

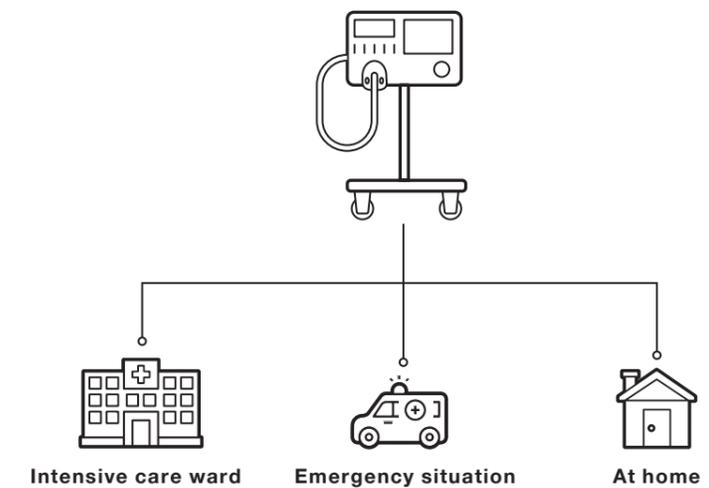


# Dosing the gas flow for reliable breathing assistance

**/ Allowing breath to flow freely /** On average, a person takes half a billion breaths over the course of roughly 78 years. Sometimes, for various reasons, the lungs need a little help. The reasons can range from the underdeveloped lungs of premature infants and newborn babies to lung diseases and external factors such as anaesthesia or brain injuries.

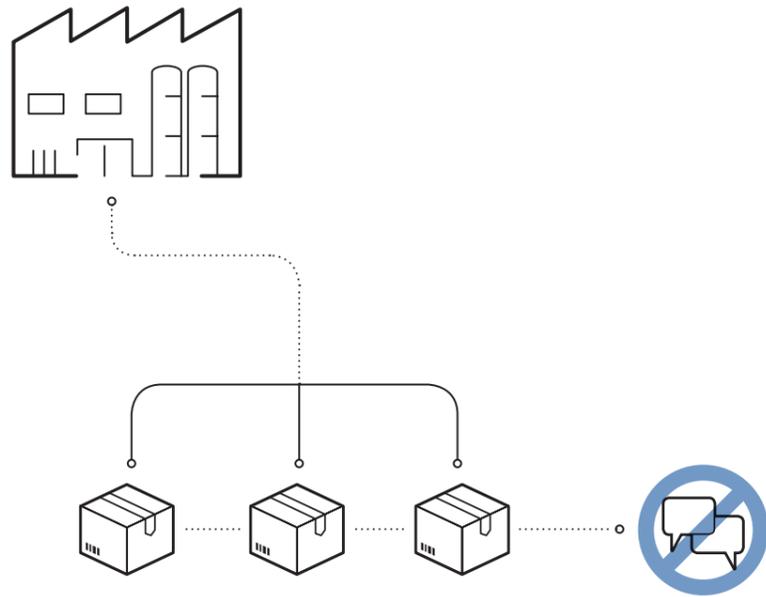
Accordingly, the available medical solutions and breathing assistance parameters such as frequency, pressure or oxygen concentration also differ. When developing mechanical ventilation devices, it is important to take all these factors into account – to allow breath to flow freely.

**Mechanical breathing assistance** demands the use of precise gas mixer systems such as the CPAP system (Continuous Positive Airway Pressure). Three applications are considered here: on an intensive care ward, in an emergency situation and at home. A high exchange of information between the devices ensures that people with respiratory conditions always receive the right amount of mixed breathing gas to meet their needs. To guarantee the gases are always perfect in terms of pressure, time, flow and mixing ratio and that this process is recorded fully and any errors are reported immediately, the gas mixers also require digital communication features.



Do you need gas mixers that accurately measure and control the volume, concentration and pressure of gases? Discover on the following pages how an integrated system solution for CPAP systems can simplify your work.

**/ One system instead of individual components /** The global demand for ventilation devices is increasing, as is the cost pressure in medical supply systems. Furthermore, manufacturers have to meet strict standards. It is, therefore, helpful if you can install a standardised pre-configured gas mixer system instead of individual components.

