

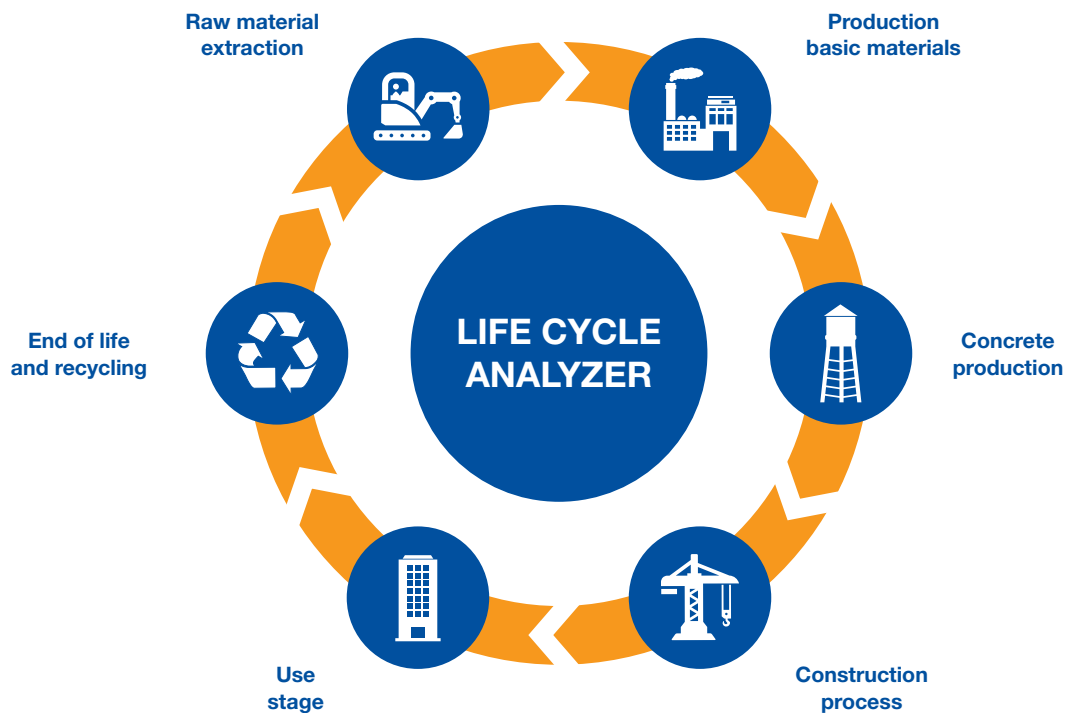


# Life Cycle Analyzer

Quantify sustainable  
solutions in concrete



# Improve and quantify the environmental performance of concrete



## The concrete Life Cycle Analyzer tool calculates and compares the economic and ecological parameters of concrete mix-designs

- Assesses the environmental footprint of ready-mixed and precast concrete based on EN 15804.
- Allows quick calculation of environmental indicators and cost impact for real concrete mix-designs.
- Allows direct comparison of different scenarios and varying production, installation and disposal situations.
- Delivers a comprehensive report as basis for concrete EPDs, and input for green building rating schemes (BREEAM, LEED, DGNB, HQE).
- Supports concrete manufacturers and users in improving process efficiency, energy and resource saving.

## Master Builders Solutions helps to translate sustainability performance into relevant marketing arguments

- Only documented and quantified improvements in sustainability are relevant for certification.
- We create comparability of the sustainability indicators for different concrete mix-designs. Thus, improvements can be strategically assessed and implemented.
- We offer relevant arguments enabling sustainable solutions to be placed in the concrete industry.
- We help in implementing economic and environmental improvements to enhance your competitiveness.
- Together we can make cost-effective rating improvements in the sustainability certification by achieving mix-design optimizations.

### A growing demand for sustainable construction

Both the private and public sectors are seeking improvements in sustainable construction. This trend is supported by the expanding network of Green Building Councils worldwide and the growing acceptance for green building rating schemes. Consequently, this does create opportunities for innovation in all stages of the construction value chain.

