



## Innovation: Key to Structures of Tomorrow

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### Abstract

Load carrying structures are increasingly complex and require constant improvements, sometimes by applying innovation. Furthermore, each structure being a prototype, there are many possibilities for innovation, whether in the shape of the structure, or in the way materials, construction methods or analysis methods are used. Finally, tools to implement innovation are available, as experimental tests and numerical simulations can confirm that the innovation is suitable. Therefore, innovation is the key to the structures of tomorrow. These statements are shown in this paper through various projects in which the author was deeply involved.

**Keywords:** Innovation, structures of tomorrow, load carrying structures, freedom of shape, new materials, experimental tests, numerical simulations, cladding systems, hybrid structures, casting assembly, UHPFRC.

### 1 Introduction

The following quote by Albert Einstein is the starting point:

*“If you always do what you always did, you will always get what you always got”*

And this is not innovation!

Innovation is the appropriate use of a novel idea or method. It is different from the finding that refers more directly to the creation of the idea or method itself.

In the area of load carrying structures, innovation is decisive.

First, load carrying structures are increasingly complex and require constant improvements, sometimes by applying innovation.

Second, each structure being a prototype, there are many possibilities for innovation, whether in the shape of the structure, or in the way materials, construction methods or analysis methods are used.

Third, tools to implement innovation are available, as experimental tests and numerical simulations can confirm that the innovation is suitable.

These statements are shown in this paper through various projects in which the author was deeply involved.

### 2 The floating Monolith

The Swiss National Exhibition Expo.02 took place from May to October 2002. Various exhibitions were located along the shore of the lake of Morat and the most spectacular structure was the monolith, symbol of eternity.