METHODOLOGICAL INTRODUCTION

SHRINKING THE ENVIRONMENTAL FOOTPRINT

With the Life Cycle Assessment methodology, Ceam Control Equipment evaluates the impacts of products, systems, solutions, and services on the natural resources and habitats of our global ecosystem.

The resulting data is communicated in Environmental Product Declarations.

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In view of the global climate crisis and the necessity to reduce carbon emissions and preserve natural resources, Ceam Control Equipment aims to decrease the environmental footprint of its own business operations as well as that of our customers and supply chains. With internationally standardized approaches, we provide transparency regarding the environmental impacts of our products, systems, solutions, and services.

Many people aspire to leave behind a footprint of their existence on this planet. Yet our legacy should be a positive one. Passing on a material and environmental burden for future generations is something every body should try to avoid. Our efforts to reduce our footprint on this planet and live in a way that preserves and protects natural resources must also be reflected in the design of our products.

Since the 1990s, we have used the ISO1 14040 and 14044 standards for Life Cycle Assessment (LCA) stud ies to understand and optimize the Environmental Footprint of our products. The term "product", for the purposes of this publication, refers to all Ceam Control Equipment business types (products, systems, solu tions, services), including inter alia software and digital applications. For communicating the results, we follow the requirements of ISO 14020 et seq., as internationally recognized standards for environmental labels and declarations to represent the environmental impacts and benefits of a product.

In this brochure, we describe the approach we use to determine environmental footprints via the Life Cycle Assessment method and to improve the environmental compatibility of products. We also explain how we communicate them in Environmental Product Declarations. By calculating and communicating these values, we aim to anticipate, but also shape the requirements and expectations of customers, partners, and investors as well as regulators and stakeholders throughout society.

SUSTAINABILITY FRAMEWORK

Sustainability is an integral part of our business. Our technologies and solutions empower our customers to drive sustainable growth and transform industries towards a sustainable future. Our DEGREE framework outlines the relevant focus topics for Ceam. It contains six action fields (Decarbonization, Ethics, Gover nance, Resource Efficiency, Equity, Employability), within which we have defined 14 ambitions. We continu ally develop all these action fields to properly address central Environment, Social, and Governance (ESG) aspects from the perspective of our stakeholders. The relevant criteria for determining the Environmental Footprint are Decarbonization (the "D" in DEGREE) and Resource Efficiency (the "R" in DEGREE).

LIFE CYCLE ASSESSMENT

A Life Cycle Assessment (LCA) measures and aggre gates the potential environmental impacts of a product across its lifecycle under the selected scope, based on consistent and reliable data that should reflect the full range of industrial processing stages.

It follows an internationally standardized methodology (ISO 14040 et seq.). An LCA considers all factors deter mining the environmental performance, including bene fits, trade-offs and optimization potential.

After setting the goal and scope of the assessment study, the process begins with a Life Cycle Inventory (LCI), where all environmental interventions (such as water and air emissions, waste, and resource use) associated with the product are aggregated, beginning with the extraction of precursor mate- rials and manufacturing, and extending throughout the product's usage up to and including reuse, recycling, end-of-life disposal, and energy recovery.

Subsequently, the Life Cycle Impact Assessment (LCIA) is conducted and interpreted.

From the LCI data, it extrapolates the expected environ mental impacts caused by the product over its service life, including on climate change, soil and water acidification, resource depletion, land use change, and effects on human health, among others.

DECARBONIZATION

We aim to be carbon neutral in our own operations by 2030, but also to expand beyond this commitment to reduce emissions associated with these operationg - along the entire value chain. Our portfolio helps customers to reduce their emissions and achieve their decarbonization goals. With our commitment to the Science Based Targets Initiative (an international initiative to help companies achieve emissions reduction targets), we support the goal of the Paris Climate Agreement to limit climate change to 1.5 degrees Celsius.

RESOURCE EFFICIENCY

At Ceam Control Equipment, we strive to achieve circularity and dematerialization. We have adopted a standard implementing global methods and rules for the design of environmentally compatible products, which determines the environmental impacts of our products and applies to all relevant product families2 - the Ceam Robust Eco Design (RED) approach. In addition, we promote the decoupling of value creation from natural resources extraction by increasingly purchasing secondary materials (metals and resins) and striving for zero waste-to-landfill on a global scale.

