ABSTRACT

Process equipment has a life cycle that includes initial design, usage life, inspection testing and preventative maintenance, and retirement. The life cycle of each vessel, storage tank, and piping system is finite. The goal of each refinery and chemical plant is to get the longest life possible from each piece of refinery equipment.

The useful life of each piece of equipment must be a guiding concern during equipment design. Material selection, configuration, anticipated damage mechanisms and future preventative maintenance requirements have to be evaluated and equipment designed in order to get the longest possible useful life from process equipment. Each possible damage mechanism that could shorten equipment life must be fully evaluated.

This paper will explore up front analysis that must be performed in order to design fixed equipment for extended useful life. Potential damage mechanisms and the right material selection must be analyzed by a qualified and knowledgeable expert. Vessel configuration design, and piping runs, bends and supports must be evaluated with future maintenance requirements in mind. This paper will discuss the use of a risk based evaluation of process systems including each equipment item as part of the design process.