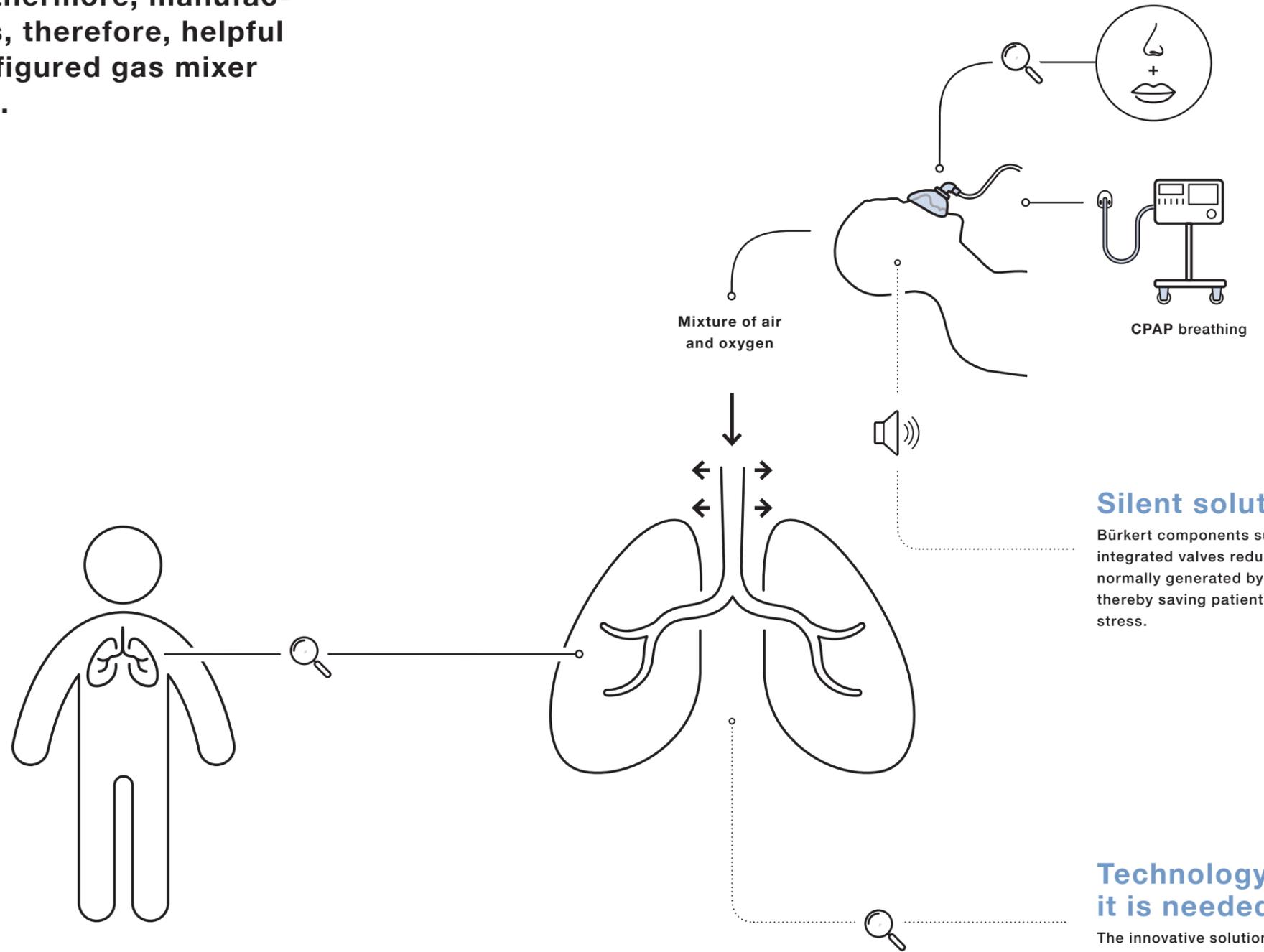


**Conventional solutions**

Many suppliers sell components but not complete system solutions with integrated valves and sensors. A lack of electronics means that the subunit and its communication fail to work as a whole.

**Approval**

The manufacturers of medical devices are required to comply with certification standards themselves – therefore we develop gas mixer systems according to norms and simplify your certification process.



**Silent solution**

Bürkert components such as the integrated valves reduce the noises normally generated by CPAP therapy – thereby saving patients unnecessary stress.

