**Zeitschrift:** IABSE reports = Rapports AIPC = IVBH Berichte

**Band:** 83 (1999)

**Artikel:** Ecobridge: railway bridge management system for the future

Autor: Bien, Jan

**DOI:** https://doi.org/10.5169/seals-62934

### Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Mehr erfahren

### **Conditions d'utilisation**

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. En savoir plus

#### Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. Find out more

**Download PDF:** 09.12.2025

ETH-Bibliothek Zürich, E-Periodica, https://www.e-periodica.ch



# **Ecobridge - Railway Bridge Management System for the Future**

Jan BIEN
Dr Eng.
Wroclaw Univ. of Techn.
Wroclaw, Poland



Jan Bien, born 1950, received his civil engineering and Ph.D. degree from the Wroclaw University of Technology. Since 1993 has been responsibly for elaboration of the BMS for the Polish State Railways. Since 1997 has been involved in the UIC ECOBRIDGE Project.

# Summary

The paper presents a preliminary conception of the ECOBRIDGE (ECOnomical BRIDGE) System which is elaborated by the Technical Subgroup Bridges (7J22) of the International Union of Railways (UIC). The main objective of the project is a cost-effective bridge management system which could be adapted by all interested railway organisations for international integration of the railway transportation systems in the 21st century.

**Keywords**: bridges; management systems; expert systems

### 1. Introduction

The ongoing development of the railway infrastructure, its greater complexity and the growing expectations of its users require a higher standard of the RBMS. In addition to the technological advancement of the bridge engineering another urgent need arises, namely making the systems intelligent by equipping them with the ability of learning, recognising, concluding, and even choosing and achieving goals. To meet the needs of many railway organisations the Technical Subgroup Bridges (7J22) of the International Union of Railways initiated in 1997 the ECOBRIDGE (ECOnomical BRIDGE) Project. The members of the group represent Banverket (Sweden), NS (Holland), PKP (Poland), Railtrack (United Kingdom), SBB (Switzerland) and SNCF (France).

Presented below a preliminary conception of the ECOBRIDGE System [7] is elaborated on the basis of 10-years experience of the Bridge Group of the Wroclaw University of Technology.

# 2. Objectives and scope of the project

The main objective of the UIC 7J22 project is elaboration of a system which could be adapted by all interested railway organisations for international integration of the railway transportation systems.

ECOBRIDGE should provide the tools for:

- assessment, monitoring and prediction of technical condition and serviceability of existing railway structures;
- assurance of traffic safety and service parameters required by the customers;
- optimal use of available maintenance funds;
- collection and processing of administrative, technical and economic data;
- knowledge representation in the system.



ECOBRIDGE tools should enable an individual treatment of each bridge structure on the basis of all data and knowledge collected in RBMS. Because of the international nature of the railway systems ECOBRIDGE should lead to a compatibility of all Railway Bridge Management Systems.

## 3. ECOBRIDGE architecture

Four main interrelated parts of the proposed ECOBRIDGE system can be distinguished:

- · organisation of bridge management;
- scientific and technical basis of the system;
- knowledge-based computer system (Fig. 1);
- bridge staff (system users).

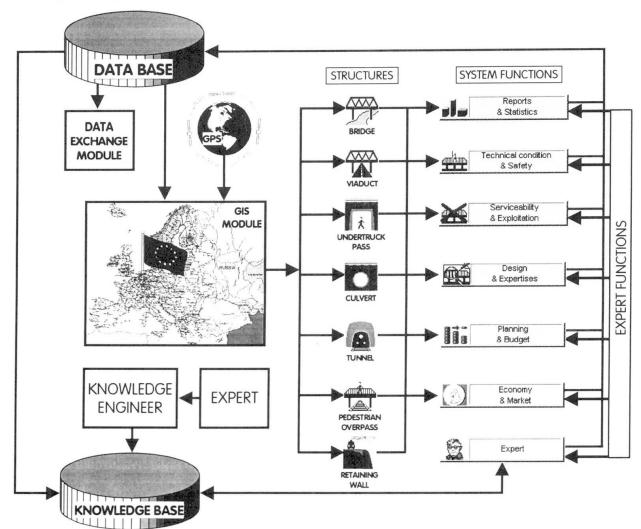


Fig. 1 Functional scheme of the computer part of the ECOBRIDGE System

## 4. Conclusions

Integration and unification of the bridge management systems are the most significant processes expected in the near future. Development of the systems should be stimulated by the international co-operation.