RISK ASSESSMENT AND RISK–BASED INSPECTION FOR
PETROCHEMICAL UNIT:
A PRACTICAL APPLICATION

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Abstract
The development of risk and maintenance tools requires the integration of risk analysis, materials technology and structural analysis. Therefore, this paper is an example of how to use known risk assessment codes (API 580, API581BRD) developed to address safety analysis requirements for risk management in petrochemical industry.

These industry environments require tools for the application of risk and reliability methods of maintenance to identify and priorities among project tasks where the risks are highest from both likelihood of failure (LOF) and consequence of failure (COF).

Risk-Based Inspection (RBI) is an integrated methodology that factors RISK into inspection and maintenance decision making.

This paper describes the methodology and the results of application for petrochemical unit using the KGS-RBI™ program, which adopt Korean’s situation, was developed by Korea Gas Safety in reference of API Codes and ASME PC (Post Construction).

The KGS-RBI™ software has been applied to evaluate the risks of equipments in Naphtha Cracking Center (NCC) which is a typical facility of petrochemical plant.

The results of the risk assessment and re-inspection interval of internal opening using KGS-RBI™ program are useful in determining the inspection period.

After applying the RBI program to the NCC unit in Korea, there was a proper re-inspection interval from 1 year to 8 year for the equipments as well as pipeline as described in API510 and API570.

RBI is very effective and efficient of the inspection techniques. It served to identify damage mechanism as described in API571 in a damaged part of an each equipment to be reflected in inspection planning in order to reflect necessary things in next turnaround.