
Semi-Automatic Lubrication System in Washer Production

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ABSTRACT

Proper sheet metal lubrication and cleaning is essential for maintaining optimum function and life of metal parts and equipment. Lubrication reduces the risk of friction and wear, prevents damage and corrosion, and ensures smoother operation and longer life. This project deals with the Semi-Automatic Sheet Cleaning and Lubrication in washer Production. We work with semi-automatic metal sheet cleaning and lubrication systems. The system consists of a metal box in which metal sheets are stacked on top of one another. The metal sheets are the same dimensions as the ones that were previously cut out and placed in the metal box. Rollers are fixed on the top of the box for pushing the sheet metal on one side. The metal sheet are pushed through the canvas. A sponge is attached behind the rollers. As a result, the sheets are pressed against the sponge and emerge. The metal sheets were then lubricated. The sheets are now ready to be used for washer protection, just like any other industrial application. By this we are able to reduce the time and labor required.

Keywords— Lubrication, Prevents damage , Sheet Metal

1.Introduction

Sheet metal forming is a key technology for producing durable and lightweight metal parts. Formed sheet metal, forming technology, and process parameters such as contact pressure, relative velocity, temperature, and lubrication influence part quality. Lubrication and cleaning of sheet metal is critical for optimum performance and life of metal parts and equipment. If you apply the anticorrosive lubricant by hand, it will not be applied evenly and it will take a long time to apply. Sheet metal lubrication and cleaning are critical to the optimum function and life of metal parts and equipment. Commonly used in various industrial applications such as machinery and automotive parts, sheet metal is often subject to high levels of wear and tear.

Over time, friction between metal parts can cause damage and corrosion, leading to poor performance and eventual failure. Sheet metal lubrication significantly reduces the risk of friction and wear, allowing for smoother operation and longer equipment life. Lubrication also helps prevent corrosion and rust that can weaken the metal and compromise its structural integrity. Sheet metal cleaning is also important to maintain the performance and appearance of metal parts. Dirt, debris, and other contaminants can build up on sheet metal over time, making it less efficient and unsightly. Regular cleaning removes these contaminants and helps prevent rust and corrosion build-up that can erode metal and weaken it over time.

In addition, clean sheet metal is easier to inspect and maintain, reducing the likelihood of problems leading to costly repairs and downtime. In short, proper sheet metal lubrication and cleaning is an important part of preventive maintenance and will help keep your equipment in top condition for years to come.

