Sustainable Fish Market and Processing Plant

Challenge

Together with the Artisanal Workshop for small-scale fishing, the sustainable fishing centre aims to **support the longevity of the trade**.

With the commercialisation of fish that is bred with a great harmful effect on the environment, **the trade is, both locally and globally running itself to oblivion**.

The harmful effects manifest themselves in many forms: Fishing techniques that **damage the seabed**; others that are insensitive to the **natural lifecycle of the fish**, thereby compromising spawning; and others that tend to yield **large volumes of bycatch**.

Proposal

By supporting the **preservation and diversification** of products deriving from the latter, the project aims to help create a local cultural shift towards a more sustainable consumption.

Architectural Design Booklet: bit.ly/SustainableFishSpace

Main Structural Considerations

The Architectural solution required a **large open space** for workers to manoeuvre through the processing plant, whilst allowing for a **sheltered market**, which simultaneously allows a continuous **cross-draft to ventilate** the space, maintaining a fresh, and pleasant environment for exploration.

Deriving from this, a **catenary, triangular-panel, steel grid-shell structure** was employed. The **catenary arches** encourage loads to pass in compression through the members **rather than increasing the bending moments**, and the **triangular panels** help minimise **in-plane and out-of-plane bending**, both of which aim to achieve the most efficient structural layout.

The Grid-shell was structurally designed and Analysed using **Karamba 3D**, wherein the structure was subject to a number of different load-cases. The structural design comprised a **cross-section optimisation** exercise, in which the software was used to obtain the minimum cross-sectional dimensions required such that all the load-cases considered are satisfied.