

## „SPOC“ Oxygen Saturation Controller

Content

Fritz Stephan GmbH presents the automated Oxygen Controller SPOC

SPOC,  
the automated  
Oxygen Saturation  
Controller:

Fritz Stephan GmbH has developed the oxygen saturation controller “SPOC” (SpO<sub>2</sub> Controller) together with leading German University Hospitals.



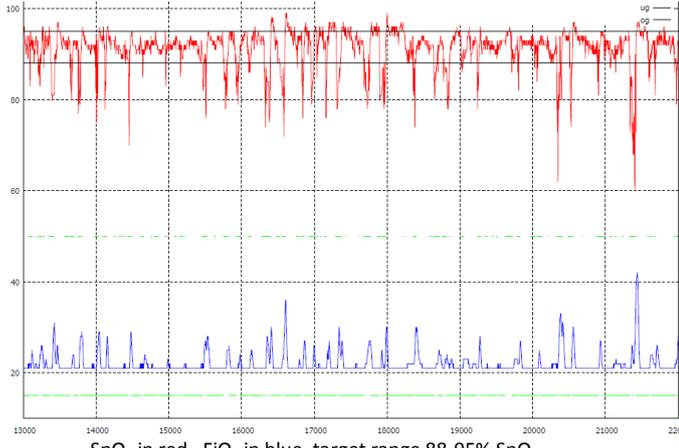
Oxygen has been identified as a key element in the delay in retinal maturation and in the development of Retinopathy of Prematurity ROP and Bronchopulmonary Displasia BPD.

There are three major tasks in the treatment of premature infants when it comes to dosing-oxygen.

- Avoiding hyperoxia to reduce the cytotoxic effects of oxygen (oxidative stress).
- Improving the duration within an oxygen saturation target window for the benefit of patients and to reduce the numbers of manual interventions by caregivers.
- And last but not least, prevent hypoxia to avoid damage of brain tissue and cerebral haemorrhage.

**The automated FiO<sub>2</sub> control is an essential module of a sophisticated, modern neonatal ventilator and will become more and more important in the clinical routine.**

SOPHIE & SPOC will be combined with the existing SpO<sub>2</sub> monitoring at your clinic to avoid double measurement at the tiny patient.

<p><b>Reducing Oxidative Stress</b></p>	<p>Preterm infants have higher levels of oxidative stress compared to term infants which is further complicated by an immature antioxidant system. High partial pressure of oxygen (PaO<sub>2</sub> in mmHg) as a result of inadequate supplemental oxygen will create oxidative stress through “reactive oxygen species” ROS. ROS can be found inside the cell nucleus even hours after an hyperoxia if the PaO<sub>2</sub> has been higher than 150 mmHg.</p> <p>Therefore the SPOC has a special algorithm to reduce the FiO<sub>2</sub> not only to the set basic FiO<sub>2</sub>. “SPOC” will additionally reduce the FiO<sub>2</sub> concentrations to less than 25% O<sub>2</sub> within minutes if a hyperoxia (&gt; 97% SpO<sub>2</sub>) of the patient occurs.</p>	
<p><b>Acting fast to keep the infant inside the SpO<sub>2</sub> target range</b></p>		<p>The automated FiO<sub>2</sub> control in preterm infants with frequent SpO<sub>2</sub> fluctuations significantly increases the time within the SpO<sub>2</sub> target range and reduces the incidence of prolonged hypoxemic events compared with the manual FiO<sub>2</sub> adjustment. Prolonged episodes of desaturation (Hypoxemia) with a duration longer than 3 min. have been found much shorter than in manual FiO<sub>2</sub> control</p>
<p><b>Oxygen Saturation triggered Backup-Ventilation in nCPAP</b></p>	<p>A unique feature of the neonatal ventilator SOPHIE with SPOC is the saturation triggered Backup ventilation in non-invasive CPAP. The FiO<sub>2</sub> of a ventilator is a slow changing parameter. It may take up to 25 sec for the patient gas to move through the breathing tube and reach the set FiO<sub>2</sub>. Improving or intensifying ventilation is the much faster and more logical intervention in this case. A preset ventilation will be activated and will improve the oxygenation of the patient immediately as soon as the oxygen saturation is lower than the SpO<sub>2</sub> lower limit. This ventilation is synchronized by an abdominal motion sensor and is able to avoid CO<sub>2</sub> retention, improve tidal volume and may, beside the better oxygenation, reduce bradycardia and the duration of desaturations. This technique has the potential to reduce the overall oxygen consumption of the patient and improves oxygenation on a much more natural way..... <b><i>intensify breathing instead of increasing the artificial amount of oxygen.</i></b></p>	
<p><b>Reduce stress of caregivers</b></p>	<p>Manual adjustments of the FiO<sub>2</sub> by caregivers to treat preterm infants with frequent SpO<sub>2</sub> fluctuations occur very often. Nearly every 10 min an intervention (manual adjustment of the FiO<sub>2</sub> or manual triggered breath) done by the nurse has to avoid or treat hypoxemia or hyperoxia. An automated SpO<sub>2</sub> controller is able to reduce the amount of interventions drastically. This will for sure reduce the stress level and workload of nurses and therapists and give them more free time to focus on more important treatments of these critically ill patients.</p>	
<p><b>Contact and more information</b></p>	<p><a href="http://stephan-gmbh.com">stephan-gmbh.com</a></p> 	