

# ***ROOTS BLOWER***

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## **Problem Statement:**

The roots blower is an essential part of pneumatic conveying, aeration, and other processes in industrial applications. Roots blowers continue to face problems with decreased efficiency, higher energy consumption, and possible mechanical breakdowns. The task at hand involves pinpointing and resolving the underlying causes of these problems in order to maximise the efficiency of roots blowers and improve overall operating effectiveness, dependability, and energy efficiency. To reduce these issues and guarantee the best possible performance of roots blowers in diverse industrial contexts, solutions should take into account elements including design enhancements, maintenance plans, and operational characteristics.

## **Objective:**

To design a roots blower

## **Theory:**

A roots blower, alternatively referred to as a "roots pump" or "roots compressor," is a kind of positive displacement pump that transfers air or gas via a system of interlocking rotors or lobes. It is a member of the rotary volumetric pump family. Two lobed rotors that rotate counter to one another and are synchronised to prevent collision are a standard

component of the roots blower design. Roots blowers are frequently utilised in operations in industry, wastewater treatment facilities, and ventilation systems that demand a steady flow of gas or air. They are renowned for their dependability, ease of use, and capacity to deliver a steady, pulsation-free airflow. They work best in low-to-moderate pressure applications, though, and they are not as efficient as certain other types of compressors.

## **Construction:**

In this project, the outer body(housing) is built in such a way so that it can incorporate every part of the machine which can be further connected in other machines and the fluid can flow easily. A back cover was also built in order to protect the impellers and avoid any foreign ambiguities to enter and harm the machine. Two four lobe impellers are used in this machine connected by two shafts which are further connected to two gears which help in power transmission. Hex flange bolts are used in order to keep the housing connected to the back cover.

## **References:**

[https://en.wikipedia.org/wiki/Roots\\_blower](https://en.wikipedia.org/wiki/Roots_blower)

<https://www.google.com/webhp?authuser=1>