



## Protection and repair of concrete structures as an important contribution to sustainability

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### Abstract

Effective protection strategies and repair methods of concrete structures guarantee their serviceability and durability for a long period of time. However, the choice of the “right” materials, according to the code-family EN 1504, does not generally ensure the success of the application. It is the choice of the right system of materials as well as the application rules and quality control which guarantee this success. To achieve this, additional regulations have been introduced in Germany in the past. However, this procedure has been declared illegal according to the decision of the European Court of Justice, so a new way had to be found. This new way is based on the specific requirements for protection and repair of each individual structure and shifts the responsibility to the design engineer.

**Keywords:** Bridges; concrete; protection; retrofitting; sustainability.

### 1 Introduction

The majority of bridges in Germany are over 40 years old and are in mediocre condition (Fig. 1).

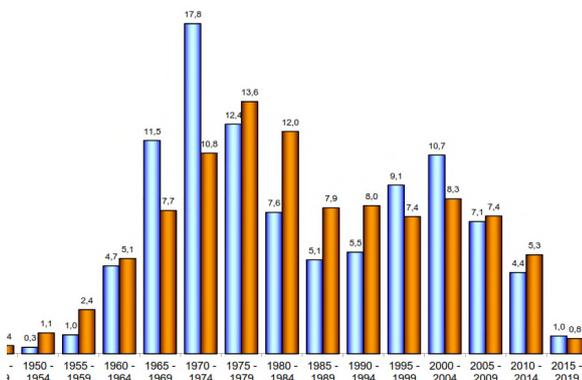


Fig. 1 Age of the bridges in Germany [1]

Except for 12 % of them, which are in very poor condition – with the degree of 3 or more, see Fig. 2 – and have to be renewed in the near future, the majority of them need to be strengthened and retrofitted as well as be protected and repaired professionally. This procedure is not only economical but sustainable as well and takes the limited natural and financial resources into

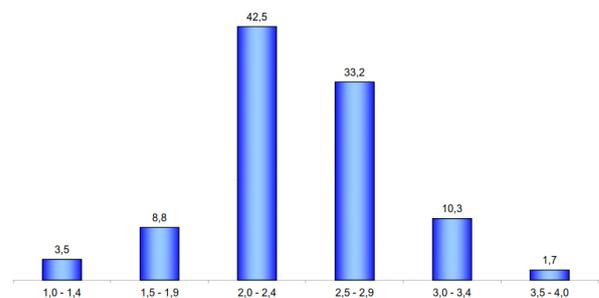


Fig. 2 Condition of the bridges in Germany [1]