

## Powerful and Nimble

Harbour tugs don't have it easy – in what are nearly always very confined spaces, they have to tow gigantic ocean-going vessels many times their size and weight safely to their berths or from there to the open sea.

Installed in the "water tractor" by the Jadewerft shipyard in Wilhelmshaven, the Voith-Schneider propeller manufactured by the Voith Maschinenfabrik in Heidenheim proved particularly suitable for this task. This propeller represented a technical innovation by virtue of its four vertically positioned blades rotating around a common axis, and the fact that the blades' angle can be set anywhere in a 360-degree range. The thrust can thus be turned in any direction. Each driven by a diesel engine, the two propellers are mounted beneath the fore ship, where they drive the vessel while steering it at the same time. A hydrofoil-like base-plate attached to the hull at eight points protects the propellers from touching the harbour floor. Thanks to the tractor-like construction and the smallness of the hull, it was possible to mount the tow hook quite far astern without endangering the vessel's stability or manoeuvrability. The tug was operated from the steering stand in the pilot house as well as from the stand on the house's roof. Incidentally, the STIER came to set an example for hundreds of harbour tugs of the same make worldwide.

## The Ship's Company and Its Lodgings

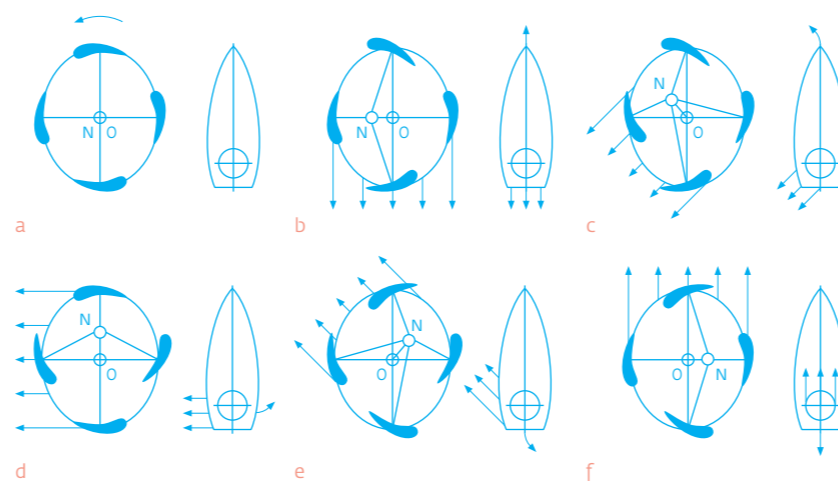
Apart from the captain, the STIER's company included an engine operator, a cook and as many as three sailors. The responsibility borne by the captain was considerable, as was the specialized knowledge he required for his job. In large harbours full of huge ships – difficult to manoeuvre by nature, and often loaded with valuable or even dangerous cargos – a single mistake could have serious consequences.

The captain's living and bedroom, the galley, a washroom with a toilet and a shower room were to be found in the pilot house. The engine operator had his quarters in a chamber on the port side, and the four sailors' berths and lockers were located below deck.

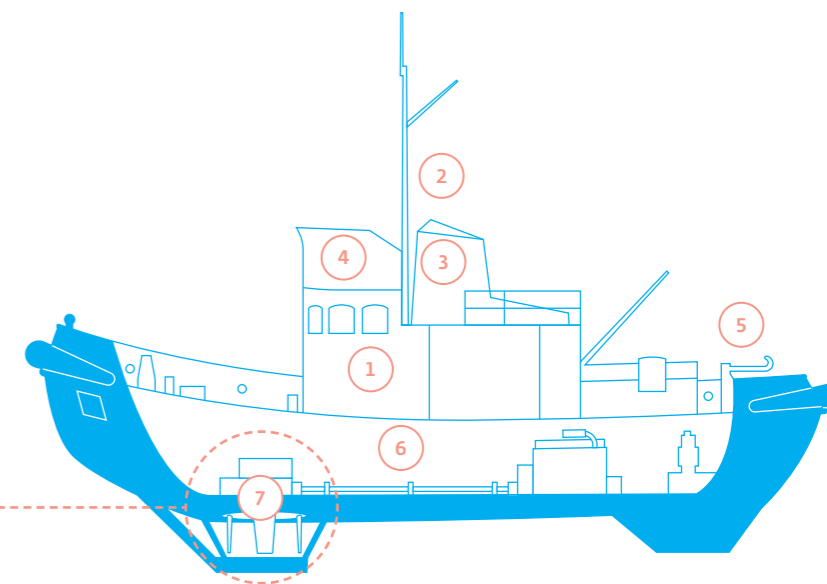
## The STIER – From Water to Land

The water tractor STIER was commissioned by the Norddeutscher Lloyd in 1954. From then on, this particularly powerful and agile tugboat manoeuvred countless ships safely through Bremen's harbours for twenty-four years. The NDL donated the vessel to the German Maritime Museum in 1978. Here it was propped up on land to enable visitors to view its special feature, the Voith-Schneider propellers.

### Voith Schneider propeller



The blades of the propeller are swung into different positions to determine the ship's direction of travel.



- 1 Superstructures with working space and crew's quarters
- 2 Mast
- 3 Funnel
- 4 Open bridge
- 5 Towhook with towing gear
- 6 Propelling machinery with workshop
- 7 Voith Schneider propeller

The National Maritime Museum of Germany  
Institute of the Leibniz Association

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### Technical Information

<b>Building yard</b>	Jadewerft Wilhelmshaven
<b>Year built</b>	1954
<b>Shipping company</b>	Norddeutscher Lloyd, Bremen
<b>Length × Breadth</b>	19.90 m × 6.20 m
<b>Draught</b>	3.05 m
<b>Drive</b>	2,350-HP diesel engines via 2 Voith-Schneider propellers
<b>Speed</b>	9 knots
<b>Tonnage</b>	75.50 BRT
<b>Ship's company</b>	4 Mann

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# Harbour Tug and Water Tractor STIER