Return On Investment in Physical Asset Management Projects

بازگشت سرمایه در پروژه های مدیریت دارایی فیزیکی

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- Loss Production Reduction
- Material Cost
- Labour Productivity
- Etc.

- Manpower

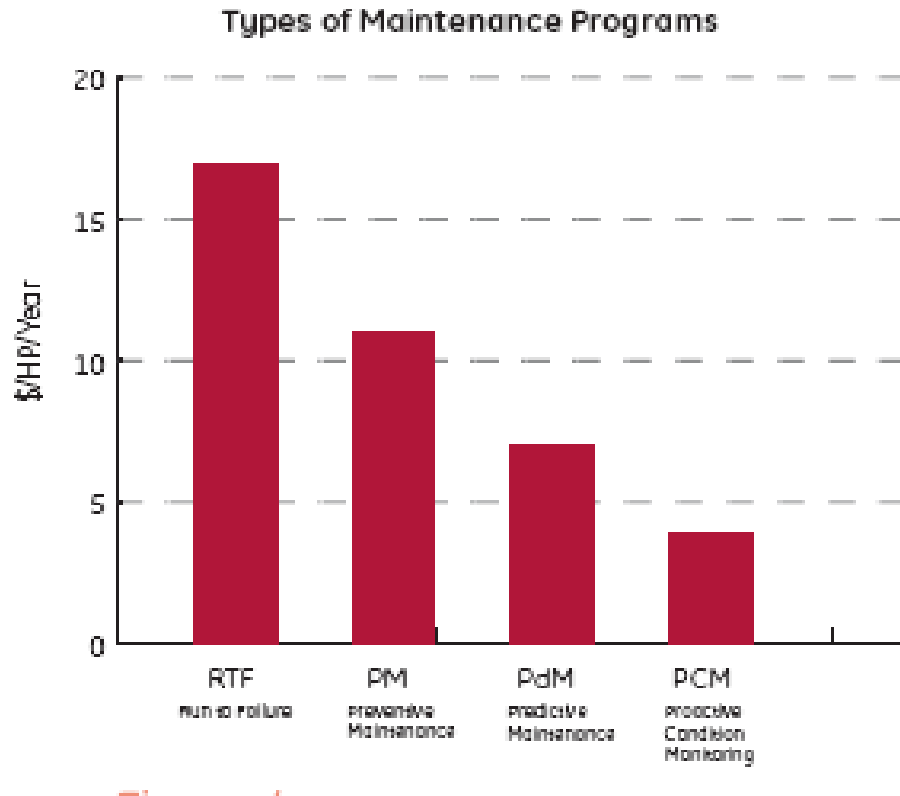Return on Investment (ROI) = $\dfrac{\text{Revenue} - \text{Cost}}{\text{Investment}}$

- External Consultant
- Information Systems
- Training
- Etc.

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Some of PAM Projects

- Reliability Centered Maintenance (RCM)
- PM Optimization (PMO)
- Work Management (P&S)
- Material Management
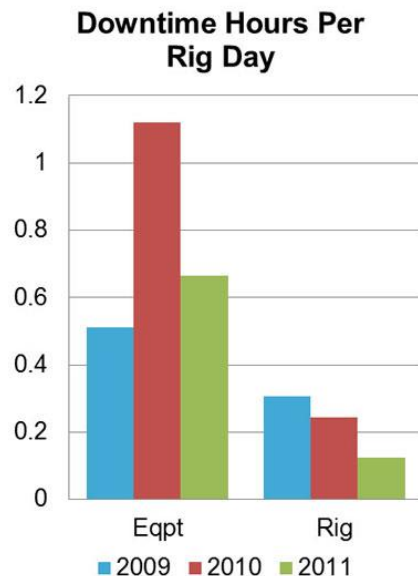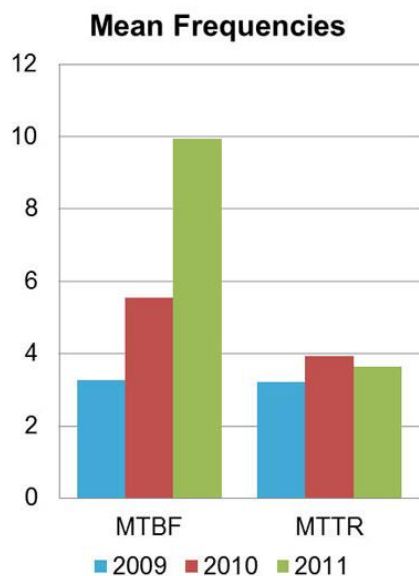- Root Causes Analysis
- Life Cycle Costing (LCC)

