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Description:

Microbial biotransformation under extreme conditions (high temperature, high pressure, low or high pH etc.) requires new tools and process engineering concepts. During process development not only certain process parameters have to be optimized. Furthermore suitable process strategies and scale-up-considerations have to be addressed. In this respect miniaturized, modular bioreactor systems can be very helpful, e.g. for data generation, kinetic studies. All these information will go into process development.

The existing systems are usually not designed for biotransformation under extreme conditions. These reaction conditions require new design concepts, special materials, automations, and control strategies.

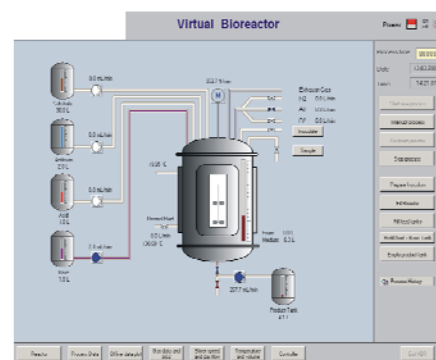
Furthermore strategies for a fast and safe transfer of data from lab-scale to production scale are required. Here model based software tools for training can be very helpful.

Within the consortium the following topics are covered:

- Development of special cultivation techniques, e.g. fixed bed reactors, integrated in multi-bioreactor systems (medorex, Pörtner)
- Modular multi-bioreactor systems for biotransformation under extreme conditions coupled with intense monitoring for process development (medorex, Schoop, Pörtner)
- Model based control and process strategies for fermentation (e.g. adaptive control strategies) (Schoop, ZytoVision, Hass, medorex, Pörtner)
- Simulations in real-time and for training (Hass, Schoop, ZytoVision, Pörtner)



Pilot scale fixed bed reactor system



Simulator for training

The project partners

Ingenieurbüro Dr.-Ing. Schoop GmbH	Hamburg
medorex e.K	Nörten-Hardenberg
ZytoVision GmbH	Bremerhaven
Bremerhavener Gesellschaft für Investitionsförderung und Stadtentwicklung mbH (BIS)	Bremerhaven
Prof. Dr.-Ing. Volker C. Hass	HS Bremen
PD Dr.-Ing. Ralf Pörtner,	TUHH (coordinator)

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