



Reliability Improvement in the Hydrocarbon Process Industry

CHALLENGE

Our client, a large United States based petrochemicals company, wanted to extend the interval between refinery compressor train maintenance outages from 8 to 10 years. The solution was to develop a risk analysis of the limiting compressor train in the refinery and demonstrate the ability to construct reliability and risk models for a compressor train.

SOLUTION

MPR has routinely been selected to perform reliability improvement assessments. Our proprietary analysis software used to complete these projects contains features not found in commercially available modeling programs. In addition, our engineers have years of experience developing quantitative models to predict the frequency of equipment failures using first principles engineering methods. MPR was selected to develop a plan to complete the work in three phases, which included collecting data to quantify failure rates for compressor trains; building a reliability model using data and calculating failure rates for system and components; and improving the reliability model to incorporate consequences information to calculate risk.

RESULTS

MPR completed the pilot project and was successful in developing a reliability model for the compressor train. MPR's work, which validated the engineering judgment of the maintenance engineers, quantified risks to enable deferral of costly maintenance while reducing risk associated with specific component failures. MPR provided necessary training to enable the client to use the tool over the long term without MPR assistance to calculate system reliability and risk at various sites.

