

CONDITION DETERMINED MAINTENANCE - THE DEVELOPMENT OF A KNOWLEDGE BASED SYSTEM FOR SLIDING DOOR FAULT DIAGNOSTICS

A knowledge based technique known as Mathematical Taxonomy has been identified as having a great potential in the area of automatic analysis of complex engineering condition monitoring data. In order to prove the concepts involved, a taxonomic system has been developed to diagnose faults on a sliding door system of a Class 321 EMU.

Maintenance and fault data from a number of sources was collated and a mathematical model of the door system developed. In addition a series of tests were carried out on a real door system to investigate possible failure modes. The data generated from these activities was used to create a knowledge base which then enabled a taxonomic recognition system to be developed.

The system is capable of identifying twenty-three different fault conditions. It has shown itself to be very robust in its diagnosis of both real faults and simulated developing faults.

The techniques developed and proved during the project are very versatile and can be applied to a wide range of subsystems. Further work is planned to apply the technique to diesel engine subsystems.