THE ROBUST ECO DESIGN APPROACH

The design phase and the definition of the requirements for a product largely determine the environmental impact of products over their entire life cycles. In this regard, integrated product-service solutions represent the biggest potential to improve a product's environmental footprint. At Ceam Control Equipment, we are aware of our responsibility to deliver innovative goods and services that are optimized for minimal impact on the climate and environment.

Ecodesign is thus conceived as the evaluation of all design options for enhancing the environmental performance of products and their associated impacts along their entire value chain. The chain extends from resource procurement, the production of precursor and final products, and the use of the product all the way to the end-of-life phase, including all logistics and transportation processes.

The approach aims to achieve several goals that are to be reached through systematic analysis of the impacts of products on the environmental areas of water, air, and soil, for example: Maximizing energy efficiency by achieving the same or higher benefit with less energy and lower resource consumption; minimizing the dissemination of harmful substances into the environment; and managing the required resources in a circular loop.

Moreover, the Ecodesign approach creates further opportunities for entirely new circular business and service models for products. It assigns an important role to collaboration in the value chain. These may relate to services such as predictive maintenance, repairs, retrofitting, and upgrading, reuse and recycling, and collection systems.

TOWARD A CIRCULAR ECONOMY

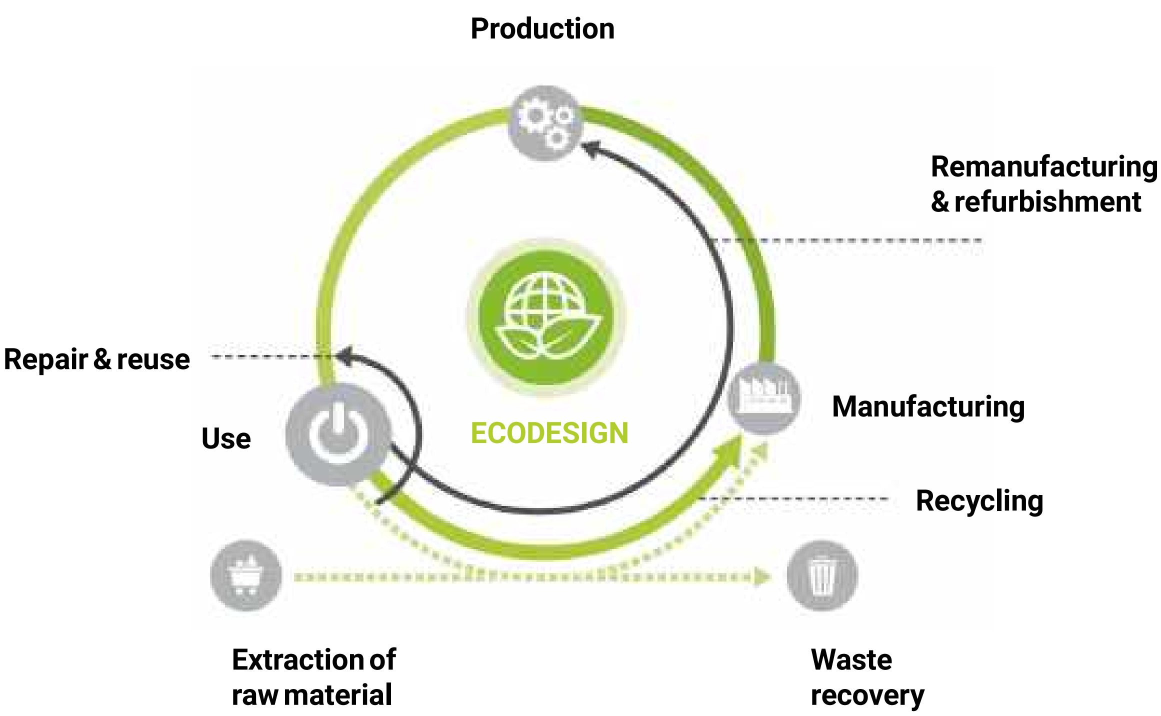

ILLUSTRATION 1

With an Ecodesign-centric approach, Ceam Control Equipment pursues the vision of a completely environmentally compatible product life cycle. It focuses on the systematic application of Ecodesign in all relevant and applicable phases of the life cycle.

Our RED approach is based on the IEC3 62430 standard for Environmentally Conscious Design for Electrical and Electronic Products. RED focuses on the requirements of applications in vertical market segments, supports the communication of environmental improvements to our customers and society, and strongly supports our principles of decoupling natural resources use from economic activity.

