Title (en)

Assessment of life of duct.

Title (de)

Ermittlung der voraussichtlichen Lebensdauer einer Rohrleitung.

Title (fr)

Estimation de la durée de vie d'une conduite.

Publication

EP 0072105 A2 19830216 (EN)

Application

EP 82303636 A 19820712

Priority

GB 8123818 A 19810804

Abstract (en)

A method and apparatus are provided for assessing the overall lifetime tr until failure of a duct carrying fluid at elevated temperatures and pressures. Sensors located in the duct which can be a pipe sense the pressure of the fluid and its temperature at a multiplicity of points along the pipe. The sensors emit voltage signals which are multiplexed and converted to pulses of a frequency proportional to voltage at 1. The pulses are counted in a fixed time to determine a value for the presure and temperature in a microcomputer 1. The microcomputer 1 is programmed to calculate a value of hoop stress sigma from the pressure values and the measured vale of sigma is used to determine the relevant value of the Larson Miller parameter P from values thereof stored as a calibration curve against sigma in the microcomputer. The computer then calculates the value of tr from the equation. tr = 10 (@ - C) where T is the temperature in DEG K and C is a constant. C can be taken as being equal to 20 and the life fraction tF(m) of the pipe used up between sequential signal samples of the same temperature sensor is determined by the computer from the equation: <CHEM> where t1 is the time of the last or current sample, t2 is the time of the last but one sample, and tr1 is that value of tr derived from the current temperature signal. The computer 1 integrates tF(m) to determine the overall fraction SIGMA tF(m) of the life of the pipe used up in the period during which the pipe has been carrying fluid. Failure of the pipe is indicated when SIGMA tF(m) = 1.

IPC 1-7

F17D 5/00; G07C 3/00

IPC 8 full level

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CPC (source: EP)

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Cited by

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DOCDB simple family (application)

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