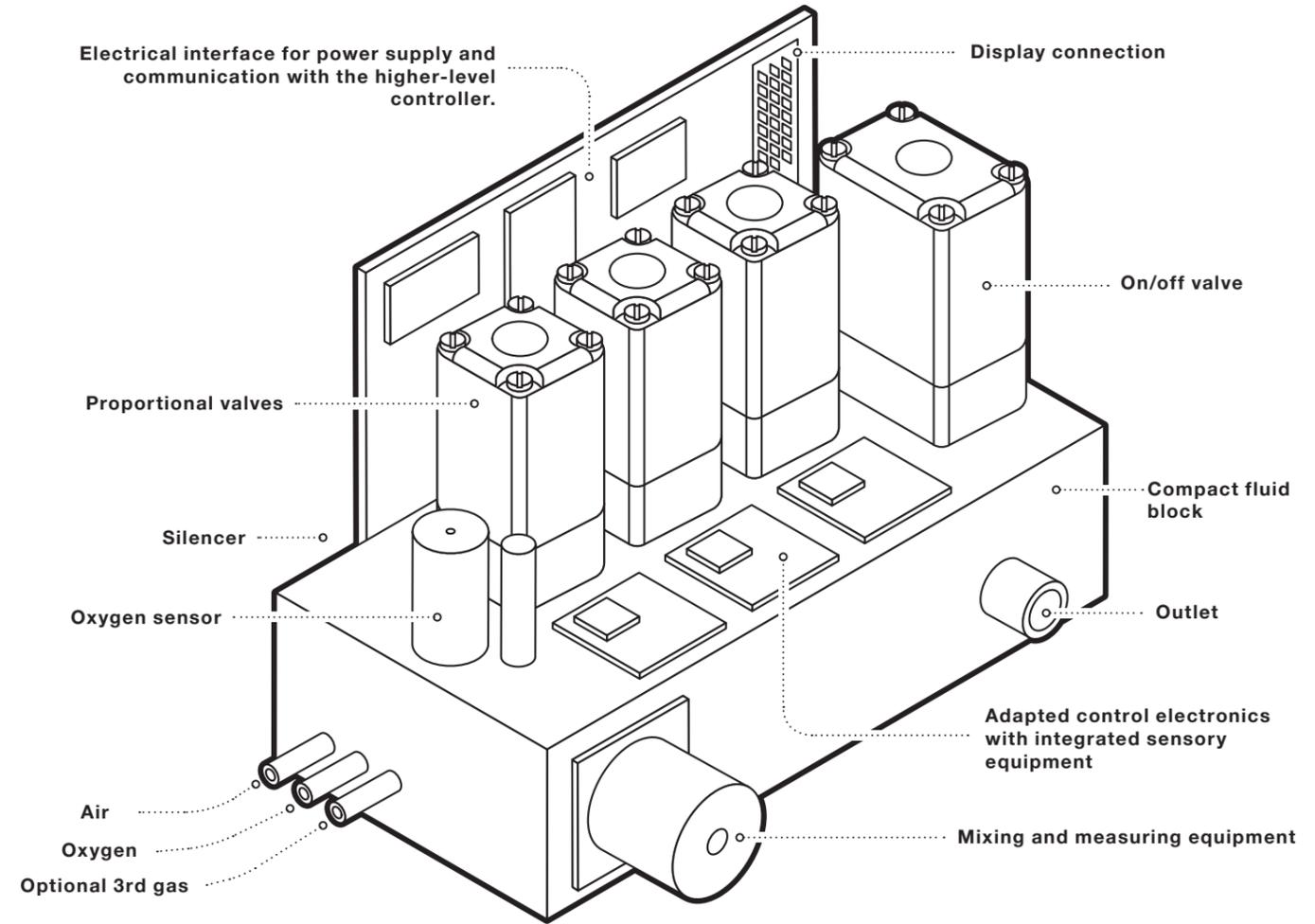
**Technology where it is needed**

The innovative solution enables up to 1200 breaths per minute, thereby opening up markets that were previously inaccessible to CPAP.

**Modular system**

Since Bürkert system solutions are designed according to the modular principle, you can easily integrate them into your systems to suit the specific application. This saves costs, enables scalable settings and reduces development risks.

**/ One solution for all devices /** The task of gas dosing in mechanical breathing assistance is to provide air and oxygen at the right time, in the right volume or at the right pressure and mixing ratio. The Bürkert solution for CPAP systems offers the following decisive advantages: it is compact, modular and individually configurable – and therefore fits into all ventilation devices, regardless of the patient group.



