clients in the dredging, offshore and defense industry also benefit from the advantages Loggers' air suspension systems have to offer. In this way Loggers contributes to the successful deployment and high utilization of a wide variety of vessels and platforms where people can work and rest in a safe and quiet environment.

For more information on the innovative Towair™ solution, please contact:

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