

# SONOFLOW® Flow Sensor

For new mobile drive unit EXCOR® Active applied at paracorporeal, pulsatile ventricular heart assist devices



APPLICATION NOTE

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SONOTEC® has once more proven its expertise in managing complex development projects in the medical engineering sector. The project partners contracted to develop a new type of clamp-on ultrasonic sensor enabling flow measurement for all EXCOR® cannula and pump variants in combination with the new mobile driving unit EXCOR® Active. With its products EXCOR® Adult and EXCOR® Pediatric, Berlin Heart GmbH is the only company in the world to support patients of any age and body size – from infants to adults.

## SONOTEC® Develops New Type of Flow Sensor for Heart Support System

In the course of the overall development of the mobile driving unit EXCOR® Active, SONOTEC® was leading the subproject for developing a new clamp-on ultrasonic sensor designed for direct volume flow measurement on flexible tubes for all cannula and pump variations of the pulsatile VAD system in combination with the new driving unit.

### New Flow Sensor Development for Mobile Driving Unit EXCOR® Active

Apart from usual parameters such as high accuracy and an excellent measuring performance, the sensors were to meet a number of additional requirements such as a compact and low weight product design. Furthermore, the sensors needed to be equipped with a childproof closing mechanism and to be safe in case of the use of defibrillators. Various sensor architectures ensure them to be easily applied to all EXCOR® cannula and pump variants. Power supply and communication of the ultrasonic sensor is included to the novel drive system.

The flow sensor is a crucial part of the mobile extracorporeal blood pump EXCOR® Active, ensuring active flow measurement and constantly performing plausibility checks. Overall, the flow sensors are a key safety feature for this kind of highly complex medical technology products.

 **SONOFLOW® clamp-on sensor as a fundamental safety feature**

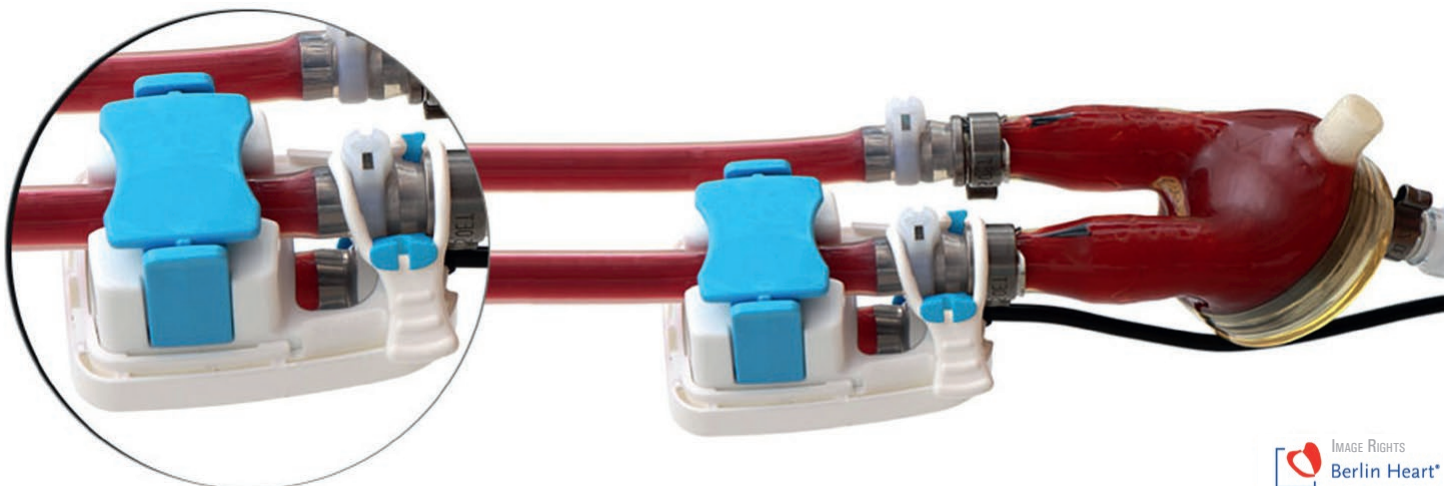


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Visualization of a customized SONOFLOW® clamp-on ultrasonic flow sensor on an EXCOR® cannula pump model from Berlin Heart GmbH  
Image Rights: Berlin Heart GmbH

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# Heart Support System EXCOR® Active from Company Berlin Heart GmbH

The heart support system EXCOR® is used to mechanically aid the cardiac function for patients suffering from heart failure in later stages. It is the only paracorporeal system with regulatory approval for patients of all ages – from new-borns to adults. In addition to the support of the left heart ventricle, the EXCOR® system can also be utilized in case of failure of both heart ventricles – the so-called biventricular support.

## Designed for Enhanced Child Treatment

The new mobile driving unit EXCOR® Active from Berlin Heart GmbH has been specifically designed to optimize treatment for children with serious cardiac insufficiency and excels through a number of outstanding advantages:

- Driving unit as small as a hand luggage, only 15 kg including batteries
- Battery runtime of at least 5 hours – even in BVAD mode
- Panel PC with user-friendly touch screen
- Different mobilization options for different ages



Driving unit EXCOR® Active for paracorporeal, pulsatile ventricular heart assist system and its portable application  
Image Rights: Berlin Heart GmbH

## SONOTEC® Meets Demands of Portable Equipment Industry

The project took advantage of SONOTEC's unique miniaturization, integration, low current draw as required by many new portable medical projects. SONOTEC® is leading the industry in making flow, bubble and flow-bubble sensors to meet the demand of portable equipment industry. Over a long period of successfully implemented projects, the ultrasound specialist has gained an excellent reputation

among manufacturers of ventricular assist, dialysis and transfusion devices, heart-lung machines, blood separators, medical pumps, and diagnostic systems. The intensive guidance from a very early stage in the product development process, support during verification, prototyping, and its expertise in certification processes gives SONOTEC® a lasting competitive edge.

✔ **The ultrasound specialist SONOTEC® serves innovative mobile medical technology applications with specific sensor developments.**

SONOTEC® preserves the right to change technical specifications without further notice. (Rev. 1 / 2020-06-03)

### SALES & SUPPORT

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