

Redesign of a waterproof luminaire for installation, repair and recycling

Installation

It is important to design for quick and easy access to the electrical connector on- and off-site and allow for easy and low-effort entry into the luminaire.

Installers would be willing to disassemble in the end-of-life to retrieve valuable materials.

Repair

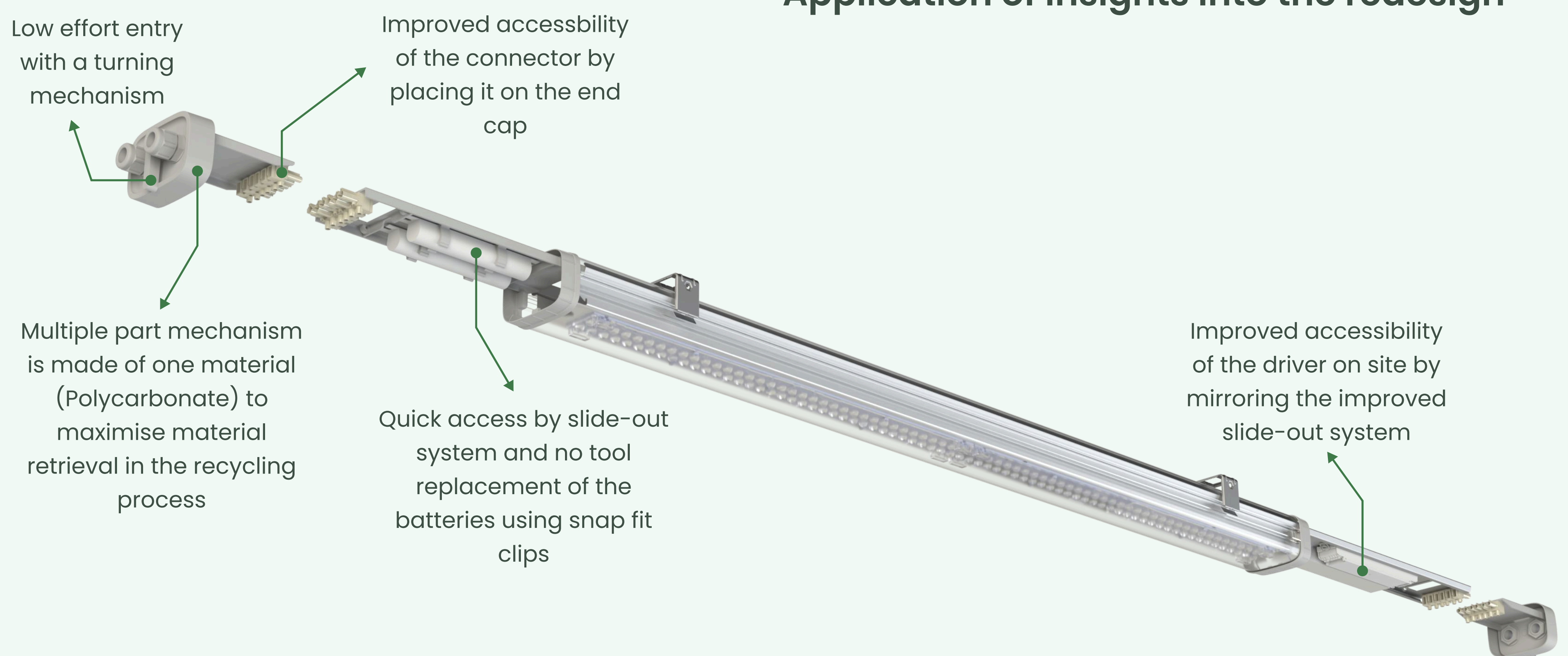
Repair on site is seldom done as labour costs are high and there is a low failure rate. Only sometimes maintenance is conducted on emergency batteries and drivers. So those parts should be easily accessible and replaceable on the spot.

Recycling

Silicone seals cannot be recycled and can pollute the plastics stream, as their density is low. Next to that, metal folds around valuable materials like LED boards and PCB's when shredded.

Complete liberation of valuable and non-recyclable materials should be strived for in a design.

Application of insights into the redesign



How to design for installation, repair and recycling?

To design for multiple domains, the designer needs to know what to prioritise and what to optimise in every part/subassembly. To aid in this, it is valuable to talk to the intended users of the product.

One should strive for optimal quality of the product and user experience. Allow disassembly for repair for parts in need of replacement during the product's lifetime. For other parts, allow for proper material liberation during recycling by striving for uniform usage of materials, proper liberation of connections during shredding and by facilitating the ease of disassembly for valuable, hazardous, and non-recyclable parts and materials.

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MSc Integrated Product Design

Committee

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