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Reliability Centered Maintenance (RCM)

Types of Maintenance Programs

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Reliability Centered Maintenance (RCM)

ENSCO

Mean Frequencies

MTBF   MTTR
■ 2009 ■ 2010 ■ 2011

Downtime Hours Per Rig Day

Eqpt   Rig
■ 2009 ■ 2010 ■ 2011

• Ensco's reliability-centered maintenance (RCM) program has resulted in a 63% return on investment (ROI) since 2009 to 2011

Source:http://www.drillingcontractor.org/reliability-centered-maintenance-program-reduces-downtime-results-in-63-roi-16152

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Reliability Centered Maintenance (RCM)

- Saving from RCM in UK Royal Navy over the first 20 years was equal to 379.9m£

- The cost of implementation was 51.3m£

- ROI=$\frac{379.9}{51.3*20}$=37% (annualy)

Source: Managing Reliability and Maintainability in the Maritime Industry, 25-26 January 2012, London, UK

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PM Optimization (PMO)

- For a petrochemical company in Iran maintenance contract is about 30000M Toman
- PM Cost is about 30% maintenance Contract
- If PMO leads to only 10% Saving in PM Cost

$$ROI = \frac{900M}{1000M} = 90\% \text{ (annualy)}$$

Also it can reduce plant downtime and EM

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Work Management (P&S)

• Based on Palmer handbook maintenance craft productivity can be increased up to 50% by work management system.

• Unplanned repair work costs at least 50% more than fully planned and scheduled work and that emergency work costs 300% as much.

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Work Management (P&S)

- In the case of MEEDC:

    – The required workforce reduce 23%

    – Vehicles for maintenance groups decrease 23%

    – An increase of 15% has been observed in wrench time

    – Getting start to work shifted 1 hour earlier

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Material Management

• By determining reorder point (ROP) and economical order quantity (EOQ) can be expected 10% to 30% reduction in inventory Investment while the service level would be increased above 90%

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Material Management

- In the case of a power distribution company:

  - The inventory value was about 33000M Toman
  - After inventory optimization the value decreased to 25000M Toman (13000M extra and 5000M lack of parts) in 3 years project
  - Considering discount rate 20%, there is 1600M Toman annualy saving

    - $\text{ROI} = \dfrac{1600M}{100\text{M} * 3} = 533\%$ (annualy)

Root Causes Analysis

- Root causes analysis can prevent to reoccurring the unpleasant events

- In the case of MEEDC for damaging the boards:

  – This event cost 500M Toman annualy

  – After analysis at least 50% reduction could be seen in a 2 years project

$$ROI = \frac{250M}{50M * 2} = 250\% \text{ (annualy)}$$

Life Cycle Costing Study

• LCC could help to make the best economical decision

• In the case of a gas refinery company for making decision about switching their turbo pumps :

– They have 8 turbo pump (4 standby)
– They cost 400M if not switching and cost 245 if swiching now for every one.

$$ROI = \frac{155M}{50M} = 310\% \text{ (annualy)}$$

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Life Cycle Costing Study

• In the case of a Canadian energy transportation company for making decision about inspection and replacing the pipelines:

- – 6.3M$ annualy estimated saving after analysis
- – 1.5M$ annualy actual saving
- – This project costs 0.5M$ (implementation & consulting)

ROI=$\frac{1.5M}{0.5M}$=300% (annualy)

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