

**ENHANCED VALUE MANAGEMENT WITH THE USE OF OTHER
PRODUCTIVITY IMPROVEMENT TECHNIQUES**

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Mr. U.S.Sastry is a Divisional Manager in Tata Steel. He is a specialist in using Productivity Improvement Techniques such as Work Study, Value Engineering (VE) etc. He has wide experience in Management of Workforce, Incentive Schemes, Improvement Studies, etc. He is a specialist in improving profitability by group approach using Productivity Improvement Techniques. Mr. Sastry is a faculty member for many professional and educational institutions to impart training in the application of Productivity Improvement Techniques.

Mr. Sastry is the Secretary General of Indian Value Engineering Society. He has organized VE training programmes in various parts of India and imparted training in the use of VE Concepts.

ABSTRACT

Value Management (VM) is a proven problem solving methodology for enhancing the profitability of organisations by identifying and eliminating unnecessary costs. VM basically derives its strength from Function Cost Worth Analysis and Team Work. Techniques such as Methods Analysis, Procedures Study, Network Analysis, etc. are highly useful in arriving at the optimum solutions. This paper discusses the use of the such other techniques in improving the effectiveness of VM in enhancing the value of products, services, systems, etc. with the help of few case studies.

CASE STUDIES

PROJECT : Minimising the variation in the thickness of cold rolled coils

The 4 Hi Hill of Cold Rolling Plant in Tata Steel reduces the hot rolled strip thickness as per customer requirements. Due to variation in the thickness, 2% of the rolled coils (about 250 tonnes/annum) gets rejected.

The variation in the thickness of rolled coils is mainly due to rolling at higher speeds, less number of rolling passes, improper roll setting due to inadequate tools (Emicron) and frequent change of position between Roller and Assistant Roller.

Function Analysis

Analysis, Search and Development for improving the cost effectiveness of mill by minimising the variation in thickness and down time. Critical Examination and Operation Analysis techniques were used. Apart from reduction in thickness variation, other benefits, like better availability of 4-Hi Mill, reduction in the frequency of roll grinding, and coil breakage etc. are expected.

Expected Savings

- (i) About 2% reduction in rejection of coils due to gauge variation.
- (ii) 2% to 3% increase in the availability of 4 Hi Mill.

PROJECT : Minimizing the down time of Galvanizing Bath due to Drossing.

Dross, also known as Hard Zinc, is an alloy of 4 Iron and 96 % Zinc. It is formed during hot dip galvanizing of tubes. Dross, being heavier than molten Zinc, settles at the bottom of the Zinc bath. It is periodically removed to affect smooth working of the bath. This operation is known as drossing. The loss of productive time on account of drossing was 50 hours per month before this study. The study was taken-up to reduce the net time required for removal of dross from the bath to increase the availability of the galvanizing bath.

Function Analysis

What does drossing do ? -> Improve Galvanizing

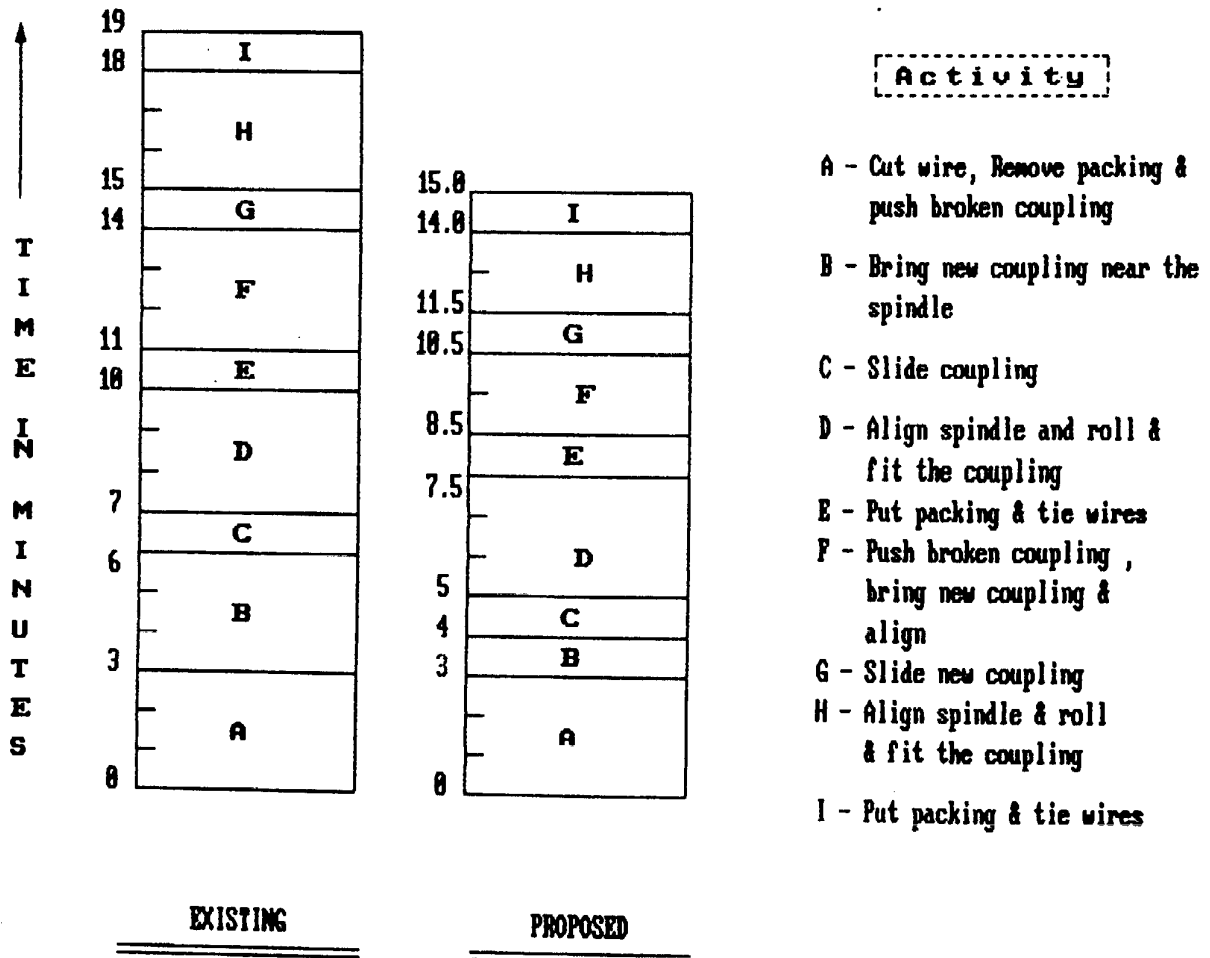
What does it cost ? -> Opportunity lose due to down time of galvanizing bath for drossing.

