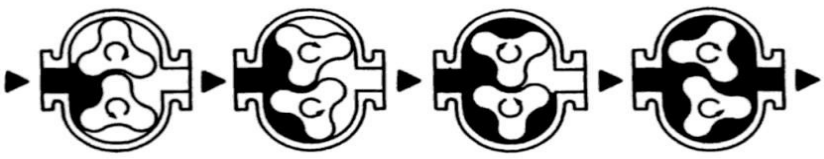
AIRVAC INDUSTRIES PVT. LTD.
ROTARY LOBE(ROOT) BLOWER

Rotary Blower History:

The rotary blower evolved from a design of a water wheel invented by the Roots brothers for their woolen mill. The device consisted of two counter-rotating wooden paddles or impellers inside a casing. Water, guided through the machine, forced the impellers to rotate, turning the shaft and driving the machinery until the wood swelled and the impellers stuck. After it had been re-built and prepared for operation, the action of the rotors forced a quantity of air through the unit. The brothers decided that they had a better blower than a water wheel, which led to the rotary positive-displacement blower, now known throughout the world “Roots blower”.

Blower Principle



The rotary, positive displacement blower works on a very simple principle. As the drive shaft is rotated, the impellers turn in opposite directions with very finite clearances between each other and between the rotors and the casing. As each impeller passes the inlet, a measured quantity of air is trapped between the impellers and the casing. As the shafts continue to rotate, this “pocket” of air is transported around the casing to the discharge side of the machine, where it is then expelled through the port, against the pressure prevailing in the discharge line. When this occurs, a back flow of air into the “pocket” from the higher pressure discharge line produces a constant volume pressure rise, causing a pressure pulse resulting in noise. As a “pocket” of air is expelled four times with each revolution of the drive shaft, or twice with each impeller, the fundamental frequency of the pressure pulse is four times the shaft speed. The drive lobe is connected to the driven lobe, through a pair of gears & they always rotate in opposite Directions.

While most applications for rotary positive displacement (PD) blowers involve handling air, the machine also is capable of handling any number of gases, from hydrogen to steam to natural gas to ethylene or, of course, nitrogen. Proper attention must be given to seals as well as performance calculations and limitations, all of which will be discussed later. In addition, they perform very well under vacuum conditions as well as pressure.