

Maintenance management of pneumatic equipment and facilities at a plant in the Industrial corridor in the South area of the state of Tamaulipas

Administración del mantenimiento a equipos neumáticos e instalaciones en una planta del corredor Industrial de la zona Sur del estado de Tamaulipas

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Abstract

Maintenance planning is focused on production, the work is to limit, avoid and correct failures. The planning is focused on the processes, all maintenance must follow a pre-established and planned process according to the company's maintenance manual. Continuous improvement and planning help to evaluate and improve the execution of maintenance and production in the company. Planning and scheduling are a fundamental part of the proper functioning of maintenance. The development of a company is an organized system that, thanks to the effort and proper functioning of the teams, such as the personnel that work in it; This entire system has an end and is to provide a high-quality service that is competitive at the national level. Each company has a different methodology to manage the maintenance of their equipment and as technology advances, they are renewed for optimum performance. In Altamira, the growth of the companies has been exponential due to a correct administration in their production line, avoiding long delays or inconveniences that affect the company in a monetary way.

Processes, Administration, Production

Resumen

La planeación del mantenimiento está centrada en la producción, el trabajo es para limitar, evitar y corregir fallas. La planeación está centrada en los procesos, todo mantenimiento debe seguir un proceso preestablecido y planificado según el manual de mantenimiento de la empresa. El mejoramiento continuo y la planificación ayuda a evaluar y mejorar la ejecución del mantenimiento y la producción en la empresa. La planeación y la programación forman parte fundamental para el buen funcionamiento del mantenimiento. El desarrollo de una empresa es un sistema organizado que, gracias al esfuerzo y buen funcionamiento de los equipos, como el personal que labora en ella; todo este sistema tiene un fin y es proporcionar un servicio de alta calidad y que a su vez sea competitivo a nivel nacional. Cada empresa cuenta con una metodología diferente para administrar el mantenimiento de sus equipos y conforme va avanzando la tecnología se van renovando para un óptimo desempeño. En Altamira, el crecimiento de las empresas ha sido exponencial debido a una correcta administración en su línea de producción, evitando grandes retrasos o inconvenientes que afecten a la empresa de manera monetaria.

Procesos, Administración, Producción

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Introduction

The industries are an important system within the supply chain since it allows a product of basic necessity to enter the homes of thousands of families that inhabit Mexico.

For this, there is a trained staff that manages to create strategies that make it possible for each product in the basic basket to reach the hands of consumers, calling this a plan.

In the opinion of (Pérez Porto, J., Merino, M, 2009) this plan allows the creation of steps and strategies from the extraction of the raw material to the end of the process, which in this case are the customers who purchase said product.

1. Procedure and Production

Mentioning from (Pérez Porto, J., Gardey, 2008) that procedure is a term that refers to the action that consists of proceeding, which means acting in a certain way.

The concept, on the other hand, is linked to a method or a way of executing something.

A procedure, in this sense, consists of following certain predefined steps to carry out a task efficiently. Its objective should be unique and easy to identify, although it is possible that there are several procedures that pursue the same goal, each with different structures and stages, and that offer more or less efficiency.

From the perspective that is seen in this methodology, the focus of this research is directed to the production area, so it is essential to know about this area.

In the opinion of (Ortega, O, 2019), "The production area plays a very important role in the competitiveness of a company, it is a department that has had to learn to evolve to meet the needs of customers.

It covers all activities that transform raw materials and components into products that will be sold to customers.

The production area describes the entire process by which the company produces a good or service capable of satisfying a demand using factors of production acquired in the market.

2. Production Systems

In the context of a company, the production system, in addition to its primary purpose, which is to produce an economic good, seeks to satisfy other objectives. The production area must allow the company to satisfy the demand that is imposed on it, which means that the company adapts its production capacity to the volume of sales. The economic goods produced must be of good quality, that is, they must satisfy the needs of customers. The production system adopted by the company must offer the lowest possible production costs to guarantee the competitiveness of the company. The system must produce in a reasonable time, that is, according to the level of demand of the company.

There are too many questions about the manufacturing area, however, something important within it is the production system; and depending on the company, the environment changes completely, adapting to the needs that the industry requires to carry out its production correctly, all this because of the type of product that is being made.

This is why it is considered relevant to assimilate about the concept of the production system and everything behind it to make it happen.

"Production systems encompass all the elements that allow raw material to become finished products. Among these factors is, mainly, the administration or management style, the procedures, the machines, the materials, the technologies and, of course, the people or workers." (Munoz, V, 2019)

As can be observed, it is a concept that has a role in all industries, thus allowing the availability of quality articles and goods for the human being.

