Seminar

Mechanical Design Parameters of a Low Flow Rate Sidestream Capnograph

By

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Information Technology Engineering Building, room 336
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Abstract:

The use of sidestream capnographs, with a sampling rate of 150-250 cc/min, as a means of measuring a patient’s expired CO2 (ETCO2) and respiratory rate, has been a common practice for many years. However, in recent years, there has been a focus on lower flow rate sampling sidestream systems due to the benefits of less loss of tidal volume for patients, such as infants or neonates. When developing a sidestream system, four principle issues must be considered; 1) The signal fidelity of the gas sample must be sufficiently maintained from the sampling site to the measurement site. 2) Condensate from a patient’s breath, as well as blood, mucus, or other contaminates often pose problems for sidestream systems and requires mitigation. 3) The mechanics of transporting a gas sample at a constant flow rate through the sampling system, regardless of atmospheric or clinical conditions must be developed. 4) The physics of handling CO2 gas throughout the transport process must be understood in order to ensure accurate readings. These issues lead to a complex web of interrelations that are explored in the development of a low flow rate sidestream capnograph.