THREE-PART IMPACT ASSESSMENT

Starting from an "Application perspective", in which the environmental requirements for relevant product families are determined from the perspectives of legis- lation, markets, customers, and users, RED assess es the environmental impacts of relevant product families quantitatively through LCAs and communicates results and further information via Environmental Product Declarations (EPD) in the "Solid foundation" phase. This phase provides the basis for the determination of environmental footprint improvement mea sures. Finally, in the "Dematerialization" phase, we evaluate, for example, the increased use of secondary materials and the substitution of declarable substances in product design specifications. Here, we also consider service aspects such as repairability and upgradeability as well as reuse, refurbishment, remanu facturing and recyclability.

APPLICATION PERSPECTIVE

Determination of relevant product families, identification, and prioritization of Ecodesign requirments from stakeholder expectations.

SOLID FOUNDATION

LCA-based assessment of environmental impacts for representative products along the entire life cycle, communicated via EPD.

DEMATERIALIZATION

Evaluation of quantitative environmental impacts of Ecodesign and of further requirements, derivation of improved design specifications wherever reasonable.

ENVIRONMENTAL PRODUCT DECLARATION

An Environmental Product Declaration (EPD) presents quantified environmental information on the life cycle of a product to enable compari sons between products fulfill ing the same function. As such, it is particularly useful in busi ness-to-business communica tions, allowing providers and manufacturers to precisely describe the environmental footprint of their goods and services under the selected scope, though it can also be used to inform consumers directly about the sustainability of their choices. An EPD follows strict guidelines and is based on a standardized LCA tool.

WE FOCUS ON DECARBONIZATION AND RESOURCE EFFICIENCY OVER A PRODUCT'S ENTIRE LIFE CYCLE.

THE THREE PHASES OF ROBUST ECO DESIGN

CEAM CONTROL EQUIPMENT' ASSESMENT OF ENVIRONMENTAL IMPACTS

The method we use to assess the life-cycle impacts of our products quantitatively is the international, stan dard-based LCA according to ISO 14040 and ISO 14044. Once we have defined the goal and scope of the assessment, an LCA is conducted according to a set of basic elements.

The first of these is an analysis of the material and energy flows of the entire product system, including all the processes involved along the life cycle of a product.

The second is the systematic recording of emissions to air, water, and soil as well as resources taken from nature, which are stored in the so-called life cycle inventory. This is followed by an evaluation of the poten tial environmental impacts *(cf. infobox p. 8)* **as part of the impact assessment** *(cf. illustration 2 p. 7).*

