

Key points of API 581 risk based inspection methodology

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Since the year 2000, risk based inspection methodology have been developed by American Petroleum Institute (API) for refining, petrochemical, chemical process plants and oil and gas production facilities. The third edition of the recommended practice for risk based inspection (RBI) methodology API 581 has been released at April 2016. API 581 divided there parts which are the inspection planning (part 1), probability of failure (POF/part 2) and consequence of failure methodology (COF/part 3). Part 1 provides methods used to develop an inspection plan for fixed equipment, including pressure vessels, piping, atmospheric storage tanks (AST), pressure relief devices (PRD) and heat exchanger tube bundles. The methods for calculating the POF for fixed equipment are covered in Parts 1 and 2. The POF is based on the component type and damage mechanisms present based on the process fluid characteristics, design conditions, materials of construction, and the original construction code. Part 3 provides methods for computing the COF in two different levels. Level 1, is based on equations with a finite set of well-known variables generated for common fluids or fluid groups found in refinery and petrochemical processing units while Level 2, is a more rigorous method that can be used for any fluid stream composition. COF results are presented in terms of either area or financial loss. The financial losses include such costs as equipment repair and replacement, environmental cleanup costs but are not limited. Some of those costs calculations need to determine constant values for the unit area which are changing from the country to country and company to company. Also in some calculations such as release rate calculation need constant values which are given in ranges and effects the overall consequences calculations. The selection of inspection effectiveness category is one of the primarily factor effects the value of damage factor and POF analysis finally. In this study, some of those key points are revealed out and discussed to understand the RBI studies better. Consequently, those key points could be used to have an idea of RBI software reliability and development of the RBI procedures and studies of the company.

Biography:

Huseyin Baran Akinbingol is presently working at Board of Labour Inspection at Ministry of Labour and Social Security (Turkey) from the year 2010, as a senior labour inspector especially in the fields of inspection of chemical industries and safety reports, according to process safety, control of major accidents (COMAH/Seveso) directive, and other legislations. He graduates from Gazi University, with bachelor degrees chemical engineering (2004) and business administration (2013). Worked before at Crude Oil Pipeline Construction project (2004), Plant Construction (2006-2008) and Bureau VERITAS (2008-2010) as an industrial inspector with the capabilities of safety (Occupational Safety Expert), welding engineering (International Institute of Welding) and painting (Training within Industry & British Gas), non destructive inspection (Middle East Technical University).

He got master's degree in the fields of energy and catalyst at the Department of Advanced Technologies (2011) and presently he is also researcher at Gazi University as a doctoral thesis subject in the fields of petrochemical industry for risk based inspection (RBI) and methodology API 580/581 since 2013.