

## MODIFICATION OF AIR COMPRESSOR SYSTEM

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**ABSTRACT:** - Compressors -Air are used as a tool with various functions in the industry for various purposes. They are used in a variety of applications in crop production such as wind turbines, wind turbines, fly ash etc. Air compressors are one of the largest sources of industrial energy. In the current context, the value of energy conservation is increasing day by day. In a productive plant, improving energy efficiency or replacing low-power equipment can save significant money. In the manufacturing industry, it has been found that active compressors are included in the initial stages. Due to aging, the efficiency of the compressor has decreased and led to significant costs. As a solution, performance tests of compressors were performed. A pressure of less than 35% is replaced by an energy-efficient Compressor. Modifications to the compressor air system are made to improve efficiency.

### 1. INTRODUCTION

An air compressor is a device that converts energy (using an electric motor, diesel or petrol engine, etc.) into energy that can be stored in compressed air. In one of the few ways, the air compressor forces more air into the storage tank, increasing the pressure. When the tank pressure reaches its maximum limit the air compressor closes. Compressed air is then trapped in the tank until called for use. The energy contained in compressed air can be used for a variety of applications, using the kinetic energy of the air as it is discharged and the tank pressurized. When the tank pressure reaches its lowest point, the air compressor reopens and presses the tank again. Depending on the design and operating principle they can be classified as good migration compressors and negative migration compressors. Air compressors are used in a wide variety of applications and application consumes a large amount of energy from the production area. In the current situation the demand for electricity is increasing day by day. Energy efficiency can improve the plant. This inspired me to do compressors analysis in the manufacturing industry. Twelve compressors were analyzed. An inefficient compressor is replaced with energy-efficient energy. In some compressors protective maintenance practices are suggested to improve efficiency. In the production plant, compressors operate at destructive and high temperature conditions. Thus improving the compressor unit design can increase the reliability, safety and efficiency of the screw compressor. As a solution, the modification of the air compressor system was suggested to improve energy efficiency.

### PERFORMANCE TESTING SIGNS

Parameters to test the performance of compressors include FAD calculation (free air delivery), volume efficiency and power consumption

### PREVENTION PROTECTION

Most compressors that work on this plant have low performance. Due to the cost problem, all compressors cannot be replaced. A compressor with an efficiency of 30.7 will be replaced by an alternative energy-saving component.

- Leaks and damage should be minimal.

The design separates and retains dust before filtering. If it happens for compressors all suction filters should be the same as those installed in the compressor used to spray raw grease spray. The only difference between these filters and older ones is the provision of two exterior plastic cases that form a centrifugal action and remove most of the dust before the air reaches the filter material.

- Regular pipe maintenance, cooling system, lubrication system, drain system etc. It has to be done

- Precautionary measures should be done based on the situation rather than based on the calendar.

- In compressors' filter filters there are gaps between filter frames and incoming filters for compressors. As a result unfiltered air may enter the compressors. It is recommended that you clean the filters more often and see a decrease in pressure across the suction FAD CALCULATION

The free delivery of the compressor can be calculated by filling the receiver. The volume of the recipient is marked when the name plate is mentioned. If the recipient's volume is unknown it should be physically measured by pouring water from the measured cannon. Dry lines cannot give the correct volume when calculated by analysis. The compressor is kept working on the load and there is no load for some time so that the temperature of the compressor rises. The compressor stops. Measurement of pipe size up to the differential valves. Volume is added to the recipient volume and is called 'active reception volume'. The valves separate the compressor receiver from the delivery lines are closed. Reading Pressure gauge. It should read zero because all the air in the receiver is lit. The compressor is started and stored at full load. This should be kept in full load mode, if controlled by an external control panel.

## 2. MODIFICATION IN COMPRESSOR

In the production plant, compressors operate in destructive and high temperature conditions. The inlet air may contain dust which reduces the efficiency of the compressor. Low maintenance and continuous service are very important in this area. Improving the compressor unit design can therefore increase the reliability, safety and efficiency of the screw compressor. The effect of ventilation on the compressor operation should not be underestimated. Contaminated or hot air input can reduce compressor performance and lead to excessive energy and maintenance costs. If moisture, dust, or other contaminants are present in the air it reduces the compressor capacity.

As a result, the flow of weight and the force of compression increase with a decrease in air temperature. On the other hand, as the temperature of the thin air increases, the air pressure decreases and the flow rate and pressure are reduced. The resulting volume reduction is often observed with the performance of additional compressors, thus increasing energy consumption. To avoid adverse effects from air quality intrusion, it is important to ensure that the entrance to the pipeline is as free as possible from contaminants, such as rain, dirt, and exhaust cooling towers. If air is drawn in a remote area, the size of the inlet pipe should be increased according to the manufacturer's recommendation to prevent pressure drop and decrease in flow rate. All import winds should be sufficiently filtered. Pressure gauge indicating pressure drop in inches of water is important to maintain the efficiency of the compressor.

## 3. APPOINTMENT OF THE PREFILTER

Compressors are sometimes installed in areas where there is a lot of dirt and dust in the air, depending on the products made by our customers. Compressors are therefore designed to eliminate pollution by adding filters to the compressor air supply. In ideal cases, these filters can operate without maintenance, until an auxiliary equipment test is performed. However, in dusty areas, the filter quickly fills up, and it is necessary to stop the converter to clean the filter. When an inlet air filter is located in the compressor, the appropriate temperature should be kept to a minimum, to prevent a decrease in the flow rate. This can be achieved by finding an access pipe outside the room or building. When an indoor air filter is located outside the building, and especially on the roof, important considerations are important, but may be less important than the availability of storage in bad weather or winter.

An air filter to install a compressor should be installed inside, or brought air to it from a clean, cool place. The compressor manufacturer usually provides, or recommends, a certain amount of food filter designed to protect the compressor. The better filtering in the compressor entry area, the lower the feed in the compressor. However, the pressure drop in the inlet filter should be kept to a minimum (in size and adjustment) to protect and reduce the compressor capacity.

The pressure separation gauge is one of the best tools to monitor the condition of the inlet filter. If the pre-installed filter in the compressor removes dust from the filter. It can be cleaned while the compressor is running. Additional auxiliary equipment such as a pressure gauge is not required to measure the decrease in penetration pressure. Continuous and smooth airflow is provided. Air flow will be higher when the compressor is removed.

## 4. CONCLUSION

Air compressors are used as a flexible tool in all industries for a variety of purposes. Air compressors are one of the largest sources of energy consumption in the industry. In the current context, the value of energy conservation is increasing day by day. It is therefore important to improve the efficiency of air compressors in this industry. Due to cost issues we cannot replace all compressors with energy-efficient products. Saving annual costs by installing a new compressor is also included. In some compressors preventive measures taken to improve efficiency were suggested. From the analysis of compressors, errors were identified and appropriate corrective measures were proposed. As the compressors operate in the most destructive and hot conditions, the adjustment is recommended to increase the efficiency of the compressors.

## REFERANCES

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