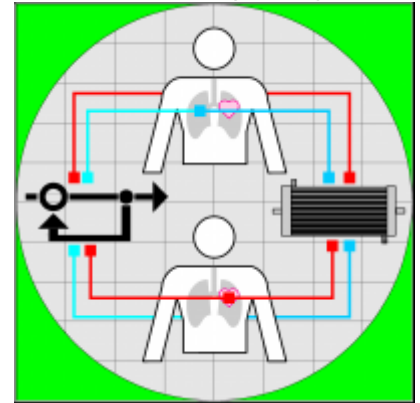


SmartECLA

Motivated by the current status of the [extracorporeal lung support \(ECLA\)](#) as an ultima-ratio treatment of the [acute respiratory distress syndrome \(ARDS\)](#), the project SmartECLA was initiated. This project enhances the existing form of treatment of ECLA with a cross-linkage of the utilised components, a closed-control concept, mechanic-constructive revision of the blood-transporting components and an interfering safety concept.



The Smart ECLA project is founded by the German Research Foundation (DFG) within the Smart Life Support framework.

Project partners

- [Institute of Applied Medical Engineering](#)
- [Department of Intensive Care Medicine](#)
- [Philips Chair for Medical Information Technology](#)
- Chair for Computer Science 11 - Embedded Software Laboratory

Project objectives

The aim of the Smart ECLA project was to facilitate a wider application of ECLA. With the allocation into four task fields, this complex challenge was processed by interdisciplinary project partners of the RWTH Aachen University.

In order to reduce the negative repercussions of an ECLA-treatment to the patient, the applied hardware, particularly the Oxygenator, was constructively revised by the Institute of Applied Medical Engineering. Further, the Chair for Medical Information Technology (MedIT) advanced closed-loop control algorithms for the application scenario which should enable less specialized operators to utilize this form of treatment.

The constructive and control-engineered enhancements were reinforced by a safety concept, which should enable the operation of ECLA even in the presence of disturbances and errors. This field was elaborated by the Embedded Software Laboratory.

In order to show proof of this concept and for the evaluation of the achieved results, the Clinic for anesthesiology established an animal model, which enables a reliable In-vivo-validation. The accumulation of these objectives facilitates the development from the current status quo as ultima-

ratio-treatment towards initializing a form of treatment of ECLA for a new group of patients.

Publications

Publications written under the framework of the SmartECLA project

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