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**Using SHM systems data to plan the maintenance
of large bridges – Polish examples**

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ABSTRACT

In Poland, monitoring systems have been installed on large bridges for over 20 years, and the collected results are used to control the condition of the facilities, and in planning maintenance works. The paper presents SHM systems installed in two cable-stayed objects:

- the Solidarity Bridge in Płock. It is a steel cable-stayed bridge with a main span of 375 m. SHM has been collecting data on this bridge since 2005.
- Rędzński Bridge in Wrocław. It is a concrete bridge with an unusual structure and spans 50 + 2 x 256 + 50 m. SHM has been collecting data on this bridge since 2011.

Selected data from the SHM systems will be presented regarding the following:

- changes of forces in the cables during operation,
- changes in the geometry of bridges over time,
- use of monitoring results to develop design recommendations for new bridges.

Key in words: cable-stayed bridges, maintenance, monitoring, SHM

1 INTRODUCTION

In Poland, SHM systems have been installed on large and smaller innovative bridges for over 20 years. During this period, extensive data on changes in deformations, stresses, internal forces, temperature, wind speed, and direction in the monitored structures were collected and developed. Based on data obtained from SHM, several interesting and valuable papers have been created [2], [3], [4], [7], and more are in preparation. In addition to scientific purposes, such as learning about the actual temperature distribution in individual elements of the bridge structure [7], data from SHM are used in works related to the maintenance of these structures. This paper presents the results obtained with the help of SHM in two cable-stayed bridges built in Poland. The methods of using the obtained results to plan and carry out maintenance works were also shown.