



**DISSERTATION FOR THE DEGREE OF MBA – OIL AND GAS  
MANAGEMENT**

**Dissertation Topic:**

**STUDY ON METHODOLOGIES AND TECHNIQUES USED TO  
MANAGE OIL REFINERY MAINTENANCE**

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# TABLE OF CONTENTS

1. Study Background
2. Problem Statement
3. Oil Refinery Maintenance
4. Need for the research
5. Objectives of the study
6. Research Methodology
7. Implement a Preventive Maintenance Strategy
8. Preventive Measures
9. Methodology to Maintain Oil Refinery
10. Equipment Critical Analysis
11. Tools and Techniques
12. Risk Based Inspection and Maintenance Procedures
13. Methods Applied In Refinery
14. Monitoring and Maintenance Systems
15. Conclusion

## 1. STUDY BACKGROUND

- The oil and gas assessment industry works to stringent gauges that principally endeavor to keep gear running effectively while methodology and strategies for maintaining oil refinery.
- Complying with such principles is testing since oil tasks include boring both ashore and seaward, supply building, admirably adjusting, creation administrations, refining and transportation of oil based commodities, and numerous different activities.
- In addition to the fact that it is trying to fit in with industry benchmarks, yet it is costly to keep up a sheltered working environment and to shield from hurt.
- It is important to outfit labourers with defensive attire; to persistently prepare them on rehearsing wellbeing methods; and to stay up with the latest on rehearsing improved gear assessment strategies.

## **2. PROBLEM STATEMENT**

- Oil refineries assume a basic job in the worldwide oil store network as there is a steady need to change over raw petroleum into different items.
- The activity of oil refineries is unpredictable and includes a huge number of gear frameworks including tremendous channeling systems, refining sections, and capacity tanks. Making a viable maintenance management program for these advantages is a basic segment in the productive and safe activity of refineries.
- At its center problem, maintenance management is a system that frameworks the needs, methodologies, and assets that an activity will use to facilitate its maintenance exercise.
- For oil refineries, these maintenance exercises preventive, prescient, and remedial are the absolute generally significant in forestalling occurrences and maintaining a proficient creation condition.

### 3. OIL REFINERY MAINTENANCE

- Maintenance is the act of ensuring or reestablishing gear so as to keep up capacity and uprightness. As a basic part of a benefit respectability management program, maintenance architects and professionals devote time to creating and actualizing maintenance procedures that improve generation and use financially savvy maintenance techniques.
- Besides, the duties of a maintenance designer might be prescient or preventive. The crucial contrast among prescient and preventive maintenance is that prescient maintenance is a nonstop procedure dependent on the present state of gear though preventive maintenance is acted in planned interims dependent on the age and remaining existence of a bit of hardware.
- **Preventive Maintenance**
- **Predictive Maintenance**
- **Corrective Maintenance**
- **Reliability Centered Maintenance**

## 4. NEED FOR THE RESEARCH

- Rising difficulties in the oil industry are ending up being an impetus for change in the management of offices, new and old, around the world.
- The development sought after for crude oil and is probably not going to give any huge indications of easing back throughout the following decade or more, however actually organizations are confronted with more noteworthy extraction costs because of the expanding shortage of customary crude oil saves, and the challenges related with the extraction or potentially handling of unusual stores situated in the profundities of the seas.
- So also, as sources develop, stream eases back and costs increment as cutting edge innovations are required to improve recuperation.
- Another test, regular to all enterprises, is the enhancement of hardware accessibility versus costs. Moreover, because of the exceptionally basic nature of the oil exercises, the industry can't bear the cost of startling disappointments.

## **5. OBJECTIVES OF THE STUDY**

- To find out the different methodology for managing oil refinery
- To meet the various maintenance techniques used in oil refinery
- To realize the management methods and analyses how to maintain the refinery
- To discuss the oil refinery how to reduce the cost for maintenance management

## 6. RESEARCH METHODOLOGY

- There is likewise an expansion in kept an eye on offices, especially in remote areas and these patterns will unavoidably increment working expenses. From a speculation point of view, the vulnerability in supply implies that speculators will be hoping to minimal effort of generation and maintenance activities to guarantee the security of their venture.
- The qualitative procedure incorporate is a fundamental and noteworthy part of tasks with numerous advantages, including; the decrease of personal time because of startling hardware disappointment, which improves dependability and practicality, expanding gear accessibility and use.
- The quantitative procedure include with the condition-based maintenance gives a powerful comprehension of hardware condition while in activity and is utilized to foresee disappointment in mechanical frameworks through issue finding from condition observing signs utilizing diagnostics and prognostics.



## **7. IMPLEMENT A PREVENTIVE MAINTENANCE STRATEGY**

- With an expansion in worldwide interest, unpredictable costs and stringent natural guidelines, the oil and gas industry must cause moves to decrease costs, to upgrade the exhibition of its modern resources and improve its ecological impression.
- Among various different methodologies, executing a legitimate preventive maintenance system ought to be the primary thought for oil and gas organizations deciding to be proactive and not receptive in decreasing operational risk.
- To stay serious and make a benefit in the oil and gas industry, administrators must understand the incentive in securing organization resources. Overseeing organization resources proficiently and successfully has become a basic business reality, and oil and gas administrators need to start a forceful resource management program.
- An effective procedure will both secure and improve the estimation of benefits, while ensuring that due consideration is taken in their day by day use. A legitimate system will likewise improve maintenance profitability, reliability and resource life span, while improving the specialized and managerial aptitudes of the workforce.

