

# Gaseous Oxygen (GOX) System Upgrade for Mitigation to Process Safety Risk of Brownfield Unit

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**ABSTRACT :** *Company A is a brownfield refinery that had been in service for over 25 years and has its own system to generate GOX for its needed utility usage. Noting of the hazards of GOX and in consideration of an aged refinery, this research is of the intent to evaluate the risk of GOX in the aspect of personnel and process safety; and to provide recommendation or mitigations planning with regards to Company A's existing hardware through Bow Tie review. The analysis was done taking into consideration the data compiled as well as the inherited Process Safety Assessment (PSA) findings of Company A that served as secondary data to this research. It was observed that Company A personnel are well versed with the risk and hazards of GOX system and through the plant rejuvenation and material upgrade works, the hazards were mitigated to a lower risk within the risk matrix. The implementation and upgrade works had served to add more barriers to the left side of the bow tie as well as ensuring that the aged complex is well equipped with needed safeguarding strategies (from inherent safer design, passive & active safeguarding and procedural controls) to avoid the occurrence of potential oxygen fire or explosion incident.*

**Keywords -** *Gaseous Oxygen, Personnel Safety, Process Safety*

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