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MINOR STOPPAGES REDUCE WCM APPROACH IN WHIRLPOOL CORPORATION

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Abstract :

The notion of quality accompanies man in everyday life. When thinking about quality, The consumer has in mind a number of product quality attributes Maximization of production system results within the framework of logistics programmers and in accordance with the assumed quality goals. It assumes that as a result of employee engagement, it is possible to significantly reduce the time lost for downtime associated with untimely deliveries of materials, conversion of machines, maintenance and break downs. Pneumatic cylinder with vacuum cup is used to transfer bridge plate from fixture to clinching station location During this movement bridge plate is getting slipped from vacuum cup and resulting in line stoppage.

Keywords : Minor Stoppage, Root cause & Analysis

I.INTRODUCTION BY WHIRLPOOL CORPORATION

Whirlpool of India Ltd headquartered in Gurugram is one of the leading manufacturers and marketers of major home appliances in the country. The company is primarily engaged in manufacturing and trading of Refrigerators Washing Machines Air Conditioners Microwave Ovens and Small appliances and caters to both domestic and international markets. The company also provides services in the area of product development and procurement services to Whirlpool Corporation USA and other group companies. Whirlpool of India is a subsidiary of Whirlpool Corporation the world's leading major appliance manufacturing. Whirlpool of India owns three state-of-the-art manufacturing facilities at Faridabad Pondicherry and Pune. Each of these manufacturing set-ups features an infrastructure that is witness of Whirlpool's commitment to providing its consumer with forward looking solutions. Whirlpool of India Ltd was incorporated in the year 1960 as Kelvinator of India Ltd. The company was formed in collaboration with Kelvinator International Corporation USA for the manufacture of refrigerators compressors and allied products. In the year 1974 they established a factory for the manufacture of electrical grade stampings in collaboration with Thermal Refrigeration Ltd UK. In the year 1975 the company established a modern tool room for the manufacture of tools dies jigs and fixtures. In the year 1976 they established a factory for the manufacture of electromechanical cash registers in collaboration with Gross Cash Registers Ltd UK. Aravalli Svachalit Vegan Ltd a sick unit at Al war merged with the company with effect from May 26 1982. In the year 1985 the company entered into a collaboration agreement With White Consolidated Industries Inc. USA for the manufacture of washing machines. In the year 1986 they introduced a 300-litre 2-door refrigerator for the lower and middle class consumers. In addition they introduced a single speed (VIP-1) and 3-speed kick-start (VIP-3) along with two new models of cash registers. In the year 1993 the company entered into a tie-up with Whirlpool Corporation USA whereby Whirlpool contracted to purchase from White Consolidated Industries Inc. USA.

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graph LR
    subgraph Man
        A[Improper Bridge plate]
        B[vacuum generator failure]
    end
    subgraph Machine
        C[vacuum cup damage]
    end
    subgraph Material
        D[Poor material Quality of vacuum]
        E[polythene cover on bridge plate]
    end
    subgraph Method
        F[improper bridge plate]
    end
    A --> G[ ]
    B --> G
    C --> G
    D --> G
    E --> G
    F --> G
    style G width:0px,height:0px
    G --> H[Bridge plate fall down in clinching]
  
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Line stoppage due to bridge plate falling down during the movement. Bridge plate not getting hold properly by the vacuum generator. Vacuum getting leaked during bridge plate lifting. Polythene cover getting peeled off during section process due to presence of air bubbles. Bridge plate are wrapped with polythene cover to avoid scratches.

ACTION AND COUNTERMEASURES

We had two option

1. Magnetic gripper
2. Servo electric grippers

Magnetic Gripper:

1. For sheets with a minimum thickness of 0.5 mm.
2. Max. Lifting power: up to 45 kg.
3. Permanent magnet.
4. Switching: pneumatic.

Application

These industrial robot end effectors can be used to grab things such as:

1. Pressed or perforated steel parts and sheets.
2. Punched steel materials.
3. Metal mesh parts.

For transport and transfer applications in:

1. Automatic production lines.
2. Press-to-press transfers.
3. Robots: pick-and-place systems.

Servo electric grippers

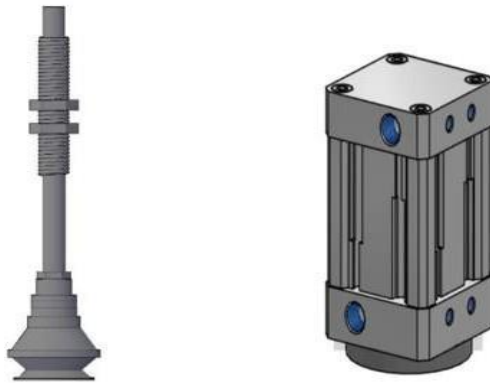
1. With most electric grippers, the command can be a position.
2. a speed or a grip force.
3. The robot can send commands to the gripper using digital I/O's.

Application

1. Measuring function.
2. Gripping power control.
3. Speed control.
4. Multi-point position control.

By doing B/C analysis we found that magnetic gripper is better option

We have removed vacuum generator with vacuum cup introduced magnetic gripper. The magnetic field attracts the bridge plate effectively along with polythene wrapper and shifts to clinching process



V. RESULT

Micro stoppage and down time due to bridge plate pickup issue. while picking the sheet from location-1 was eradicated completely by replacing. The pickup methodology form vacuum to magnetic gripper. This method was easily to grip the bridge plate.

VI. STANDARDIZATION AND FUTURE ACTIONS:

Magnetic gripper was added in machine ledger component list.

Magnetic gripper checking frequency was set in PM calendar.MP info was given to EEM pillar.

RHS side bridge plate pickup mechanism also to be changed from vacuum to magnetic gripper.

VII. REFERENCES

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