### Concrete mix-design optimization: An important lever to improve sustainability

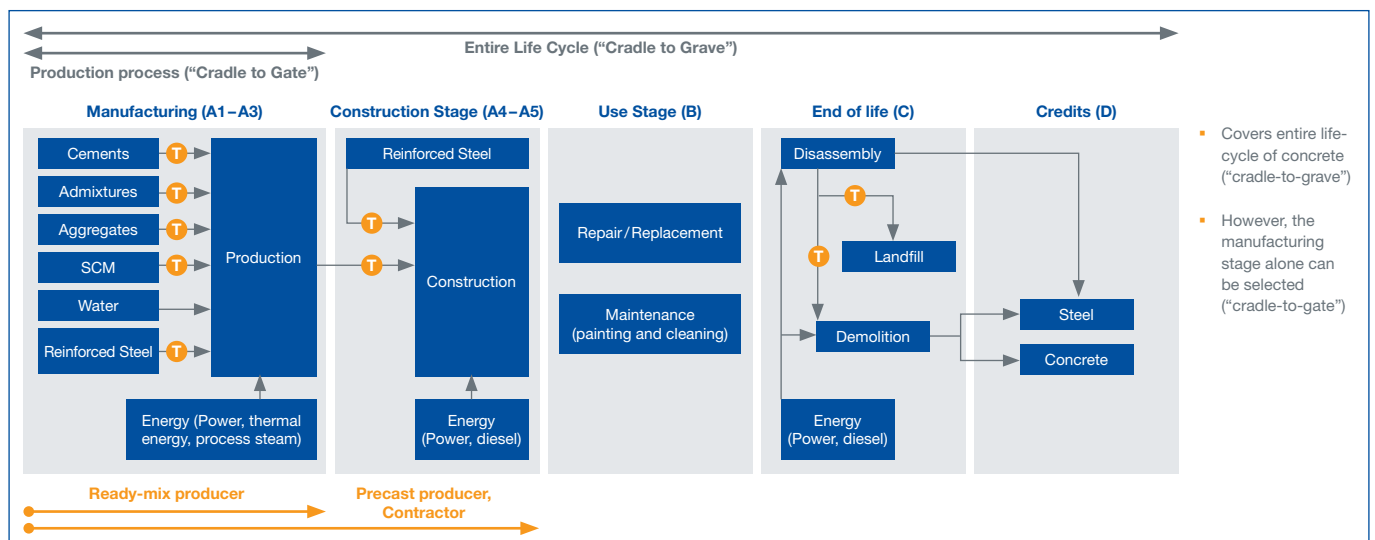
During a buildings life cycle, cement and reinforcement are the main drivers in determining the sustainability indicators in the manufacturing and construction stages. At the same time they provide the building with longevity and stability. The optimization of concrete mix-designs is proven to have a significant impact on the overall assessment of building sustainability.

### Life Cycle Analyzer: Connecting ecobalance improvement with economic efficiency

At Master Builders Solutions, we are convinced that improving sustainability requires a balance between economic factors, social aspects and responsibility for the environment. We do not optimize only one environmental indicator such as CO<sub>2</sub> reduction our Life Cycle Analyzer assesses and reports all of the economic and environmental indicators detailed in EN 15804.

For concrete producers the Life Cycle Analyzer provides the opportunity for differentiation via economically beneficial and environmentally sound concrete mix-designs. Whereas, contractors can offer cost efficient contributions to sustainability ratings of their projects.

### Tool methodology



### Tool functionalities

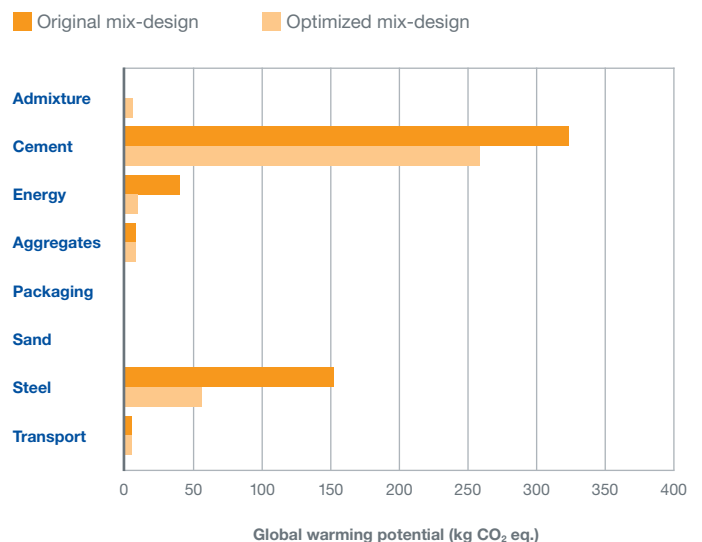
**Input:** concrete mix-designs, production data (energy, water consumption), material costs, transport, data for installation and use stage, recycling and disposal.

