

# **EUCON<sup>®</sup>**

## **Design for Durability**

Software for Estimation of Concrete  
Strength & Service Life

General Overview

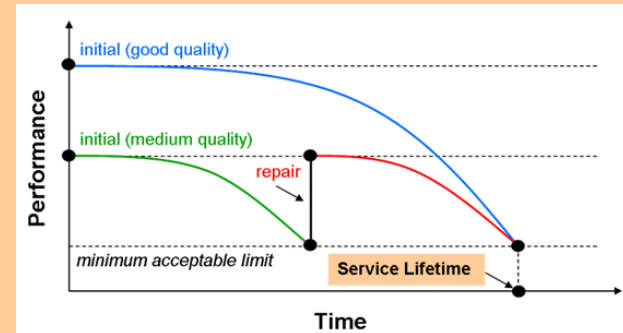




# The EUCON<sup>®</sup> Software Package

is a complete and comprehensive solution tool in calculating:

- concrete mix design
- concrete service life under harsh environmental agents
- corrosion preventing measures

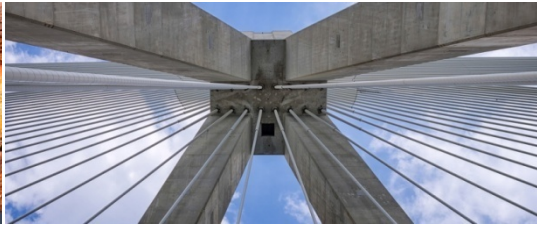


Its structure is in full compliance with:

- EN 197 standard for cement applicable to 27 types of cement
- EN 206 for concrete including additions of fly ash and silica fume and the use of various admixtures







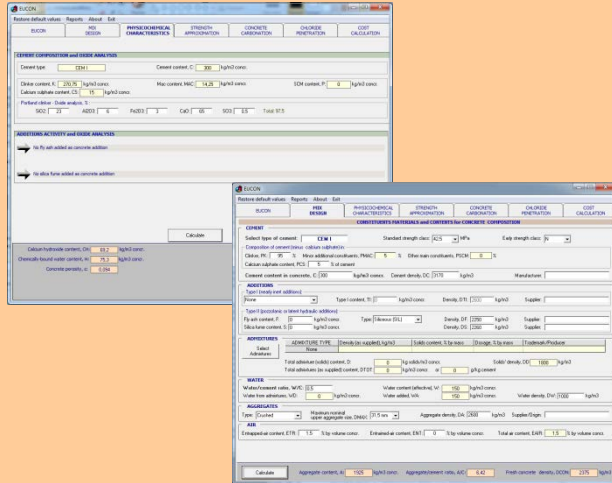
# EUCON<sup>®</sup> Key Features

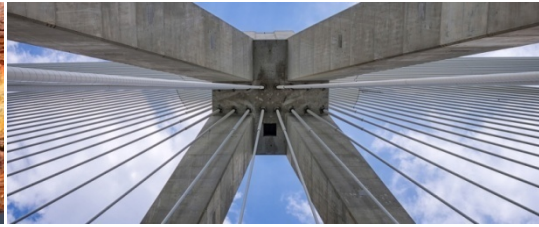
## Mix Design

- Selection between 27 cement types (ENV-197)
- Selection of Standard Cement Strength Class
- Incorporation of Type I, II additions & admixtures
- Selection of Type and Size of Aggregates

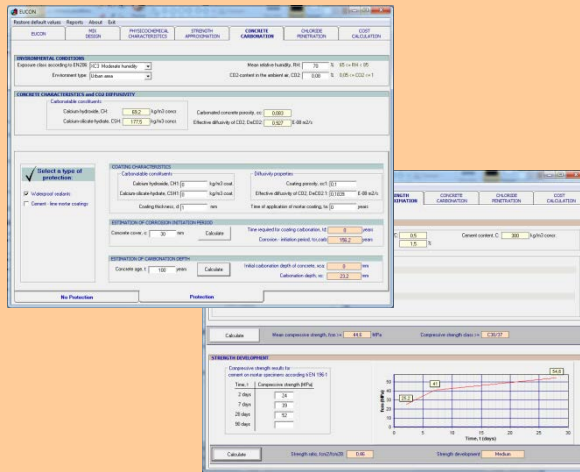
## Physicochemical Characteristics

- Cement Composition
- Portland Clinker Oxide Analysis
- Additions Activity and Oxide Analysis
- SCM Oxide Analysis