Analysis, Search and Development

- (i) Multiple activity chart was drawn and analyzed. It was suggested to split the dross cutting gang into 2 gangs with one more bed. A saving of 60 minutes i.e. 40 % of the drossing time was achieved. The present and the proposed methods are shown in the multiple activity chart in Fig. 1.

ACTIVITY CHART

WOBBLER COUPLING CHANGING TIME



(ii) Critical examination of the process and the equipment was done and it was suggested to put a perforated tray inside the bath to collect dross directly in the tray. The filled tray can be replaced by a fresh one to start the production immediately.

Expected Savings

40 % reduction in dressing time has improved the profitability of galvanizing operation.

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through the weak portion of the seal. Over a period of time, these cut portions of the seal grow in size and ultimately lead to its failure.

Function Analysis

Withstand Pressure.
Close Gap (during testing)
Minimise Resistance (to allow smooth entry of tube)

Analysis, Search and Development

It was observed during the Methods Analysis that the prime reason for seal failures is the sharp edge and lack of proper taper on the seal.

The modified seal with round edge and with required taper on its bore, to allow smooth entry of the tube, was tried out and finally implemented.

Savings

1. Reduction in down time of the hydraulic tester by 50%.

Reduction in cost of the couplings by 50%.

Relief to the workmen due to reduction in frequency of the tiring and monotonous seal changing activity.

PROJECT : Minimizing the Wobbler Coupling changing time

The two Pilger mills at Seamless plant of Tata Steel are critical machines in the production line. Therefore, efforts are always made to minimise the down time of Pilger mills. Wobbler Couplings are used to connect the Pilger rolls with the respective driving spindles. These couplings fail during seamless tube making due to various reasons. The failure rate of these couplings is quite high and the corresponding down time is about 28 hours/month. The breakage of couplings is more prominent when higher size tubes are rolled. The average time for replacing a broken coupling with a new coupling is about 19 minutes.

Function Analysis

Analysis, Search and Development

Based on activity chart and detailed methods analysis following recommendations were made

(i) To keep couplings near Pilger mills to minimize the handling time.

(ii) To lubricate and mark centre line on the flute of the couplings to facilitate faster and easy alignment with the Pilger rolls.

(iii) To use a jack (instead of crane) for lifting, the spindle, whenever bottom coupling needs to be replaced, thus allowing the crane to bring the new coupling Simultaneously.

Savings 20 % reduction in coupling replacement time

PROJECT : Improving the system of test certification

The tube and strip samples are tested as per specification or customer requirements. Accordingly, test certificates are issued at the time of despatching the material. These test certificates are a proof of the material conforming to the specifications and are called Works Test Certificates (WTC). For boiler category of tubes, a separate test certificate is required in addition to WTC, which has to be signed by the boiler inspector. This is called Indian Boiler Regulation Test

Certificate (IBRTC) and is sent to the customer after completing all the formalities.

A need was felt to study the system of test certification with a view to make the process more effective and least time consuming, thereby resulting in improved customer satisfaction

Function Analysis

The ladder of abstraction is shown below

Satisfy Customer

WHY Guarantee Quality

HOW Issue Certificate

Test Material

Analysis, Search and Development

The following work simplification techniques were applied during the system study :

(i) Flow Process Chart

(ii) Travel Chart

Savings

(i) Education in cycle time of test certificate preparation

(ii) Reduction in waiting time of lorries inside the company premises

(iii) Payment by the customers expedited

(iv) Savings in cost of stationery