

A New Type of Impact Protection for Luxury Yachts

Author T.M. Nijboer
Programme BSc Industrial Design Engineering, University of Twente
Client Vadac B.V.

Introduction

The world of yachting is quite a characteristic one. This upper segment of the recreational boating industry is driven by extravagance and style. High levels of details are found in every corner and crevice of a (super)yacht's decks, while infinity pools and included submersible vehicles are becoming increasingly common in the industry. This makes it all the more surprising that some aspects of yachting have remained unchanged over the past centuries. A prominent example of that is the use of fenders. Fenders are used to protect a vessel from different types of impacts; when first entering the harbour, but also once the vessel is moored. While they are relatively suitable for the protection of a yacht, they do not fit into this luxury image in multiple ways, not only aesthetically.

This statement was pointed out by Vadac B.V. in the beginning of this design assignment. Current fenders are often seen as a 'given' – they are simply part of a boat, no matter the size. However, there are multiple different ways in which the current situation can be improved. This applied research illustrated and supported the process of designing of a new type of impact protection for luxury yachts, which plays into these opportunities.

Process

The design started with an initial research phase of several aspects regarding the current situation(s). This not only included analysis of the underlying need for impact protection, but also its market landscape, existing solutions and the involved stakeholders. Several issues and design opportunities came to light, to which a list of requirements was fitted.

Subsequently, a conceptual design phase presented a variety of different solutions; from passive artefacts to active and predictive systems. Multiple structuring and selection steps finally led to distinct design directions and ultimately several concepts. A well-considered choice for a single concept allowed for further development. The inner working principle was designed and detailed based on further research, various calculations and even a simulative program.

The inner working mechanism of the final design was represented in a detailed CAD model. The exterior design of the final design was formed by digital sketches, including representations of the installed solution and its lighting effects.

Result

When compared to the current situation, the found solution offers more efficient operation and thorough integration, both on the functional and aesthetic level. In addition, it drastically lowers safety concerns, since it provides the yacht with better impact protection and the yacht's crew with a safer work environment.

In short, the solution consists of several units which are mounted onto or into the hull of a yacht. These units are able to automatically deploy and retract when it is needed. In their deployed state, they are able to absorb large amounts of energy, while they look sleek and stylish in their retracted position. The proposed exterior styling of the solution and its 'floating look' function as an addition the yacht's styling, especially when compared to the situation with conventional fenders. Since the solution relies

on industrial-grade shock absorption components, it offers reliable and predictable behaviour, even in extreme situations. All in all, it is a product that proposes innovation in the unadventurous market of marine impact protection.



The current situation (top) in comparison to the found solution (bottom).

