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SPM-181 PRACTICALLY APPLICABLE RELIABILITY TOOLS

A guide with practical cases

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SPM

Reliability Management

SPM is an independent organisation consisting of about 60 company members in Scandinavia.

SPM initiates and finances unprejudiced investigations of common interest for its members – mainly in the field of reliability and testing of electronic components and materials.

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Abstract

This aim of this handbook is to give the reader a guide to practically applicable reliability tools to be implemented during different phases of the product's life from the development phase to the field operation phase.

Firstly, an overview of reliability definitions, other general terms, and reliability strategies are given.

Secondly, a broad range of reliability tools used by different industries are presented. The reliability tools are mapped against two development models, namely the V-model and the Stage-Gate® model. The selection of the reliability tools covered by this handbook is based on conclusions of the survey carried out among SPM members in conjunction with this project.

The different reliability tools are described by purpose, method, applicability, advantages, disadvantages, guidelines, and references. The general idea is to give a short presentation of the tool, i.e. 2 – 4 pages, which can stand alone and serve to assist the reader in deciding whether or not to apply the tool to a given project, as well as providing guidance on the implementation.

Finally, the use of the tools is demonstrated by a number of cases supplied by SPM-members.

The report is intended for R&D, reliability, quality, and test managers and engineers who need a handbook of practically used reliability tools for inspiration, reference and guidance rather than an extensive textbook.

Preface

The work presented in this report has been initiated and financed by SPM Reliability Management.

This aim of this project has been to develop a guide to practically applicable reliability tools to be implemented during different phases of the product's life from the development phase to the field operation phase.

The report has the form of a handbook which enables the reader to get an overview of a number of reliability tools in a few pages rather than an extensive textbook. Further, the application of the tools is demonstrated by practical cases developed in cooperation with SPM-members.

The project includes:

- Information gathering using existing literature, reports, and the Internet.
- Questionnaires sent to SPM members and participants included in a project group formed at the beginning of the project. The project group consists of the following companies:

B&O Medicom A/S, Brüel & Kjær SV A/S, PBI Dansensor A/S, Novo Nordisk A/S, Danfoss Power Electronics A/S, OJ Electronics A/S, Danfoss Electronics Controllers and Services A/S, GN ReSound A/S, DEIF A/S and Terma A/S.
- Company visits to Danfoss A/S, OJ Electronics A/S, and Grundfos A/S.
- A one day project seminar "Reliability seminar with focus on practically applicable reliability tools" halfway in the course of the project for SPM members and other invited companies.

The purpose of the seminar was to present the status and the preliminary project results to the participants in order to incorporate the feedback and input from the participants in the final report. Further, a number of examples / cases prepared by SPM member companies were presented.

Exchange of knowledge and experiences took place and the participants commented on the project results and the continued work.

Readers

The report is intended for R&D, reliability, quality, and test managers and engineers who need a handbook of practically used reliability tools for inspiration, reference, and guidance.

Table of contents		Page
1.	General	1
1.1	Introduction	1
1.2	Project and report.....	1
2.	Reliability introduction	3
2.1	Definitions	3
2.2	The overall process	10
2.3	Development models	10
2.4	Task, methods & tools	12
2.5	Overall method examples	12
3.	Software reliability - ISO/IEC 25000.....	17
4.	Reliability tools	23
4.1	Failure mode effect (and criticality) analysis FMEA/FMECA	27
4.2	Fault Tree Analysis (FTA).....	33
4.3	Design philosophy guidelines.....	37
4.4	Finite element modelling (FEM)/Finite element analysis (FEA)	41
4.5	Reliability review.....	45
4.6	Derating	49
4.7	Lifetime/failure rate estimation	53
4.8	Mean time between failures (MTBF) / Mean time to failure MTTF based on handbooks like MIL-HDBK-217	55
4.9	Accelerated testing in general.....	57
4.10	Highly accelerated life (limit) testing (HALT).....	59
4.11	Calibrated accelerated limit testing (CALT)	63
4.12	Multi environment overstress testing (MEOST)	67
4.13	Classic Accelerated life testing (Classic ALT).....	69
4.14	Type/qualification/design verification testing	73
4.15	Highly accelerated stress screening (HASS)	77
4.16	Reliability Stress Screening (RSS)/Burn-in.....	79
4.17	Mean cumulative function (MCF) analysis	83
4.18	Weibull analysis	89
5.	Reliability cases.....	93
5.1	Tailoring of DFMEA (Oticon A/S)	93
5.2	Slip ring CALT/ALT	101
5.3	Extended PCB power relay lifetime (Svend Haugaard, Danfoss A/S).....	119
Annex 1 Questionnaire		125
Annex 2 HALT check list.....		131