

## Methods for ensuring the sustainability of steel heritage bridges

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### Abstract

This paper describes the results of the NAKI II project of the “Methods for Achieving Sustainability of Industrial Heritage Steel Bridges” which has been carried out over the last 5 years. It deals with the diagnostics results presents the overview of the load tests done and assessment results, including the coating application. The strengthening methods are presented, with the focus on the SMA materials. It is shown, that we have still many hidden reserves in the load capacity of heritage bridges, and if proper methods are chosen, the durability can be much longer, then predicted 100 years.

**Keywords:** Industrial heritage, steel bridges, load test, fatigue.

### 1 Introduction

Bridges are part of every route, whether for rail, highway, cycle or pedestrian traffic. They are large structures that complement the landscape or urban character of cities. The second half of the 19th century brought a boom in railway transport in the Czech republic. It was at this time that many railway bridges were built. They were stone or brick bridges with small spans. For larger spans, steel bridges were made. Some of them are still in use

today. Mostly they are found on local lines or less frequented routes.

Approximately 400 bridges are protected, four bridges are national cultural monuments and others within urban heritage protection areas. However, age has left its mark on many bridges, particularly in the form of corrosion or the development of cracks. Many valuable metal bridges are not listed and, as a result of their rapidly declining physical integrity, an important