

Role of Management of Change (MOC) for Safety in Iron Industry - A Case Study

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Abstract

The Safety and protection of people, equipment and the environment is a serious concern in the engineering industries. Many industries have recognized the advantages of safe work environments and are progressively adopting safety management system by the process of MOC, avoid production and manpower losses and other fallouts associated with industrial accidents.

The present paper focus is to describe the change, its reasons, applies a risk assessment, and manages all the actions associated with the change. The management of change process applies to all changes to equipment and infrastructure, manufacturing process and materials used by an organization so as to assess the effect on and to safeguard process safety, assets and the environment.

Keywords

Management of change risk assessment, Equipment, Infrastructure, Materials, Regulation, Engineering Industries etc.

I. Introduction

Management of change applied is a process that clearly describes the change technical Justification for change applies a risk assessment. For change there is an approval process and has a recording system to demonstrate the process has been followed.

II. Management of Change Applied

All changes to be in documented process safety information and facilities should be clearly identified evaluated reviewed and approved before implantation of change to prevent process, related as well as all other incidents in the facilities. Process safety information includes.

Hazards of materials physical and chemical properties of materials and process design basis process safety information include equipment design basis assumptions and logic on which design is based.

For any new facility and Brown field projects the management of change process is applicable during the concept, Construction/ Commissioning or whenever there is need for deviation from the design. Hence MOC is to be raised at project concept stage and any field Changes/deviations from the drawings approved for construction requires MOC [1].

A. Change process can be initiated from any of the following:

- Daily Management
- Recommendation of failure analysis.
- Improvement Initiatives (SIP- Systematic improvement Projects, GB- green belt etc)
- Quality improvement activities
- Introduction of new technology
- Deviation from design during plant construction.

B. Example of changes that would require use of the MOC procedure [2]:

- Change of material of construction
- Replacement of a centrifugal pump with a positive displacement pump.
- Piping modification that involves changes in line size valve arrangement gaskets etc. Also included is permanent removed of piping from active system.
- Replacement of a centrifugal pump impeller with an impeller that generates a different (higher or lower) discharge pressure
- Changing a control valve or control electronic component that become obsolete and the new one has the same functional specification but upgraded internal parts that are different than original design and/ or operation and maintenance requirements are different to maintain
- Changing a process control strategy (Ex- Controller tuning, logic sequence and pairing analysis)
- Changing raw materials, raw materials suppliers, finished product specification.
- Plugging tubes on a heat exchanger
- A threaded bolt hole becomes stripped out and you need to repair with a mechanical repair such as a heli-coil or need to drill it out to the next size bigger
- New or modified equipment installations or configuration
- Changes to the design basis for existing equipment
- Changes in process materials or operation parameters
- Changes to basic process control system and strategies.
- Add, remaining or relocating nozzles or man ways on vessel
- Modification that impart or alter existing protective systems (e.q. Changes to fire suppression systems leak detection and containment devices)

III. Case Studies: - Management of change is part of core value- "Technical excellence"

A. Management of change in operational procedure [3]:

- An explosion occurred in BOS convertor No.2 at TATA steel. Three people working at 75m level on the convertor flue system were injured when an inspection door was blown open by the blast. The incident was covered by a change in operating procedures.

It was decided to lead converter 21 with a full scrap charge consisting of HBI (Hot Briquetted iron), instead of the neat varied scrap charge containing only 20 tonnes of HBI. This meant that an excessive amount of wet scrap was in the furnace water and molten metal do not mix and the resulting explosion ejected 15 tonnes of molten metal from the vessel shown in fig. 1.



Fig. 1:

- In the Herald of free enterprise disaster which killed 193 passengers and crew. Changes to operating conditions let to the bow door being left open while the ship was trimmed nose down and moving out to sea. Manning levels has been changed which meant nobody spotted the error. Complacency in practices was also a major contributor to the accident shown in fig. 2.



Fig. 2:

B. Some Examples where MOC is Required [4]

- Special spacer type coupling replaced by simple and easy available tyre coupling in BLT G.Box cooling pump for better availability as shown in fig. 3.



Fig. 3:

- Screen plate provided in dry pit tank drain line as shown in fig. 4.



Fig. 4:

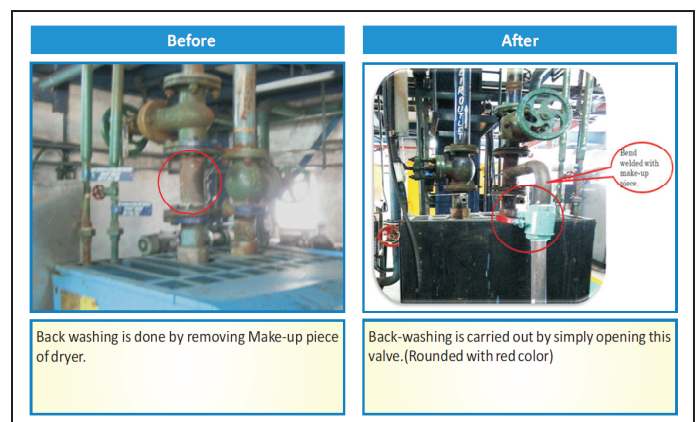


Fig. 5:

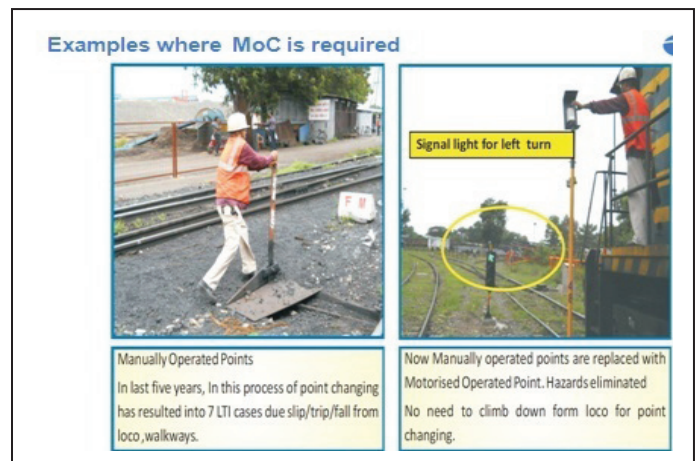


Fig. 6:

IV. Conclusion

Classifying under different categories and subsequently determining the correct maintenance strategy was evaluated on the basis of MOC in categorization could be save costs of the plant. However, there is required a systematic approach to managing maintenance of machinery and equipment.

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