

## STRUCTURAL HEALTH MONITORING AND ITS RAMIFICATIONS ON KENYA'S INDUSTRIAL GROWTH

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### **Abstract**

Safety and integrity of machine parts and structures have for a very long time been top concerns for decision-makers in industrialization. Thus, structural health monitoring (SHM) systems aid in the strategic and effective planning of maintenance of current components and provide guidance for refining future designs. Uncertainties are continually present in the materials used in such designs. The failure of such structures due to encountered uncertainties is unavoidable, regardless of the safety precautions that have been considered, and can only be prevented through maintenance. SHM has developed into a useful tool for determining when a structure's attributes have altered to signal degradation, enabling for the scheduling of timely and suitable maintenance and the estimation of the remaining performance potential. By preventing total component failure, condition-based maintenance (CBM), which is a timely and appropriate maintenance of machines and structures, can lower operational costs and deaths caused by accidents. The current study explores SHM's varieties, applications, and effects on Kenya's industrialization process. The capabilities and potential applications of SHM will be discussed, and a suggestion for how SHM systems could be retrofitted into current machinery and structures will also be made. It will also present how to build components and structures that are optimized using historical infrastructure data from the SHM system.

**Keywords:** Structural Health Monitoring; Condition Based Maintenance; Prognosis; Remaining Useful Life.