3. Maintenance

In factories that practice this system, operators and other workers tend to dedicate their efforts to tasks more related to planning, supervision, and maintenance.

Of course, it takes much more than economic resources to make these processes profitable. It is also important that the demand for the manufactured product is high enough, since otherwise it can lead to large losses.

As previously mentioned, it is very important that there is a "planning, supervision and maintenance", which is why, within a company, one of the most important relationships must be the staff and their work area, since day by day there are a series of actions that must be carried out by the personnel within their area, these activities are intended to ensure that the equipment, machines, components and facilities involved in an industrial process are in the required operating conditions for what was designed, built, installed and put into operation.

This series of activities includes a whole combination of knowledge, experience, skill and teamwork, we call this as plan / maintenance.

Taking into account the background of the aforementioned concept, the history of maintenance should be taken as a preamble, which has been and will be very extensive, since over the years and the innovation of technology, new methods have been created., steps or processes that have helped to improve the way in which a piece of equipment receives its respective maintenance. As mentioned, (Olarde C., William; Botero A., Marcela; Cañon A., Benhur, 2010) "The first companies that existed were made up of groups of people who had to work in each of the steps of the production process and in turn repair the tools and machines when they had a breakdown.

Because the workers developed multiple trades, producing a finished product to offer it to the market implied a high cost in time and money. With the objective of earning more, investing less, the companies were forced to distribute their workers to dedicate themselves to specific tasks, these tasks were of two types: Machine operation tasks and repair tasks. In 1930, the automotive businessman Henry Ford, implemented a new organization system within his company which he called "Chain Production". This new system was established through the assignment of organized responsibilities.

With the new Ford model, the concept of maintenance arose, which depended on the operation department, which was the one that determined when the repair work should be carried out. With World War II, companies had to increase their production to meet market demand; For this, it was necessary to increase their working hours. This hasty way of producing in large quantities and for long periods of time caused the machines to wear out due to excessive use and therefore to fail in their operation.

The repair of the machines implied the stoppage of the production process which generated great losses. In order to avoid these stops, employers gave greater importance to maintenance by restructuring their organizational models. Starting in 1966, with the strengthening of national maintenance associations, he began to develop criteria for failure prediction, thus visualizing the optimization of the performance of maintenance execution teams. In order to carry out a correct procedure, it is necessary to know the equipment in the work area, in this case the investigation is aimed at the pneumatic equipment and facilities, since if it is not known about the history of the machines, there would not be enough information. information, such as failure history, whether maintenance has been performed, economic factors, safety factors; each of these points are valuable when creating the plan.

5. Methodology to develop

For the present research work, tools such as Excel were identified where the maintenance required for the different equipment used could be identified, as well as its brand, model and series with respect to its annual activity.

Breakdowns are expensive because they produce:

- Repair costs that include expenses for materials, personnel expenses, expenses for subcontracted services.
- Damage to machines or facilities, which in some cases means shortening their useful life.

- Production losses, since, on the one hand, the amount of product that has been obtained is lost as a consequence of a malfunction, and on the other, the planning disorder due to late deliveries. But most importantly, bad service if the situation affects customers.
- Risks for people. On some occasions, there are breakdowns that can cause very serious accidents.

Giving with this a follow-up to each of them, as to what maintenance corresponded to them and on what exact date.

The maintenance plan took the following steps: establish objectives, define key performance indicators, take inventory, establish a budget, analyze the available technology, foster a culture and review and optimize.

Results

Maintenance management consisted of maintaining the company's resources so that the operations are carried out effectively and according to the standards and resources, time are not wasted in the work processes when proceeding to carry out some type of maintenance on. With the help of the standards created and the established maintenance calendar that allows to keep track of the tasks that are carried out within the plant. These objectives are to control costs, schedule work adequately and efficiently, and ensure that the company complies with all regulations.



Figure 1 Maintenance
Own Source

Gratitude

We appreciate both the facilities and the information provided by the company located in the industrial area of the port of Altamira.

To the Polytechnic University of Altamira and the Academic Body in Consolidation UPALT-CA-6 "Quality and Productivity".

Conclusions

Throughout this document, the application of a maintenance management procedure is exposed, which is part of the maintenance improvement within the Maintenance Planning and Control department, such a procedure demonstrates the continuous improvement within the plant, not only It should be used if you want to achieve more agile processes by reducing time, but also if you need to reduce any other resource used, obtaining improvements in the productivity of the different tasks to be elaborated.

The results of the implementation allow the plant a comprehensive improvement in quality, reducing costs, optimizing productivity and increasing profitability in the company's operations.

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