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CARDIAC BIOSIMULATOR PLATFORM



**TECH & TRAIN** 

# CARDIAC BIOSIMULATOR PLATFORM

for assessment of devices, procedures, image guided therapy and skills training

The cardiac biosimulator is a passive heart platform for functionality and feasibility assessment of surgical and interventional devices and procedures. The biosimulator is also a training platform that allows surgeons, cardiologists and radiologists to train virtually any procedure in a highly realistic setting. The system works with real hearts creating in vivo like hemodynamic conditions and cardiac behavior. The system is compatible with a variety of medical imaging modalities, such as 3D ultrasound, fluoroscopy,

CT, MRI, and intracardiac endoscopy. With the biosimulator, it is for instance possible to create a valve pathology and treat it with a minimally invasive procedure. The efficacy of the treatment on valve performance and behavior can be assessed by hemodynamic monitoring and visual endoscopic evaluation.



"The biosimulator platform allows for endoscopic and 3D TEE and 3D TTE ultrasound visualisation on a beating heart"

- The biosimulator is a valuable tool to assess the functionality and feasibility of cardiology and heart surgery devices and procedures.
- The biosimulator is a lifelike environment in which working with cardiology and surgical devices and procedures can be realistically and rigorously trained.
- The biosimulator can easily be customized to fit your specific need, e.g. assesing the latest repair technology to treat a simulated disease.

### FEATURES & BENEFITS

- A pulsatile pump system allows the application of desired hemodynamic conditions (heart rate, stroke volume, systolic fraction).
- The hearts are connected to a circulatory loop with adjustable preloads and afterloads to simulate different systemic or pulmonary impedance.
  - An easy connection system for the hearts allows for swift replacement of hearts.
  - A one-day campaign allows up to 10 hearts per system for assessment and/or training purposes.
- An intracardiac endoscopy system is available to acquire live video and images of the cardiac valves and heart chambers.
  - Like in a clinical setting, medical imaging techniques can be used with the biosimulator.

• Multiple pressure and flow sensors allow for hemodynamic monitoring before, during and after an intervention.

- The biosimulator is mobile, allowing for studies, demonstrations, and/or training on location.
- Highly skilled operators support you during your studies and training sessions.





"The heart can also be mounted with the aortic arch and descending aorta to simulate transcatheter procedures"

#### EXAMPLES OF USE

• Assessment and feasibility of intracardiac placement of delivery or guiding catheters for e.g. artificial heart valve delivery or pacemaker lead placement.

- Training of cardiac interventions and surgery, e.g. TAVR, TMVR, PTCA, minimally invasive mitral or tricuspid valve repair procedures.
- Applying a lifelike setting to train physicians with efficient protocols under image guidance.

• As a demonstrator to exhibit your device or procedure at conferences, workshops, meetings, etc.

#### WHAT'S IN IT FOR YOU?

• Medical imaging results of the procedure performed on a simulated beating heart.

• Intracardiac endoscopy: look at the results of your procedure with a camera, and analyze the results of your procedure.

- Time and cost efficient assessment and validation of your technology or procedure.
- Steep learning curve with safer and better treatment leading to higher success rates.



"Clear endoscopic visualisation and video recording of cardiac anatomy and functionality in real-time"



"https://vimeo.com/291349004 - Dr. Chitwood about the passive heart biosimulator platform"

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# CARDIAC BIOSIMULATOR PLATFORM

"Cardiac biosimulator platform is a platform as a service."



"Overview of the whole biosimulator setup"



"The biosimulator is mobile, allowing for studies, demonstrations, conference workshops, etc. on location"

### For further information please contact:



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