A **NEW CONTROL SOLUTION FOR INDEPENDENT SYNCHRONOUS VENTILATION OF LUNGS**

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Abstract

A new control solution for independent, synchronous ventilation of lungs has been developed and a controller to perform it with use of only one respirator and a bilumen intubation tube has been built. The controller enables division of the inspiratory tidal volume between the lungs in desired ratio, and setting of the positive end-expiratory pressure (PEEP) separately for each lung. The model tests have shown that the characteristics of the flow meters used, however not linear, is good enough to achieve clinically accepted accuracy of volume division. The tests have shown that the volume division is independent from the total tidal volume and PEEP. Maximal errors of the tidal volume division was less than 10%. The case study of patient after lung injury has shown significant improvement of the X-ray image and respiratory parameters (blood oxygenation, ventilatory pressures) during the independent ventilation of lungs with the use of the new device. The clinical study of 60 patients has shown that differences between actually realized volume division and the adjusted values are practically negligible.

Keywords: independent ventilation of lungs, respiratory system, respirator