2. Experimental Methods and Methodology

2.1 3D modelling

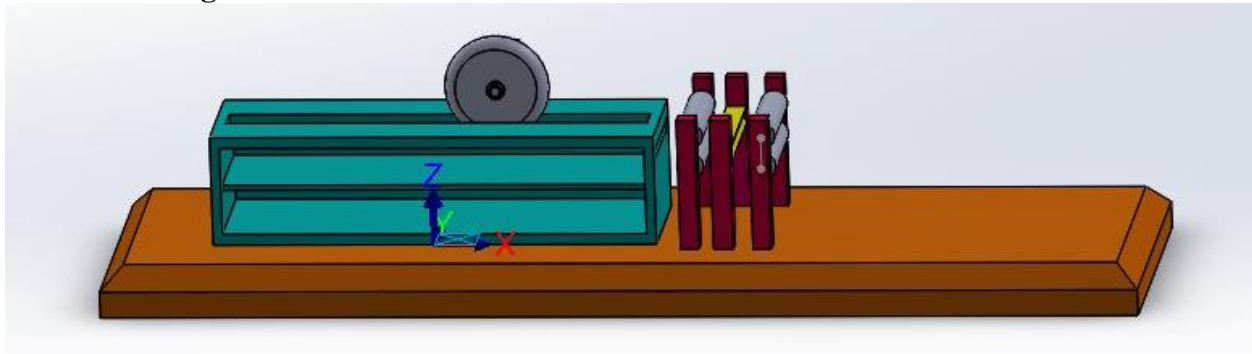


Fig.1. Isometric View

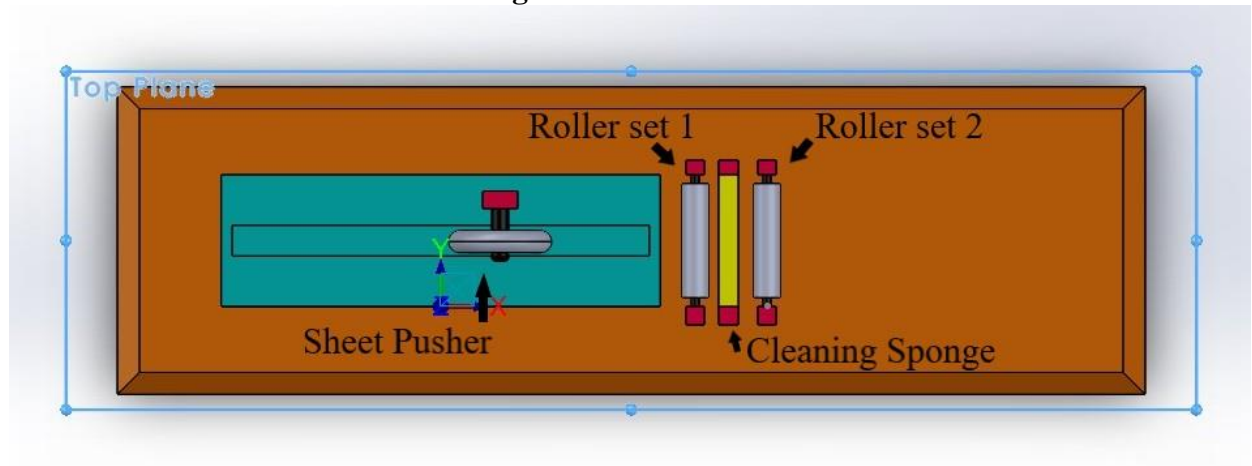


Fig.2. Top View with parts

Sheet Dimensions:

- Length = 400 mm
- Breadth = 60 mm
- Thickness = 0.5 mm

2.2 Process Flow

A metal box with stacked with the sheet metal sheets. The sheet has the same dimensions as the previous one previously. A roller is attached to the top of the box and pushes the sheet to out. The sheet is grasped by the roller and pushed forward. There is a sponge behind the roller. This causes the sheet to come out pressed against the sponge. The metal sheet was then lubricated and cleaned. We use 12V DC 30 rpm motors to operate both sets of the rollers and the pusher at the top. The following figure shows the process flowchart of the steps involved the

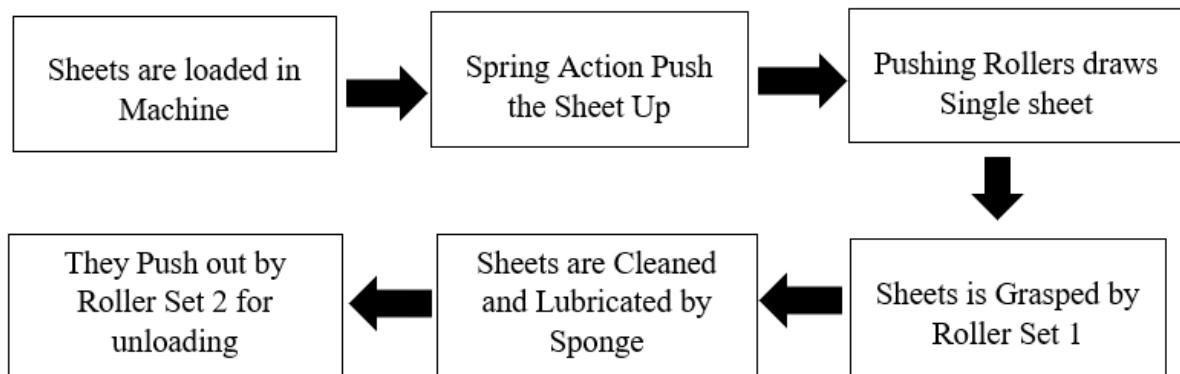


Fig.3.Process Flow

3. Result and Discussion :

The proper lubrication and cleaning of sheet metal can help prevent the costly and time-consuming repairs associated with worn and damaged metal parts. Sheet metal can be cleaned and lubricated more quickly. Sheets are cleaned evenly. Additionally, the amount of manual work associated with cleaning and lubricating is reduced. We can reduce injuries that occur due to bur on the metal sheets. We are able to reduce the manual labour from three to a single person. The 3 were used for the loading, one for cleaning and lubricating the sheet metals and the third person for unloading the lubricated sheet metal. Now only a single labour is used for both loading and unloading and the cleaning and lubrication is done by our system.

Through our system we are also able to reduce the time it takes to lubricate the sheets and the uniformity in which the lubricant is applied. The time taken to lubricate the sheet metal manually was approximately 5 sec per sheet now it is done at 3 sec per sheets.

Market research shows strong demand for sheet metal lubrication and cleaning products and services. There is a growing interest in automated and digitalized lubrication and cleaning processes. Companies that can provide innovative and cost-effective solutions to these challenges are likely to gain a competitive advantage in this market.

CONCLUSION :

In conclusion, the benefits of proper lubrication and cleaning of sheet metal cannot be overstated. These simple maintenance practices can help prevent costly repairs, reduce energy consumption, and extend the lifespan of metal parts. Regular cleaning and lubrication also help maintain the appearance and structural integrity of sheet metal, By prioritizing maintenance, businesses can save time and money and ensure that their equipment performs at its best for years to come.

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