

## Book review

### USE OF FIBRE REINFORCED POLYMERS IN BRIDGE CONSTRUCTION.

T. Keller. IABSE-AIPC-IVBH, Zurich, 2003. ISBN 3 85748 105 0, 131 pp.

The aim of this structural engineering document, published by the International Association for Bridge and Structural Engineering as a state-of-the-art report, is to review the progress made worldwide in the use of fibre-reinforced polymers as structural components in bridges up to the end of the year 2000. Due to their advantageous material properties (such as high specific strength, a large tolerance for frost and de-icing salts and short installation times with minimum traffic interference), fibre-reinforced polymers have matured to become valuable alternative building materials for bridge structures. Today, fibre-reinforced polymers are manufactured industrially as both semi-finished products and complete structural components that can be easily and quickly installed or erected on-site. This book reviews these applications and the state of the art internationally.

Examples of semi-finished products and available structural components are flexible tension elements, stiff-in-bending profiles and sandwich panels. As tension elements, especially for the purpose of strengthening, strips and sheets are available as well as reinforcing bars for concrete reinforcement and prestressing members for internal or external use. Such systems

are described in the book. Profiles are available for beams, columns and sandwich constructions—especially for bridge decks—and again description is offered. During the manufacture of the structural components, fibre-optic sensors for continuous monitoring are integrated into the materials. Adhesives are being used more and more for joining components.

Fibre-reinforced polymers have been used in bridge construction since the mid-1980s, mostly for the strengthening of existing structures, and increasingly since the mid-1990s as pilot projects for new structures. In the case of new structures, three basic types of application can be distinguished: (1) concrete reinforcement, (2) new hybrid structures in combination with traditional construction materials, and (3) all-composite applications in which the new materials are used exclusively; and a chapter is dedicated to each within the publication.

This structural engineering document also includes application and research recommendations, albeit for Switzerland, and is aimed at both students and practising engineers working in the field of fibre-reinforced polymers, bridge design, construction, repair and strengthening.

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