The system controls the mixture of medical gases such as air and oxygen. You can set the mixing ratio digitally to between 21% and 100%.

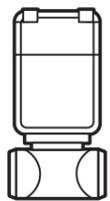
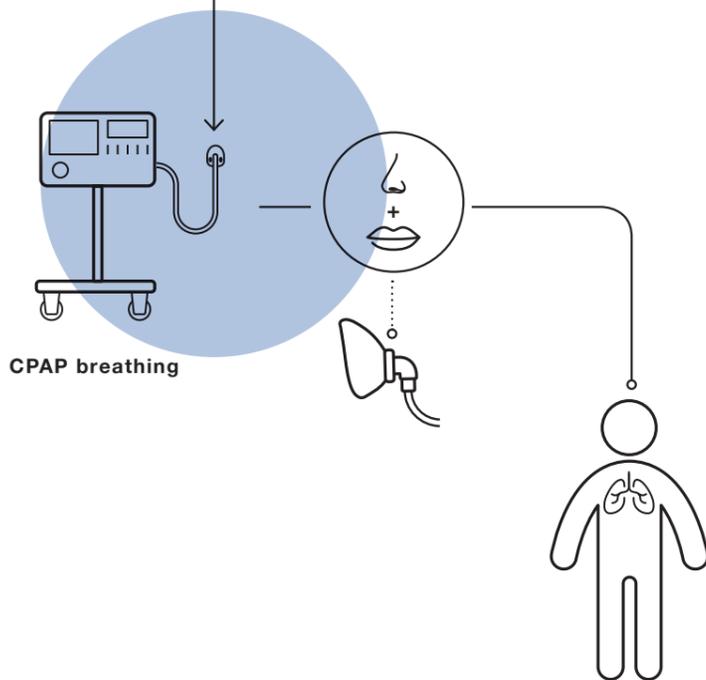
The option of controlled oscillation or pulsation of the gas mixture allows you to adjust the concentration in real time.



**/ Breathing in a controlled manner / In a hospital, in an ambulance or in your own four walls: The demands placed on ventilation devices vary according to the application and the location. However, it is always important for patients to breathe in a controlled manner. Bürkert electronic gas mixers provide the necessary support – in every situation. High-precision proportional valves control the oxygen concentration, pressure and flow rate dynamically and often with much greater accuracy than deemed medically necessary.**



System solution



**Bürkert proportional valves** operate without friction, with short response times and a repeat accuracy of  $\pm 0.25\%$ . This allows you to achieve a significantly lower deviation from the set value in the volume flow of the gas mixture than the legally required  $\Delta Q \leq \pm 2\%$  at 20 litres per minute.

**Reliable**



Real-time data transmission allows immediate response in an emergency situation. The automated system responds precisely to the patient's condition, doses gases exactly and operates extremely reliably.

**Time saving**



You can integrate the unit in just one step, without further testing. Thanks to the quick start-up and a quick-start function, the device is immediately ready for use. The correct gas mixture is dosed without manual control.

**Cost saving**



There is no need to purchase external components such as a control unit. If required, you can integrate additional components into the flexible modular system at any time. The minimum power consumption of the valves in the mixer enhances battery life.

**Compact**



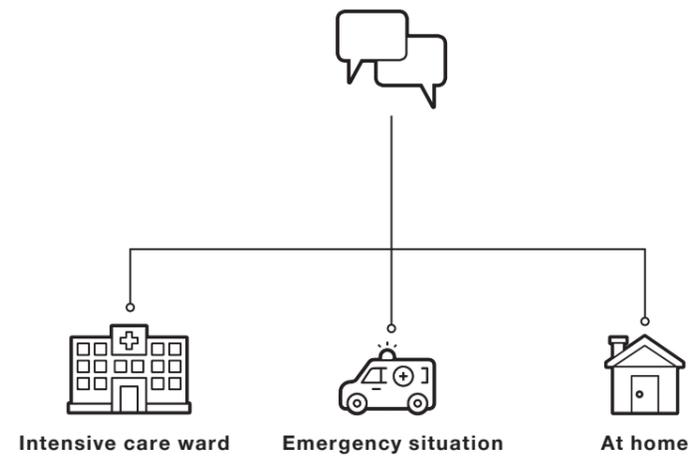
The system device boasts a space-saving design. You do not need any external devices for gas dosing.

