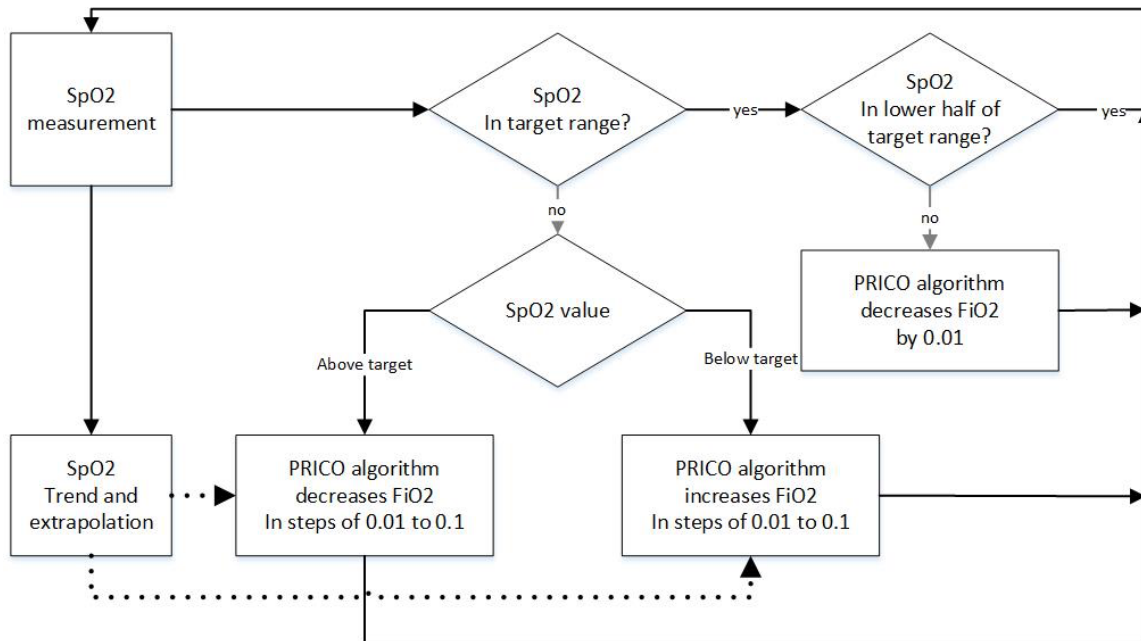


## Appendix 1

### Information about the PRICO algorithm

The PRICO algorithm of the Fabian® ventilator is a rule-based control scheme with proportion-integral-derivative characteristics that uses both the current SpO<sub>2</sub> and the trend in the SpO<sub>2</sub> measurement as input. The SpO<sub>2</sub> target range is set by the caregiver. A FiO<sub>2</sub>-adjustment takes place every 30s. The adjustment is based on the current SpO<sub>2</sub> and its position in one of the four SpO<sub>2</sub> regions: above target range, below target range, in upper half of target range or in lower half of target range. When the SpO<sub>2</sub> is outside the SpO<sub>2</sub> target range, the size of the FiO<sub>2</sub> adjustment (0.01-0.1) is determined by current SpO<sub>2</sub>, trend of SpO<sub>2</sub> data and an extrapolation of SpO<sub>2</sub> data to limit over- and undershoot. When the SpO<sub>2</sub> is in the lower half of the target range, no adjustment in FiO<sub>2</sub> takes place. When SpO<sub>2</sub> is in upper half of the target range, FiO<sub>2</sub> is decreased by 0.01. A number of safety checks are performed before an automated FiO<sub>2</sub> adjustment takes place: reliable connections between all devices and an assessment of the correctness of all measured parameters. FiO<sub>2</sub> limits are set by the staff to define a range wherein the algorithm can operate. If these FiO<sub>2</sub> limits are reached PRICO will alarm and will not increase or decrease outside the predefined range. If the algorithm gets no signal or is disconnected, it will alarm and FiO<sub>2</sub> returns to a pre-set (backup) level. The algorithm uses input from a separate Masimo pulse oximeter, therefore a second pulse oximeter is attached to the patient.



**Figure:** Scheme of PRICO algorithm: The algorithm uses both current SpO<sub>2</sub> and trend in SpO<sub>2</sub> measurements in order to adjust FiO<sub>2</sub>. An adjustment is made which is based on the current SpO<sub>2</sub> and its position in one of the four SpO<sub>2</sub> regions: above target range, below target range, in upper half of target range or in lower half of target range. When the SpO<sub>2</sub> is outside the SpO<sub>2</sub> target range, the FiO<sub>2</sub> adjustment (0.01-0.1) is determined by current SpO<sub>2</sub>, trend of SpO<sub>2</sub> data and an extrapolation of SpO<sub>2</sub> data. When the SpO<sub>2</sub> is in the lower half of the target range, no adjustment in FiO<sub>2</sub> takes place. When SpO<sub>2</sub> is in upper half of the target range, FiO<sub>2</sub> is decreased by 0.01.