# EUCON<sup>®</sup> Key Features



## Compressive Strength

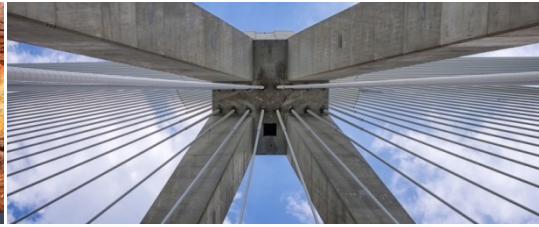
Estimation of Compressive Strength Class of Concrete  
Prediction of 'Actual' Compressive Concrete  
Compressive Strength based on Cement Strength Values

## Service Life Regarding Carbonation

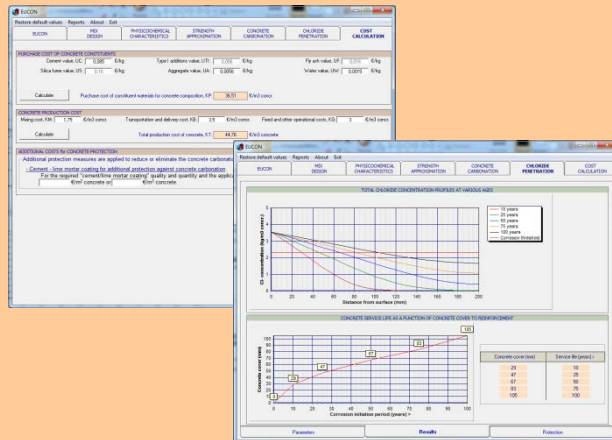
Fully Parametric Selection of Exposure Class, Environment Type & Humidity Conditions (EN206)  
Estimation of Concrete Service Life (in years) & Carbonation Depth  
Design of Protective Measures using Waterproof Sealants & Cement-Lime Mortar Coatings







# EUCON<sup>®</sup> Key Features



Service Life Regarding Chloride Penetration

Fully Parametric Environmental Conditions

Selection of External Source of Chlorides and Exposure Class (EN 206)

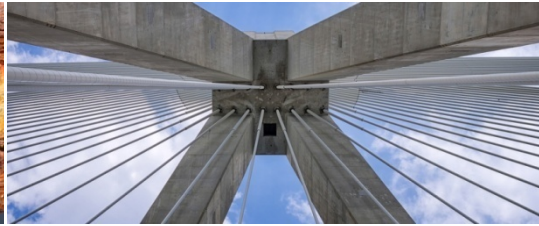
Setting Up of Chloride Diffusion Parameters and of Initial Boundary Conditions and Threshold for Corrosion Values

Calculation of Total Chloride Concentration Profiles and of Concrete Service Life (as a function of Concrete Cover to the Reinforcement)

Cost Considerations

Mix Design Optimization to Achieve the Specified Mechanical and Durability Characteristics at the Lowest Cost





# EUCON <sup>®</sup> Key Features

Example Case:

**Input:**

CEM I, Standard Cement Strength Class 42.5 MPa, w/c: 0.50, Cement Content 350 kg/m<sup>3</sup>, Crushed aggregates 31.5 mm

**Output:**

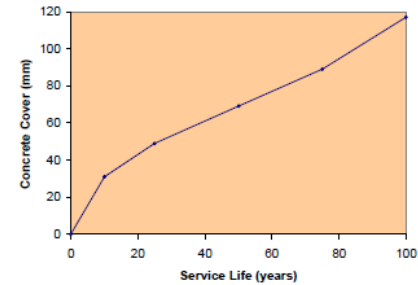
Carbonation Depth: 18 mm (at 50 years, Exposure Class XC3, Urban Area)

Total Service Life of concrete with a 30 mm cover > 100 years

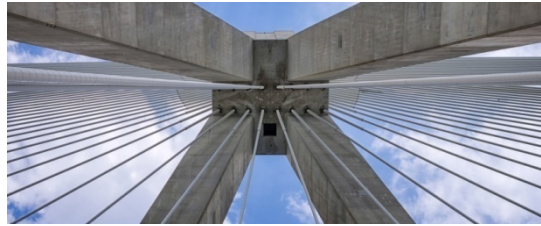
**Environmental Conditions for Chloride Penetration:** Corrosion induced by chlorides from Sea water, Exposure class XS2, External source of chlorides: Marine environment-Mediterranean Sea

**Concrete service life as a function of concrete cover to reinforcement**

Concrete cover (mm):	31	49	69	89	117
Service life (years):	10	25	50	75	100







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