



THE ^{AX}LUNG-ON-CHIP SYSTEM REDUCES ANIMAL TESTING AND DRUG FAILURE RATES

Organs-on-chips are biotechnologically produced in vitro models that imitate the structure and function of human organs. By modeling the smallest functional unit of the organ, they enable the simulation of human physiology. The first organ-on-a-chip from the startup AlveoliX AG simulates the microenvironment of the lung alveoli, in particular the air-blood barrier. The goal of AlveoliX is to change how drug research is conducted by providing new in vitro models that reproduce the in vivo environment in unprecedented ways. These in vitro models, i.e., organs-on-chips, make it possible to predict the human response to drugs better than conventional in vitro and in vivo models, and therefore significantly reduce the need for animal testing.

Two compact and intuitive devices – developed in collaboration

The ^{AX}Exchanger pneumatically controls the valves of the cell culture chamber for a controlled fluid flow during medium exchange. The ^{AX}Breather pneumatically controls the deflection of the micromembrane, and therefore generates the cyclical breathing movement that can be set up for pressure curves of various shapes, repetitions, and frequencies. The devices are operated via touchscreen and allow the export of experimental data to a USB stick for documentation purposes. konplan designed and implemented the electronics and embedded software for both devices. The development team was made complete with process and mechanical experts from AlveoliX. konplan was the ideal partner for AlveoliX because they brought the missing know-how in the embedded software area and can respond to the needs of a startup with agility.

First satisfied customers

The first customers in the clinical R&D industry are successfully using the devices and were able to perform initial research studies during the Covid-19 crisis of 2020 and 2021. konplan continues to support AlveoliX quickly and efficiently with the implementation of new software features and as a reliable and strong partner who will help AlveoliX exceed customer requirements and advance further in the market.

Result

- Functional devices for the first customers in the clinical R&D industry
- Intuitive, expandable device software
- Intuitive touch control
- CE conformity

Methodology & Technologies

- ARM® Cortex® A8
- Embedded Linux
- Python
- Qt Touch

Scope of Services

- Architecture and Concept
- Electronic evaluation & design from 2 PCB
- Software development for component and GUI control
- EMC testing and optimization
- Design transfer for small series



24 months



3 employees – konplan
1 employees – customer



Conception to production

Customer
AlveoliX

