



Fault Codes – Definition and Use

When implementing a computerised maintenance management system (CMMS), there is often a great deal of discussion around Fault or Failure Codes: their definitions and uses. All of the modern CMMS systems have some way of recording Fault Codes. The CMMS may even have other associated fields to record for example Cause (Raw Material Out of Specification, Operator Error) and Action (Adjusted, Replaced). Typically Fault or Failure Codes are either a short alphanumeric or a numeric code.

- For example, BRK or 03 for Broken.

The codes should provide an easy way to analyse equipment failures, problems and faults and to see for example MTBF for a range of similar equipment.

When defining the Fault Codes as part of the CMMS implementation there are a number of different factors to be considered.

Code Type Definition

Firstly, is an alphanumeric code preferable? At first sight, in the example above BRK seems to be the most logical, as it is a logical abbreviation for the word BROKEN. However before making a final decision on the coding structure it is worth considering other options. Codes were typically used in older CMMS systems to save on disk storage space as well as to reduce data entry times. Today disk storage space is not really an issue, consequently you may want to allow the full word to be used e.g. Broken, especially if the Codes are available from a drop down menu or pre-defined list.

There may well be a case for using a numeric, e.g. 03 to represent the code for broken. Many companies have used numeric, pre-printed Fault Codes, as part of their older manual Work Orders systems. ie tick boxes, and often these codes are engrained in the minds of the engineers; so why change them.

In addition, numbers tend to be easier to enter via a keyboard and this can be particularly important if the engineers will be entering the data into the CMMS themselves. This is even more important if contractors are expected to enter data. Different contractors will be used over time and they will all need to be trained.

Multiple language support – screen label or data and screen label

There is one other reason for using numeric codes; namely language independence. Most CMMS systems support multiple languages and typically the software suppliers will supply a list of languages including French, German, Chinese, Arabic, and Italian etc. When software suppliers talk about multiple languages they normally mean the screen labels – not the data. So the Fault Code may be “Broken” in English but will be “Kaputt” in German and “Guasto” in Italian or BRK, KAP or GST (for the abbreviated versions). The data in the CMMS database will therefore be inconsistent as the Fault Code will be stored in the local language, BRK, KAP etc. So if you wish to analyse Faults that are occurring in different countries on similar item of equipment this will be difficult to do if you do not use numeric codes. If all three countries (in this case) used “03” to indicate that the item was “Broken” it will be easier to compare the individual country operations.



One way around this problem has been to use an English abbreviation e.g. BRK, but at the local site the software would display the long description in the local language. In these cases the Fault Code descriptions are linked to the local language user profile, as per the local language screen labels. But unless the software has been designed with this in mind, it will be an expensive to have this functionality added

Number of Code Options

Secondly how many options should be included? Too few and the data will be meaningless. Equally if there are too many options the default will become either the “Miscellaneous” or “Other” option, which will again render the data meaningless. When the author analysed the Failure data that was being collected by a major food manufacturer, the majority of the entries were option 99, which was “Miscellaneous”. With a single list of 99 options the engineers found it too time consuming to find the correct code. When the list was reduce to a manageable size (30 in this case) then less than 10 percent of failures were recorded under the “Miscellaneous” option.

If the CMMS supports a hierarchical code structure (some do, many do not) then a larger number of codes can be successfully used, as the first level will act as an initial filter to reduce the number of options at the second level. With this option the first level filter is normally the Type of Equipment, which ideally will be entered automatically from the Plant or Equipment Register, rather than having to be re-entered in the Work Order.

Code Complexity

Thirdly, how much information should you try and gather in one code entry? Some companies have complex codes that try to do two or even three different jobs.

For example to record the Fault Code (BRK) and the Severity (1,2 or 3) the Code would be: BRK-1 – two different jobs, and if you add the Cause – three jobs. For example: BRK-1-MAT: Broken – Level 1 Severity – Raw Material Problem).

The author recommends that the Code should be there to do one job, if the other information is required, first see if it can be collected automatically or use an additional field. Aim to get 80 percent of the benefit for 20 percent of the effort.

Summary

Fault and Failure Codes can be very useful in helping to understand how and why equipment fails or under performs. Having a clear understanding of your near term and longer term objectives will help ensure that you take the right approach when defining the codes. It will also ensure that implementation is undertaken once and only once. Having the correct codes and will also generate the types of reports and statistics that you require whether you are looking to improve OEE, or to implement a 6-Sigma or TPM program.

About the author

John Hookham is a director of maintenance management consulting and marketing services company Adrelia.

- Tel: 020 7286 7073
- Email: john.hookham@adrelia.com
- Website: www.adrelia.com