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Design and Development of Pneumatic Air Engine using Linear Actuator

Abstract

A study was performed to produce a pneumatic air engine using two linear actuators and then the linear motion was converted to a rotating motion using a crank shaft. This study aims to increase the use of linear actuators in pneumatic air engines as well as to apply pressurized air as an efficient and convenient transportation mechanism in line with the development of technologies developed through products available in the market. Two units of linear actuator such as pneumatic cylinders with two units of 5/2 way directional control valve with double solenoid actuation are used to control the cylinder movement. The cylinder will rotate the crank shaft when receiving a signal from the solenoid valve with 5 bar air pressure. In conclusion, the system can travel up to 153 meters for a 24-liter air-pressure with 5 bar pressure when the test is run for a charging cycle by the compressor motor. If the compressor motor able to charge the compressor continuously, the movement distance can be increased.