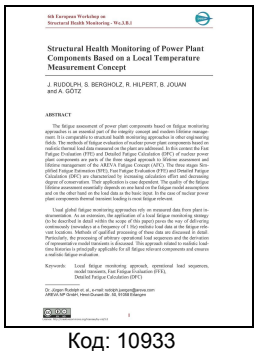

Код: 10933

**J. Rudolph, S. Bergholz, R. Hilpert, B. Jouan, A. Gotz**

# Structural Health Monitoring of Power Plant Components Based on a Local Temperature Measurement Concept

Дрезден, Германия, 2012 год

8 стр; формат: 23,5 x 16 см; библиографический список: 8 единиц

The fatigue assessment of power plant components based on fatigue monitoring approaches is an essential part of the integrity concept and modern lifetime manage¬ment. It is comparable to structural health monitoring approaches in other engineering fields. The methods of fatigue evaluation of nuclear power plant components based on realistic thermal load data measured on the plant are addressed. In this context the Fast Fatigue Evaluation (FFE) and Detailed Fatigue Calculation (DFC) of nuclear power plant components are parts of the three staged approach to lifetime assessment and lifetime management of the AREVA Fatigue Concept (AFC). The three stages Simplified Fatigue Estimation (SFE), Fast Fatigue Evaluation (FFE) and Detailed Fatigue Calculation (DFC) are characterized by increasing calculation effort and decreasing degree of conservatism. Their application is case dependent. The quality of the fatigue lifetime assessment essentially depends on one hand on the fatigue model assumptions and on the other hand on the load data as the basic input. In the case of nuclear power plant components thermal transient loading is most fatigue relevant.

Usual global fatigue monitoring approaches rely on measured data from plant instrumentation. As an extension, the application of a local fatigue monitoring strategy (to be described in detail within the scope of this paper) paves the way of delivering continuously (nowadays at a frequency of 1 Hz) realistic load data at the fatigue relevant locations. Methods of qualified processing of these data are discussed in detail. Particularly, the processing of arbitrary operational load sequences and the derivation of representative model transients is discussed. This approach related to realistic load-time histories is principally applicable for all fatigue relevant components and ensures a realistic fatigue evaluation.

Доклад. 6-я Европейская конференция по мониторингу технического состояния сооружений, 2012. Редакция Кристиана Боллера.

**Ключевые слова:**
Local fatigue monitoring approach, operational load sequences, model transients, Fast Fatigue Evaluation (FFE), Detailed Fatigue Calculation (DFC)

**Содержание**