A Functional HAZOP Methodology

A HAZOP methodology is presented where a functional plant model assists in a goal oriented decomposition of the plant purpose into the means of achieving the purpose. This approach leads to nodes with simple functions from which the selection of process and deviation variables follow directly. The functional HAZOP methodology lends itself directly for implementation into a computer aided reasoning tool to perform root cause and consequence analysis. Such a tool can facilitate finding causes and/or consequences far away from the site of the deviation. A functional HAZOP assistant is proposed and investigated in a HAZOP study of an industrial scale Indirect Vapor Recompression Distillation pilot Plant (IVaRDip) at DTU-Chemical and Biochemical Engineering. The study shows that the functional HAZOP methodology provides a very efficient paradigm for facilitating HAZOP studies and for enabling reasoning to reveal potential hazards in safety critical operations.

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