HeartSine®
Inventor. Innovator. Lifesaver.

TechNote

Electrodes

Electrode Choice Is Important

Electrodes are not only the primary point of contact between the patient and the defibrillator, but in many ways they form the critical link between the AED and its ability to deliver lifesaving energy to the patient.

HeartSine Electrodes

HeartSine® electrode technology provides an outstanding four-year shelf life without a significant increase in cost or compromise in specification.

This same technology provides superior electrical performance, rapid recovery time and greatly reduced noise.

HeartSine electrodes are large and have very low impedance, both of which are critical to successful defibrillation.[1, 2, 3]

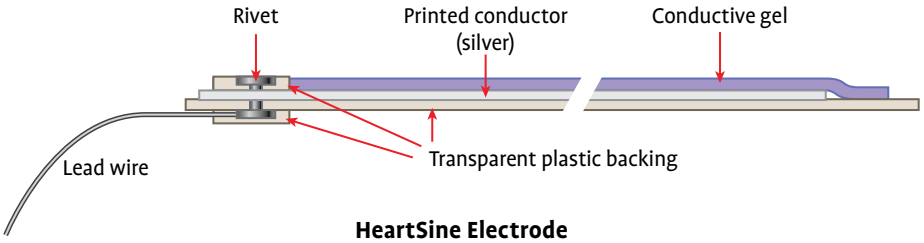
Due to both the high stability and low impedance of the electrodes it is possible to acquire additional Impedance Cardiography (ICG) information that can be utilized to provide detailed CPR feedback.

How It Works

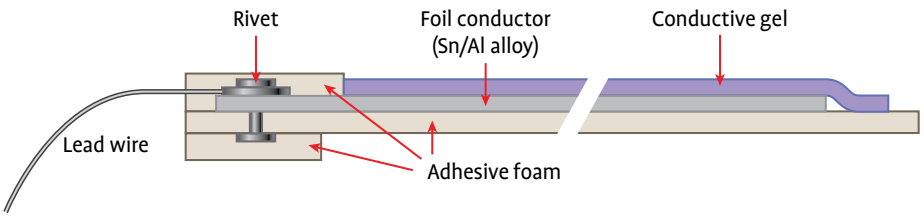
Traditional electrodes use a tin/aluminum alloy conductor with a front hydrochloride gel layer. The aging mechanism involves a chemical reaction between the chloride and the aluminium, which usually limits the useful life of the electrode to up to 2.5 years.

HeartSine electrode technology is based on an entirely different structure. HeartSine electrodes are formed by printing a thick layer of silver onto a substrate. The addition of a hydrochloride gel layer instigates a chemical reaction with the silver during the manufacturing process. After approximately one week, this reaction has formed a thin layer of silver chloride, creating a stable and self-limiting layer.

This technology effectively creates a defibrillation electrode that will be stable for more than five years. In addition, the silver/chloride interface exhibits very low offset potentials and fast recovery characteristics, providing superior noise and recovery performance.



HeartSine Electrode

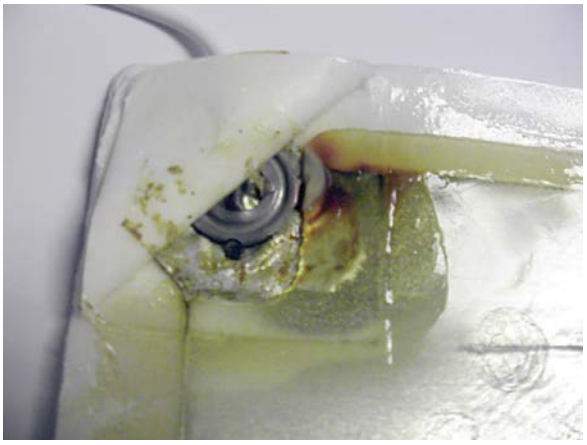


Traditional Electrode

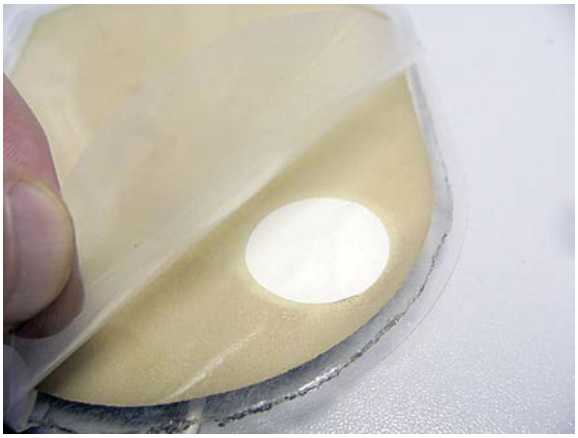
Lifesaving, **Pure and Simple**

Electrode Comparison

The photograph below shows typical corrosion characteristics of a traditionally manufactured defibrillation electrode after four years:



And below is a similarly aged HeartSine electrode:



Other defibrillation electrodes that claim similar long-life characteristics use a particularly expensive manufacturing process using sacrificial components to “redirect” the corrosion from the primary conductive foil. This sacrificial component adds cost and bulk to the resulting electrode and reduces the area available for effective conduction.

A History of Innovation

Innovation in technology drives HeartSine in the design, development and manufacture of Automated External Defibrillators (AED).

The company’s pedigree dates back over 50 years to the development of the world’s first out-of-hospital defibrillator in the 1960s. Since then, HeartSine technologists have been at the forefront of placing lifesaving technology in the hands of users of all skill levels.

At HeartSine our technology changes lives. And saves lives.

It’s Lifesaving, Pure and Simple.

References

1. Electrode pad size, transthoracic impedance and success of external ventricular defibrillation. Dalzell GW, Cunningham SR, Anderson J, Adgey AA. Regional Medical Cardiology Center, Royal Victoria Hospital, Belfast, Northern Ireland.
2. Predicted Trans-Thoracic Impedance and ECG-defibrillator Electrode Pad Size in Patients with Ventricular Fibrillation and Ventricular Tachycardia. G Dalzell, J Anderson, H Magee, J Adgey. Pacing and Clinical Electrophysiology 10, p874-878, 1987.
3. Transthoracic Impedance in Cardiac Arrest. J Anderson, G Dalzell, H Magee, J Adgey. European Heart Journal 8, Supplement 2, p58-62, 1987

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CE 0120 The products described in this brochure all meet the applicable European Medical Directive requirements.

UL Classified. See complete marking on product.

CAUTION: U.S. Federal law restricts this device to sale by or on the order of a licensed practitioner.

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