

Abstract

The topic was chosen due to a personal fascination with hydrofoils. This study focuses on the use of hydrofoils and examines whether their higher costs can be justified by an increase in efficiency.

The study addresses the pros and cons of implementing hydrofoils in an existing context. A case study was chosen as the research method, comparing a planing ship with a ship equipped with hydrofoils. Both ships were analyzed on the same route, specifically the trajectory of the Waterbus in Antwerp. The results showed that ships with hydrofoils can maintain the schedule with fewer vessels, thanks to their higher speed and the absence of wave drag. However, when an additional time margin was incorporated into the hydrofoil schedule, necessitating an extra hydrofoil ship, it was no longer cost-effective.

To understand why hydrofoils are used less frequently, research was conducted on active and inactive hydrofoil services. Active services demonstrate that hydrofoils are valued for their speed, tourist appeal, and as a luxury option. They remain relevant, and new ships using this technology are being built. However, inactive services revealed that hydrofoils were not always financially viable. Out of the five services studied, two were discontinued, and three replaced hydrofoil ships with catamarans, which did not offer maintenance advantages. Safety was not the reason for discontinuation. Services were primarily terminated due to high costs and insufficient profitability.

In the final chapter, the Candela P-12, an electric ferry with hydrofoils, is analyzed. Although the vessel does not yet exist, an analysis of battery usage indicates that this should not pose a significant problem. However, challenges such as charging time and reduced capacity exist. This suggests that the current Waterbus system is not suitable for the Candela P-12, but an adapted operational model might be feasible.