

Miniaturised Extracorporeal Circulatory Support System

The innovation

Understanding the Challenge

Reducing the size of organ support systems is a major trend that opens new options, particularly for open-heart surgeries and several extracorporeal systems (e.g. ECMO, hemo-dialysis).

System miniaturisation of extracorporeal lung assists is primarily achieved by integrating system components such as the pump, the oxygenator and the heat exchanger. Furthermore optimising gas exchange efficiency and blood flow in the system components is essential to ensure a high blood quality.

Presenting our Solution

Our breakthrough technology is a hollow fiber based oxygenator. Additionally, integrated inflatable silicone tubes generate a pulsatile blood flow by extending and collapsing under cyclic pressure change. Therefore, an additional blood pump is not required. Besides providing blood transport, the pulsatile flow improves gas exchange efficiency. The gas exchange is

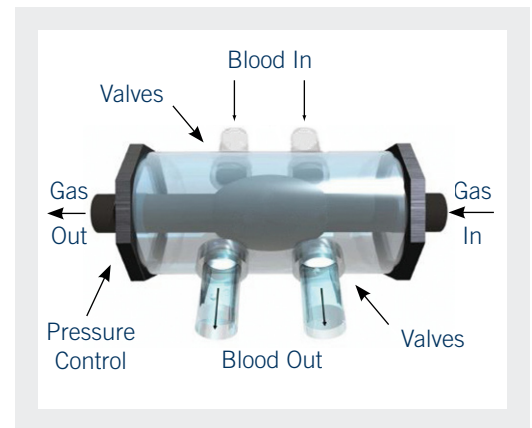
further supported by an optimized blood flow achieved by a specific fiber arrangement. Overall the presented system permits a drastic reduction of the blood volume required.

Development Plan and Status

The current development goal is to pass animal testing and to prepare the documentation for the CE- and FDA-certification.

The Commercial Opportunity

The funded development project is secured until proof of concept and the creation of a prototype. Industrial partners can leverage on their competence by jointly steering the development project and align it to their individual needs. Due to its characteristics, this breakthrough technology is expanding the market of cardiopulmonary bypass systems by improving their operability. As a significant benefit it is creating new future markets for ECMOs, artificial lungs or special application fields such as pediatric use.



Advantages at a glance

- Combination of carbon-dioxide-oxygen exchange and blood pumping in one system
- Pulsatile blood flow
- Improved gas exchange efficiency
- Drastic reduction in required blood volume (permitting pediatric use)
- Low cost, miniaturised, disposable device

Keywords

- MedTech System Miniaturisation
- Oxygenator
- Heart-Lung Machine (HLM)
- Cardiopulmonary Bypass (CPB)
- Extracorporeal Circulation
- Blood-Pump
- Open-Heart Surgery
- Carbon Dioxide–Oxygen Exchange

Areas of application

- Heart-Lung Machine
- Cardiopulmonary Bypass
- Extracorporeal Membrane Oxygenation (ECMO)
- Artificial Lung
- Membrane for Hemo-dialysis
- Pediatric Use

Patent status

The invention is filed internationally. It is owned by Dritte Patentportfolio Beteiligungsgesellschaft mbH & Co. KG. The application was filed in February 2007.

To acquire a licence for this new technology, please don't hesitate to contact us!



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