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## Reconstruction of the Neues Museum in Berlin

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### Introduction

The Neues Museum in Berlin, Germany, was built between 1841 and 1859 under the management of Friedrich August Stüler, a pupil of Karl-Friedrich Schinkel. Although designed with a solid appearance to the outside observer, the building's interiors were a compelling combination of the latest cast-iron technology and ancient lightweight construction techniques. However, shortly after its opening, the museum building began to show settlement damage. This settlement activity persisted and reached a depth of 400 mm at the most unfavorable location. In 1943, during World War II, the central staircase hall was bombed. The northwest wing, the Egyptian courtyard and the southeast dome suffered the same fate in 1945. Some parts of the building were left fully exposed to the elements for over 40 years. The significance of the remaining fabric was recognized in the mid-1980s, prompting a decision to reconstruct the Neues Museum; however, significant portions of the damaged building sections had to be demolished. Some historic structures are unsuitable for a formal evaluation solely based on generally accepted verification methods or modern codes and standards. For this reason, experimental methods had to be considered at an early stage in order to support the structural stability analysis required for the historic elements.<sup>1</sup> The verification methodology was defined at the concept planning stage and implemented experimentally in close cooperation with Prof. Steffens, Ingenieurgesellschaft mbH (PSI), Bremen.

### Aspect of Structural Design during Reconstruction

Following the early use of iron in buildings in the 1790s in England, the Neues Museum was one of the first prestigious buildings in Berlin in which the use of iron became a distinct feature in both structural and architectural terms. Because of the issues that arose from the unstable ground, dead loads had to be minimized, and masonry ceilings built on “clay pots” were