

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.

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IPC 8 full level

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