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Application of Rotary Sensors in Ventilator Machines

A ventilator is a machine that supports breathing. It's also called a breathing machine or respirator. Ventilators will get oxygen into the lungs, remove carbon dioxide from the body, help patient breathe easier. It also helps people who have lost all ability to breathe on their own.

Working principle :

A ventilator uses pressure to blow air into the lungs. A patient usually exhales the air on their own, but sometimes the ventilator does it for them too. The amount of oxygen the patient receives can be controlled through a monitor connected to the ventilator. The machine works by bringing oxygen to the lungs and taking carbon dioxide out of the lungs. This allows a patient who has trouble breathing to receive the proper amount of oxygen. The basic manufacturing of a ventilator includes a spirometer to measure the flow-rate (and volume, by integrating over time), a hand dynamometer to measure force exerted on the cam.Rotary sensor are used to measure cam angular displacement. A pressure sensor to measure internal air pressure. The cam concept utilizes a crescent-shaped cam to compress the Ambu Bag, which allows smooth, repeatable deformation to ensure constant air delivery. As it rotates, the cam makes a rolling contact along the surface of the bag and unlike the roller-chain, achieving low-noise of operation. By controlling the angle of the cam's shaft, the amount of air volume delivered can be accurately controlled. The air volume delivered is measured as a function of cam angle by integrating the flow rate over time.