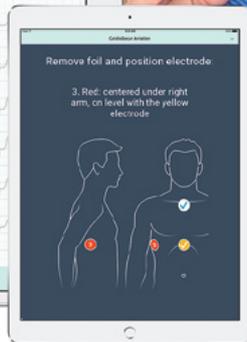


CardioSecur Aviation

Ultralight 12-lead ECG



Made
in
Germany



CardioSecur 
Knows Your Heart

Passenger Safety at Heart

Actual or suspected infarctions are one of the most common reasons for flight diversions. The result is disruptions to operations, safety risks for passengers and crew, and high costs for airlines.

CardioSecur introduces highly sophisticated, yet easy to use, ECG technology for remote settings. Its in-app assistant was specifically designed for non-medical staff and intuitively guides cabin crew through the few steps to attain a 12-lead ECG recording. CardioSecur Aviation requires practically no training and enables every airline to further optimise its existing medical emergency processes.

Reliable diagnostics. Prevent diversions.



Easy to use
& high acceptance



Minimal
training



Optimal ground
transmission



Ultralight

Airlines trust in CardioSecur – a case example

After a successful introduction of the CardioSecur Aviation 12-lead ECG on Lufthansa's A380 fleet, the airline deployed the system to its entire long-haul fleet. In cooperation with the ISOS MedLink™ service all CardioSecur ECGs are evaluated by means of seamless ground transmission. This allows for analysis of infarctions and any type of arrhythmia.

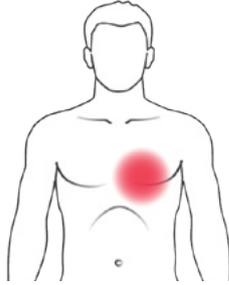
The new CardioSecur technology enabled Lufthansa to increase passenger safety, prevent unnecessary re-routing and trigger justified medical diversions due to its unrivalled ECG data quality and ease of use.



How it works

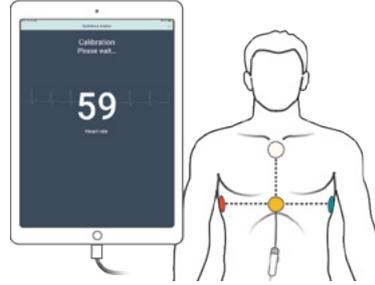
Comprehensive ECG data in just 3 steps:

1



Passenger shows cardiovascular symptoms.

2



Cabin crew records a 12-lead ECG with the CardioSecur Aviation app.

3



Automatic transmission to a 24/7 ground medical service, giving feedback.

An ECG can be recorded easily and discreetly by any crew member in less than 3 minutes.

In addition: CardioSecur Aviation features an expert mode for physicians on board in order to view the live ECG in the cabin.

Unique ECG-system properties

- Easy to apply mobile 12+ lead ECG
- Miniaturised hardware with only 4 electrodes
- Ultra-light technology (50g)
- Data transmission works with low bandwidth
- Optionally ECG includes lateral and posterior leads (V7-V9, VR3-VR9)
- App securely distributed to crew via MDM
- ISO 27001 compliant infrastructure for secure data processing
- Approved class IIa medical product

Medical diagnostics at its best

To assess if a medical emergency is time critical or not is a challenge wherever it occurs. Lacking comprehensive data in-flight, makes it close to impossible for any physician to tell, if a life-threatening infarction is present or if a diversion can be prevented. Attaining comprehensive medical data swiftly is crucial.

CardioSecur Aviation closes the diagnostic gap on board and seamlessly integrates with existing emergency processes of airlines. The easy-to-use CardioSecur 12-lead ECG automatically transmits to any designated ground medical service. CardioSecur data sets are optimized to ensure transmission also in low bandwidth circumstances. Feedback from ground medical service can thereby reach pilots in the shortest possible time. In addition, CardioSecur Aviation allows doctors on board, regardless the WIFI connectivity at the time, to resort to the in-app expert mode to view the live ECG. Doctors thereby can support the process or perform monitoring of a passenger with serial readings during flight continuation.

CardioSecur Aviation supports cockpit and crew from take-off to landing.

Increasing safety. Reducing cost.

By significantly reducing unnecessary diversions for airlines, CardioSecur has proven to increase passenger safety, mitigate inconvenience to travelers and help airlines to save significantly in cost year over year. CardioSecur is striking in that it:

- affords minimal crew training (4 min. video)
- reaches unrivaled acceptance rates by crews
- decreases unnecessary diversions
- accommodates existing in-flight processes
- requires no aircraft refitting (fits into MEKs)
- entails no extra fuel consumption (50g light)

Technical Details

- 12-lead ECG (I, II, III, aVR, aVL, aVf, V1-V6) optionally 22-lead (incl. V7-V9, VR3-VR9)
- Ultra-light cable (only 50g) with 4 electrodes
- No batteries (power supply from iPad™)
- ECG recordings of 10 seconds each
- Unlimited number of ECG recordings
- View live ECG in Expert Mode
- Communication via on-board WIFI and CardioSecur Integrated Service Platform
- Heart rate: 18 to 256 beats per minute
- Bandwidth: 0,05 to 40 Hz, Sampling rate: 250 Hz
- Disposable wet gel electrodes: Type P-00-S/12
- Optimised for iPad™

CardioSecur uses a precise electrode system based on the EASI standard^{1,2,3}. CardioSecur has developed EASI further so that it only requires four electrodes. The positioning of the electrodes captures the entire heart and computes all 12 leads (I, II, III, aVR, aVL, aVF, V1-V6). Optionally, the same setup allows for additional posterior and lateral leads (V7-V9, VR3-VR9).

1) Accuracy of the EASI 12-Lead electrocardiogram compared to the standard 12-lead electrocardiogram for diagnosing multiple cardiac abnormalities. Journal of Electrocardiology. 1999; 32 Suppl: 38-47. 2) Dower, GE, et al. Deriving the 12-lead electrocardiogram from four (EASI) electrodes. Journal of Electrocardiology, 1988, 21, Suppl. pp. 182-7. 3) Comparison of standard and derived 12-lead electrocardiograms registered by a simplified 3-lead setting with four electrodes for diagnosis of coronary angioplasty-induced myocardial ischemia. European Cardiology, 2012 Jul; 8(3): 179.

CardioSecur is an innovation by Personal MedSystems GmbH
Certified by TÜV SÜD subject to regulation ISO 13485 and 2017/745 MDR



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