Development of Low Cost Continuous Positive Airway Pressure Device

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Abstract

When an infant is born, he quickly begins to breathe on its own. Unfortunately, premature infants are susceptible to a variety of lung-type ailments, which may progress into respiratory distress syndrome. Different factors may contribute to the inability of infant to sustain independent ventilation. For infants suffering from respiratory distress syndrome, CPAP is typically administrated. CPAP is the application of positive pressure to the airways of a spontaneously breathing patient throughout the respiratory cycle. Research was carried out for developing a method for low cost and accurate CPAP system for the use in rural hospitals in Sri Lanka.

The proposed design is consisted with two pressure vessels one of which has two pneumatic solenoid valves, which are operated to obtain the required concentration based on the partial pressures of the air and medical oxygen, thus the cost for an expensive oxygen sensor has been eliminated. The mixed air with required concentration is fed to the patient via a supply vessel. Bubbling method is used to control the exit pressure hence it is the least cost method with considerable accuracy.