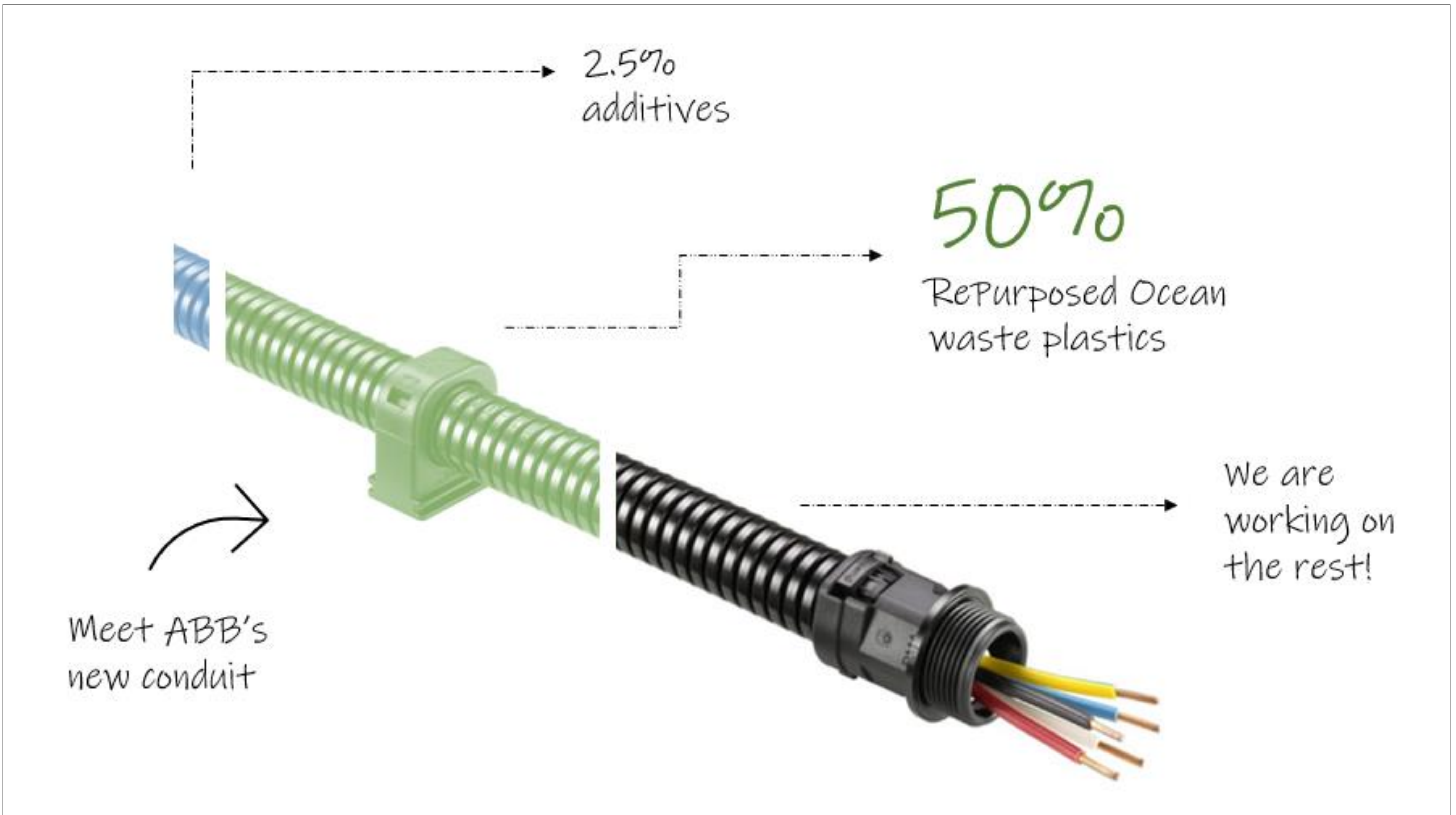


Sustainable material selection indicators for informed decision-making using Lifecycle assessment: ABB PMA Case



Problem definition

Material selection plays a crucial role in determining the environmental impact of a product. ABB Electrification Installation Products division uses 156'000 tons of raw material each year. With growing global environmental challenges and high demand for resources, there is a need to explore sustainable material alternatives. Traditional approaches to material selection have focused primarily on factors like cost, design, chemical and mechanical properties. A commonly accepted framework or guideline for material selection taking sustainability perspectives does not exist and highly varies depending on the individual context. Finding alternative materials is particularly challenging in ABB's case due to the need to produce a high-specification cable protection system meeting industry technical standards which also contributes to substantially reducing environmental impacts.

Solution

Lifecycle assessment (LCA) as a tool is found to give an overview and transparency of the environmental performance of the material. Using LCA and the three sustainability pillars (environmental, social, economic), 10 key indicators are proposed to be examined at a pre-decision phase of material selection to ensure significant contribution towards sustainability aspects.

Results

Proposed key indicators were applied to a pilot sustainability portfolio project within ABB PMA. The project involves using repurposed plastic from fishing nets to produce high-specification Conduit. Results reveal that substituting fossil materials with recycled alternatives significantly improves the environmental performance of the product by reducing water consumption by 49% and CO2 by 32%. Additionally, the pilot project also contributes to other societal aspects, such as educating customers and society, taking proactive action in sustainability

initiatives without pushing the burden across the supply chain and showcasing technological advancements hence demonstrating the feasibility of producing high-grade polymer cable protection systems for standard industrial applications.

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