

Title (en)

Fatigue monitoring method of components, for example in a nuclear power station.

Title (de)

Verfahren zur Überwachung der Ermüdung von Bauteilen z.B. in Kernkraftwerken.

Title (fr)

Méthode de surveillance de fatigue d'éléments par exemple dans une centrale atomique.

Publication

**EP 0122578 A2 19841024 (DE)**

Application

**EP 84103962 A 19840409**

Priority

DE 3314181 A 19830419

Abstract (en)

[origin: ES8703028A1] A method of monitoring fatigue of a stressed component part such as in nuclear power plants or aircraft, with sensors attached to the outside of the component part to be monitored, includes feeding values measured by the sensors at the component parts to be monitored at a given timing cycle to a process computer. The process computer contains a first arithmetic unit (LCID) which determines weighting factors for addressing mechanical unit load cases and/or directly comparing stresses specific to a load case, from the measured values with the aid of a stress file (LCL) of specified unit load cases, and storing them in a working memory. They are assigned in a second arithmetic unit (HSP VSP), in accordance with the comparison stresses determined by the first arithmetic unit (LCID) and/or on the basis of measured data stored in the working memory (FIFO II), after they are resolved in accordingly weighted unit values, utilizing a first memory including two unit load case libraries (TLL, MLL). They are stored in a weighted manner and in a timing cycle in a second memory (STACK VSP). The second memory is controlled with a third arithmetic unit (RFL). A partial usage factor obtained during an evaluation cycle of the component part is calculated from a comparison stress curve, utilizing fatigue curves stored in a memory (FAT). The partial usage value is added to a previous usage factor stored in a further working memory (RAM USE I), whereby an actual overall usage factor (Uges) is obtained.

Abstract (de)

Die Überwachung der Ermüdung von Bauteilen, z.B. in Kernkraftwerken erfolgt dadurch, daß die von Sensoren (13) an den Bauteilen (14) gemessenen Meßwerte an einen Prozeßrechner (33) gelangen, der aus den Meßwerten und anhand einer Datei (LCL) spezifizierter Lastfälle Gewichtungsfaktoren (ri) zur Beaufschlagung der mechanischen Einheitslastfälle oder/und direkt lastfallspezifische Vergechsspannungen ermittelt. Ferner werden nach Maßgabe der von einem Meßdatenerfassungsteil (MWE) im Arbeitsspeicher (FIFO II) abgelegten Meßdaten unter Benutzung zweier Einheitslastfall-Bibliotheken (TLL, MLL) Vergleichsspannungswerte berechnet. Eine weitere Recheneinheit (RFL) errechnet aus dem Vergleichsspannungsverlauf unter Verwendung der in einem Festspeicher (FAT) stehenden Ermüdungskurven den sich während eines Auswertungszyklus ergebenden Teilausnutzungsgrad des Bauteils.

IPC 1-7

**G06F 15/20**

IPC 8 full level

**G01M 99/00** (2011.01); **G01N 25/72** (2006.01); **G06F 17/40** (2006.01); **G07C 3/00** (2006.01); **G07C 11/00** (2006.01); **G21C 17/003** (2006.01)

CPC (source: EP US)

**G07C 3/00** (2013.01 - EP US)

Cited by

FR2633757A1; EP0477948A3; EP0339833A3; WO2009027255A3

Designated contracting state (EPC)

BE DE FR IT SE

DOCDB simple family (publication)

**EP 0122578 A2 19841024**; **EP 0122578 A3 19870401**; **EP 0122578 B1 19890719**; BR 8401842 A 19841127; DE 3314181 A1 19841025; DE 3479064 D1 19890824; ES 531767 A0 19870116; ES 8703028 A1 19870116; JP S59206751 A 19841122; US 4764882 A 19880816

DOCDB simple family (application)

**EP 84103962 A 19840409**; BR 8401842 A 19840418; DE 3314181 A 19830419; DE 3479064 T 19840409; ES 531767 A 19840418; JP 7829584 A 19840418; US 60164384 A 19840418