## 8. PREVENTIVE MEASURES

- The essential objective of maintenance is to maintain a strategic distance from or moderate the results of hardware disappointment.
- Be that as it may, concentrating on forestalling disappointments before they happen is a generally new acknowledgment for the oil and gas industry.
- Condition-based observing is a maintenance procedure that screens the state of an advantage for choose what maintenance should be done and when.
- CBM directs that maintenance ought to be performed when certain markers give indications of diminishing execution or up and coming disappointment. It is intended to save and reestablish hardware reliability by supplanting worn segments before they cause an issue.
- Administrators adopting a CBM strategy through remote resource observing can altogether limit the risk of plant shutdown.

## 9. METHODOLOGY TO MAINTAIN OIL REFINERY

- Petroleum treatment facilities and enormous petrochemical plants contain a large number of bits of procedure and utilities gear that are liable to wear, disintegration, crumbling, maturing, and so on., bringing about expanding breakdowns and blackouts. Envision being a maintenance engineer and getting 50 work orders during a redesign with a constrained spending plan, time, and work, save parts, instruments, machines, and so forth. How does that architect organize the work?
- End clients examine causes, yet in addition decide the best methodology to alleviate or keep away from results. The results of a hardware disappointment incorporate risks identified with:
  - Safety
  - Environment
  - Production misfortune
  - Maintenance cost.

## 10. EQUIPMENT CRITICAL ANALYSIS

- Gear basic analysis is a quantitative analysis of hardware blames, and positioning them arranged by genuine results on wellbeing, condition, creation misfortune and maintenance cost.
- The key advantage of this analysis is to give the way to perceive high-criticality versus low-criticality gear, decrease the degree of vulnerability and spotlight on high-need maintenance errands.
- The analysis additionally chooses the best and most financial maintenance procedure, organize work arranges and settle on protection and the interest on save parts.
- For criticality analysis, the accompanying drawings and documentation ought to be accessible: definite plant/framework portrayal or control accounts, datasheets, P&IDs, process stream outlines (PFDs), single-line graphs, circumstances and logical results charts, shutdown rationale, and so on.

## 11. TOOLS AND TECHNIQUES

- Master judgment ought to apply to the data sources used to build up the hardware criticality list/arrangement and to every single specialized detail during this evaluation. Such skill is furnished by any gathering or individual with specific information or preparing in wellbeing, cost estimation, activity, maintenance, condition, wellbeing, structure, and so on.
- Archive analysis is utilized as another apparatus. A wide scope of reports and drawings might be investigated to help give an increasingly successful and effective examination.
- A few gathering innovativeness exercises, for example, conceptualizing, ostensible gathering techniques, and so on can be sorted out to survey hardware. The systematic order process (AHP) technique can be utilized as an amazing asset to organize resources as indicated by their criticality.
- The AHP is based on three essential standards: disintegrations, relative judgment and chain of command piece of blend needs.

## **12. RISK BASED INSPECTION AND MAINTENANCE PROCEDURES**

- Wellbeing in a refinery depends, in addition to other things, on the embraced management criteria. They influence all the vegetation cycle: from plant structure and development, all through the creation movement, until conceivable disassembling.
- Security management techniques for critical frameworks include numerous measurements including plan reasoning, maintenance strategies, and methodology of faculty contracting, preparing, and assessment (Cowing, Cornell, and Glynn, 2004).
- Toward one side of the range, the most traditionalist methodologies depend on a strong framework configuration, visit preventive maintenance, and early reaction to admonitions.
- At the opposite end, forceful methodologies are driven by requesting generation plans, single-string framework structures, and insignificant examination and maintenance to get most extreme creation with least interferences.

### **13. METHODS APPLIED IN REFINERY**

- The advancement of RBI&M methodology and the application to two explicit stages in the maintenance exercises of a medium-sized refinery was completed by a board of specialists.
- A board of specialists was framed so as to support correspondence and gatherings where the administrators could contribute their insight and data about the procedures.
- The board was comprised of 15 members, and included 3 scholastics, whose research considers, are predominantly cantered around risk analysis and maintenance management, 4 specialized administrators and 5 administrative administrators associated with the maintenance forms, 3 ApiSoi administrators.
- The re-designing of assessment maintenance and procedures was additionally incited by the appearance of an outsider at the refinery (ApiSoi), brought in to deal with the maintenance exercises based on a worldwide help contract.

## **14. MONITORING AND MAINTENANCE SYSTEMS**

- In the course of recent decades, maintenance procedures have advanced from crude breakdown maintenance to increasingly modern methodologies like condition checking and reliability-centered maintenance (Khan and Haddara, 2004).
- A few creators (Krishnasamy et al., 2005; Kumar, 1998; Van Heel, Kneegtering, and Brombacher, 1999) created Risk-based maintenance procedures to give a premise not exclusively to taking the reliability of a framework into thought when settling on choices with respect to the sort and the ideal opportunity for maintenance activities, yet additionally to have the option to contemplate the risk that would result as an outcome of an unforeseen disappointment.
- The majority of the past examinations concentrated on a specific framework and were either quantitative or semi-quantitative.



## 15. CONCLUSION

- The methodology was that of distinguishing the extremely critical occasions, things and work arranges as far as wellbeing, condition, plant accessibility, quality of the item and maintenance costs, in order to have the option to continue, in a methodical way, with disappointment analysis and in this way with the presentation of ensuing corrective activity in refinery.
- The use of the methodology in the maintenance exercises of the refinery has demonstrated how the utilization of assessment techniques prompts an improvement in the records which measure maintenance quality. The planning of essential activities is made based on risk estimation, cost of the option yet most importantly based on assets accessible.
- Methodology must be done by an exceptional group whose experience must ensure careful competency concerning all parts of the particular activity being inspected.

**Thank you**