Two different concrete mix-designs can be compared simultaneously, allowing the comprehensive analysis of “what if” scenarios and finding environmentally preferable and cost effective

- The Life Cycle Analyzer is based on best available data in the market and uses widely recognized European databases. However, the tool also has the flexibility to import material specific or locally available data (EPDs).
- Besides the environmental profile of concrete, based on all 25 environmental indicators, cost/unit can be assessed for production stage.

**Output:** a comprehensive report with Life Cycle Assessment including costs and green building rating schemes annexes.

### Production (A1-A3) – Global warming potential





### Further report's deliverables



The tool provides input information for most recognized green building rating schemes, in separate annexes.

BREEAM®



### Ensure your competitiveness and profitability

The use of the Life Cycle Analyzer delivers following benefits:

#### Concrete producers:

- Providing transparency and optimizing the environmental footprint of concrete versus costs.
- Answering customer's requests for life cycle data on concrete.

#### Precast producers:

- Optimizing production processes and creating a data base for corporate sustainability.
- Support for developing and marketing "green precast and ready-mix concrete".

#### Contractors:

- Delivering ready-to-use input data for green building rating schemes to clients (DGNB, BREEAM, HQE, and LEED).
- Assessing the improvement potential of concrete in buildings.

#### Architects, Engineers, Specifiers:

- Adding value to buildings thanks to the quantification of environmental performance.
- Understanding the potential and implications of using innovative concrete solutions in structures.



### BASF's "Green Sense Concrete" approach

Innovative admixtures for sustainable solutions in concrete make the difference!

The Green Sense Concrete approach represents the various initiatives of BASF towards more sustainable concrete. These initiatives comprise optimization services, products and tools under the respective local norms and standards, enabling environmentally preferable, cost-effective concrete that meets, and often exceeds, performance targets.

The Life Cycle Analyzer is a software package especially developed for the European market and norms.

Nowadays key trends are challenging the concrete industry to provide highly sophisticated materials guaranteeing a sustainable approach. Admixtures enhance energy efficiency in concrete

production and durability of structures while minimizing their environmental impact. They can also allow the use of recycled and supplementary cementitious materials (SCM) ensuring the correct performance development and aiming at a zero net waste concept.

- **Master X-Seed** a unique hardening accelerator admixture that promotes concrete hardening at low, ambient and even heat curing temperature.
- **MasterMatrix** a viscosity-modifying admixture (VMA) of the latest generation that provides superior robustness in highly fluid concretes.
- **MasterFiber** a comprehensive range of fibres creating a particularly efficient internal reinforcement network in concrete.

### Master Builders Solutions' sustainability

#### Services

- Customer support in understanding sustainability in concrete and construction
- Support in certifying and marketing sustainability

#### Product

- Innovative technical solutions for concrete performance differentiation
- Unique, patented technologies



#### Tools

- Life Cycle Analyzer parameterized calculation tool for concrete
- Support from our sales force



# Master Builders Solutions from BASF for the Construction Industry

## **MasterAir**

Complete solutions for air entrained concrete

## **MasterBrace**

Solutions for concrete strengthening

## **MasterCast**

Solutions for the manufactured concrete product industry

## **MasterCem**

Solutions for cement manufacture

## **MasterEmaco**

Solutions for concrete repair

## **MasterFinish**

Solutions for formwork treatment and surface improvement

## **MasterFlow**

Solutions for precision grouting

## **MasterFiber**

Comprehensive solutions for fiber reinforced concrete

## **MasterGlenium**

Solutions for high performance concrete

## **MasterInject**

Solutions for concrete injection

## **MasterKure**

Solutions for concrete curing

## **MasterLife**

Solutions for enhanced durability

## **MasterMatrix**

Advanced rheology control for concrete

## **MasterPel**

Solutions for water tight concrete

## **MasterPolyheed**

Solutions for mid-range concrete

## **MasterPozzolith**

Solutions for water-reduced concrete

## **MasterProtect**

Solutions for concrete protection

## **MasterRheobuild**

Solutions for high strength concrete

## **MasterRoc**

Solutions for underground construction

## **MasterSeal**

Solutions for waterproofing and sealing

## **MasterSet**

Solutions for set control

## **MasterSure**

Solutions for extraordinary workability retention

## **MasterTop**

Solutions for industrial and commercial floors

## **Master X-Seed**

Advanced accelerator solutions for concrete

## **Ucrete**

Flooring solutions for harsh environments

## **BASF plc**

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