**Efficient**



Low maintenance and robust performance reduce your operating costs.

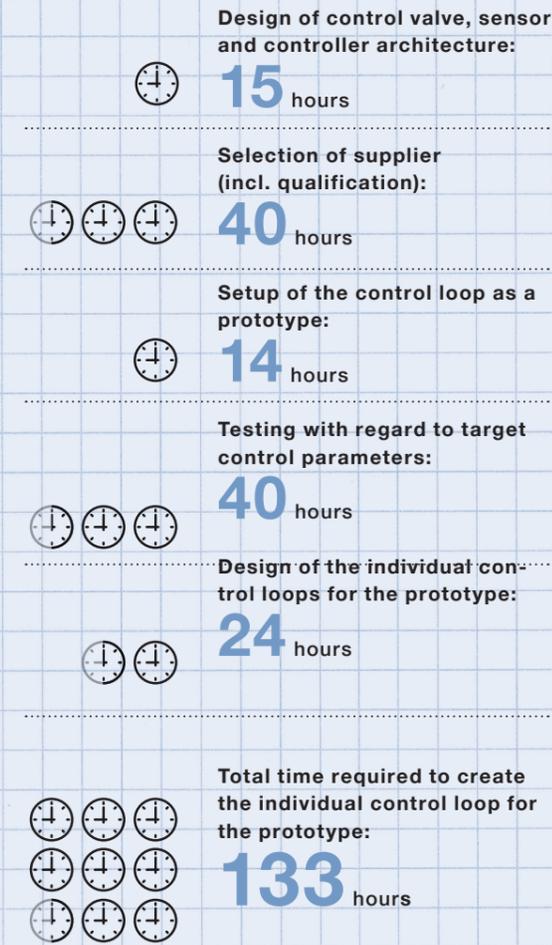
**/ Direct communication – Medicine 4.0 / Digital communication capabilities play a crucial role in monitoring and personalising ventilation devices. Bürkert gas mixer systems can be connected directly to the higher-level controller via digital interfaces. This ensures automation of the processes. High data availability is important when using ventilation devices at home: the values can be transmitted in real time to the responsible hospital.**



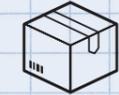
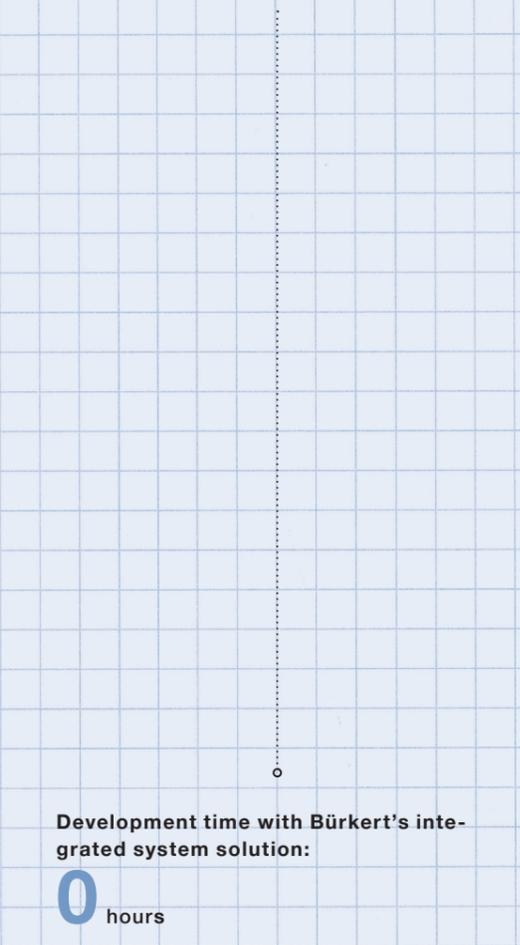
Example calculation

**/ Engineering savings /** To design a gas mixer in line with requirements, various development steps are required. Alternatively, you can opt for a complete Bürkert gas mixer tailored to your requirements. You can then be sure of receiving the right valve, the right sensor and the necessary controller architecture – as a unit you can rely on at all times.

**Development of a medical gas mixer (service extract):**



**Single control loop fully integrated in the system:**





**Flow measurement**

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