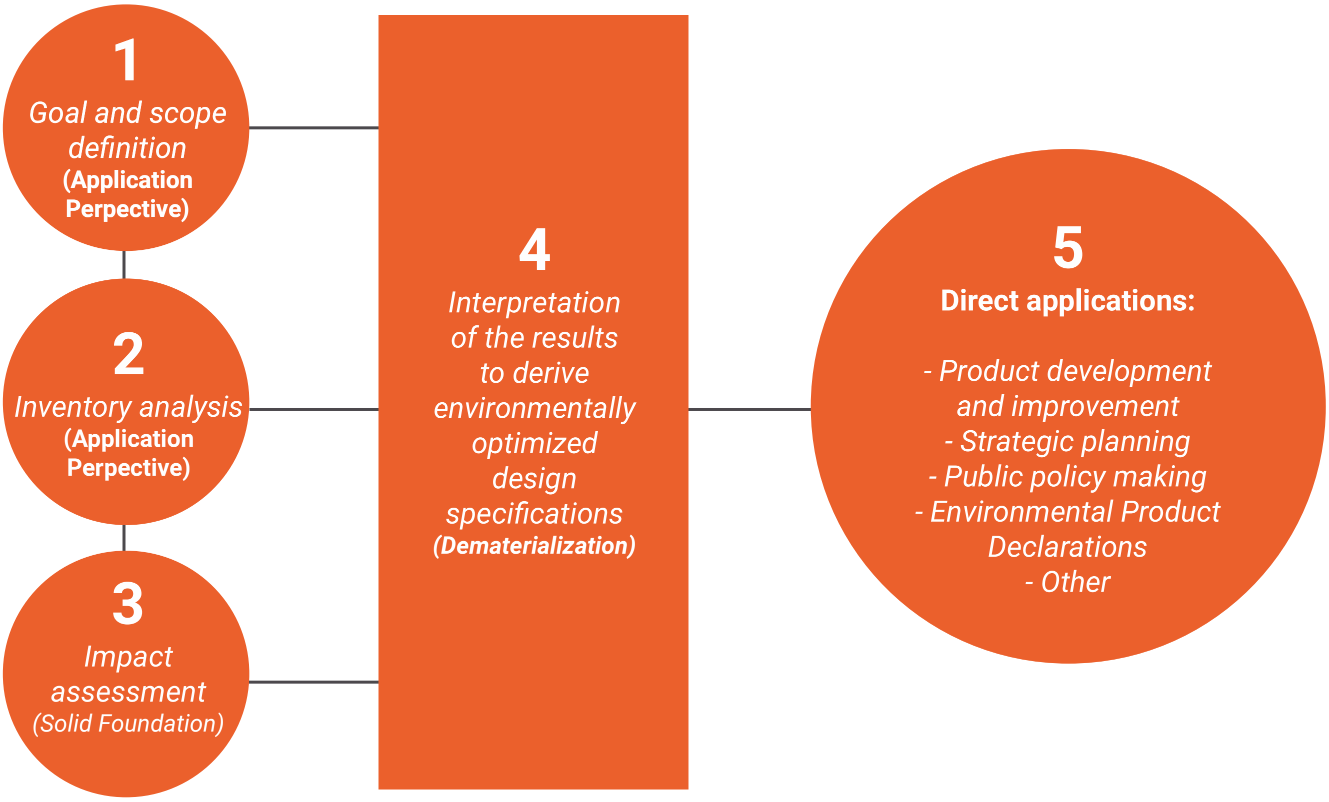

ILLUSTRATION 2

Ceam Control Equipment RED phases support the five stages of an LCA according to the ISO norm

LIFE CYCLE PHASES

For the evaluation of effects on environment and health, we use impact categories in line with the European Commission's recommendations for Product Environmental Footprint methods[4], which may be accompanied by additional parameters. The assessment covers all stages of the life cycle, "from cradle to grave". It begins with resource extraction *(the "cradle")* **and includes all stages and operations ranging from manufacturing** *("gate")* **and use to waste management, disposal, or transition to further use** *("grave")*. **For each of these life cycle phases, the impacts can be specified individually.**
They are usually aggregated into three phasesas:

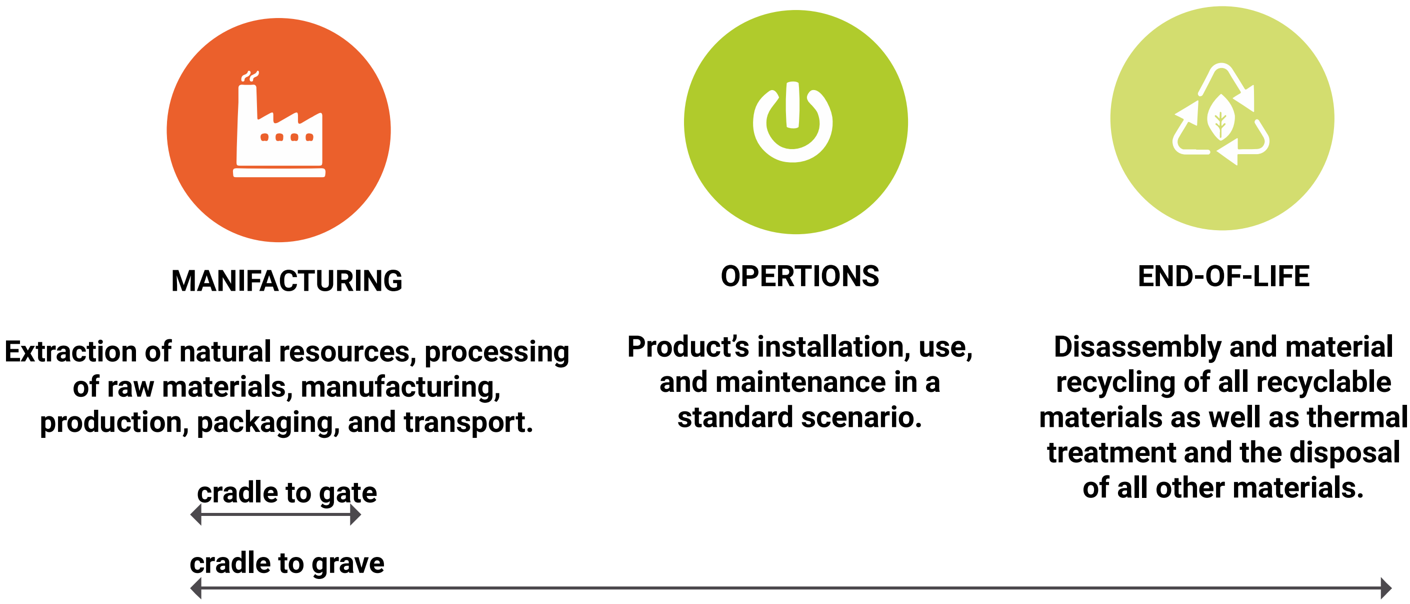

ILLUSTRATION 3 *Different scopes to account for life cycle stages*

The LCA considers specific or appropriate horizontal product category rules (PCR) as well as product specific rules (PSR), if available, to ensure utmost comparability. Other standards, such as for carbon accounting, might also be applied to increase transparency on the carbon footprints of products.
The scenarios used for assessing the respective impacts of each life cycle phase are displayed transparently, for example regarding the corresponding energy or transportation models and assumptions made.

LCAs are conducted by our expert teams based on their deep understanding of product life cycles including supplier base, our own processes, and customer applications as well as their technology expertise.

DECLARATION ON ENVIRONMENTAL IMPACTS

We follow the general principles of ISO 14020 for environmental labels and declarations. The Type II environmental declaration is provided in conformity with ISO 14021 as a self-declared environmental claim, which can be used by manufacturers, importers, distributors, retailers, or anyone else who wants to provide information on the environmental impact of their products.

When communicating the results of Life Cycle Impact Assessments (LCIA), we use the Type II declarations to inform customers, consumers, and other interested parties about our products' environmental performance. We have chosen this approach because it guarantees a high degree of flexibility by ensuring compliance with international standards while incorporating the latest knowledge and technologies.

ENVIRONMENTAL IMPACT CATEGORIES

- Climate change
- Ozone depletion
- Acidification
- Eutrophication – Fresh water
- Eutrophication – Oceans
- Eutrophication – Terrestrial
- Photochemical ozone formation
- Abiotic resource depletion Minerals and metals
- Abiotic resource depletion – Fossil fuels
- Human toxicity – Cancer
- Human toxicity – Non-cancer
- Ecotoxicity – Fresh water
- Water use
- Land use
- Ionizing radiation – Human health
- Fine particulate emissions

With our internal processes and standards, we make certain that all relevant requirements are met and assure the quality and reliability of data, which permits complete comparability in terms of quality and objectiveness with Type III declarations (EPDs) according to ISO 14025.

A SUSTAINABLE LEGACY

The transparency and accountability provided by an LCA lays the groundwork for effective communication of the environmental footprint left by a product. Thus, an LCA – and the communication of its results in an EPD – are ways of accepting responsibility for the environmental impact of our products. At the same time, they serve as a tool for reducing that negative environmental impact and enhancing both the sustainability and the economic profitability of our business activities and those of our partners and customers. They serve as a basis for the systematic application of impactful Ecodesign principles.

The best legacy that future generations can hope for is that we leave behind as small an environmental footprint as possible. If we manage to adapt the designs of our products and realign our economic systems in a way that decouples growth from resource consumption, we may one day be seen not as the last genera tion to ignore the consequences of environmental exploitation, but as the first generation to have changed its way of thinking and set a course toward sustainable environmental and economic development for humanity and Planet Earth.

THE BEST LEGACY IS TO LEAVE BEHIND AS SMALL AN ENVIRONMENTAL FOOTPRINT AS POSSIBLE.

PUBLISHED BY CEAM CONTROL EQUIPMENT

Via Val D'Orme, 291 - 50053 Empoli (FI) Italy
Tel. +39 0571 924181 | Fax +39 0571 924505

Skype: ceam_info | Email: info@ceamgroup.it

Internet Web Portal: www.ceamgroup.com
Division Web: www.ceamcontrolequipment.it
Support Web: www.ceamsupport.it

www.sensorstore.it

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