



ERSG/Project/FS/005/09

PROJECT:
FMEA/FMECA TRAINING

OUR SERVICES COVER THE FOLLOWING AREAS:

- Process Hazard Analysis
- Enterprise Risk Management
- Project Management
- RUBI-Software
- Business Continuity Systems
- Process Safety Management
- Risk Training Solutions



CHINA SOUTHERN GRID: FAILURE MODE & EFFECT ANALYSIS

Project Intro.



INDUSTRY: ELECTRICAL
SECTOR: POWER GENERATION & TRANSMISSION

GPSGS (CSG) requested a formal session on the Failure Mode and Effect Analysis (FMEA) with a view to determining the value of this technique for use in determining risk and maintenance strategies at the power generation site.

Failure Mode and Effects Analysis (FMEA) is a technique which is used to identify hazards or ways in which components or systems can fail to perform their design intention. It will also identify the effects of those functional failures on the system of which those components or sub-systems are a part. FMEA is largely a qualitative technique.

Project Scope

The project scope included a FMEA training and practical session and covered the following issues:

Know and understand the mission of the system being analysed, and the constraints under which it has to operate. The analysis was carried out by, or with the help of design engineers who are familiar with the technical details of the system and its operational conditions.

The steps of the analysis used must be as follows:

1. Obtain all necessary information on the system to be analysed.
2. Establish ground rules and assumptions for the analysis.
3. Construct a hierarchical block diagram for the system.
4. Conduct the FMEA based upon the information derived in steps 1 to 3.

FAILURE MODE AND EFFECT ANALYSIS: A RIGOROUS APPROACH

Project Results

The FMEA project resulted in the following outcomes for the company and participants:

1. Ability by staff to understand and use both primary approaches to the completion of an FMEA. One is the hardware approach which lists individual items and identifies their possible failure modes and effects. The other is the functional approach which recognises that every item is designed to perform a number of functions that can be considered as outputs.
2. Candidates are capable of listing outputs and the effects of losing those outputs.
3. A database which can be used to conduct further FMEA studies
4. ERSG certificate of competence for all candidates

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SOFTWARE APPLICATION

ERSG used the Lihou FMEA software for the duration of the project but the company decided to use a basic XL FMEA program to conduct initial studies for training purposes.

The Lihou software can also be used for any future PHA studies including HAZOP, FTA etc.