

Safety Corner

What is GOFA?

Goal Oriented Failure Analysis (GOFA) is a hazard identification technique using selective features from failure mode & effect analysis (FMEA) and fault tree analysis (FTA) to identify the causes of failure of a defined goal, which can be described by a prescriptive statement of intent to be satisfied by the designer of a system.

A typical GFOA is a top-down analysis using system diagram to identify causes of failure. A number of steps are used in a typical GFOA:

1. Define the failure goal of a system
2. Develop a system diagram that shows the subsystems and components
3. Determine the fault modes for each component in each subsystem of the system diagram
4. Choose a component for detailed study
5. Choose a fault mode for this component
6. Identify failure mechanisms for the chosen fault mode
7. Choose a failure mechanism
8. Identify the failure causes for this failure mechanism. These may be external to the system diagram or internal if caused by the other components
9. Repeat the above steps until all components are evaluated

GOFA provides a practical approach to identifying the factors that can lead to a recognition of the hazards associated with a process, system, hardware, software, human errors, etc. GFOA uses practical knowledge of the failure of equipment to identify the hazards and a wide range of causes can be evaluated. However, GOFA can be time-consuming when a large number of failure modes and process items are required to be evaluated. Furthermore, the scope of GFOA is often limited to the failure goals considered. The technique only assesses hazards that occur from the failures considered, and so some hazards might be missed if some of the failures are omitted in the analysis.

=====

The Safety Corner is contributed by Ir Dr. Vincent Ho, who can be contacted at vsho@UCLA.edu