

Unitron Group

Product

Inca

Intra Cardiac Analyzer

CD Leycom



CD Leycom about Unitron

Our innovative project has received a Challenger Credit from SenterNovem. This is a subsidy for companies that want to force a breakthrough in development. Unitron was the missing link. They came up with some smart and surprising solutions for the mechanical / electronic separation of modules. Furthermore, we really appreciated their thematic approach of the project. Pressure of time was never at the expense of craftsmanship. And thanks to their positive attitude, it is a pleasure doing business with them!



CD Leycom designs and develops medical devices for the continuous real-time measurement of cardiac function and performance. In addition to volume, intracardiac pressure is recorded simultaneously to produce continuous real-time virtual images, known as Pressure-Volume loops (PV-loops), widely recognized as a 'Gold Standard' of cardiac function and performance, useful in Cardiac Research and in guiding treatment in the fight against heart disease. This technology for measuring volume within the heart uses information derived from the conductance of blood and tissue (conductance catheter technique).

Over the years CD Leycom's clinical research device, the Cardiac Function Laboratory – the CFL-512 – has been distributed to university hospitals and institutes globally for clinical research. Twenty years later, CD Leycom wanted to change to routine-clinical settings in specialized hospitals. However, the CFL 512 was not optimally serviceable for such a commercial application.

CD Leycom gave Unitron a head start to develop a user-friendly modular system, with a prototype and software of their own. There was one very important challenge: it had to be impossible to connect the medically CE/FDA certified modules for human clinical use to non-medically certified, less costly veterinarian modules. This has resulted in the Inca (intra-cardiac function analyser).



Industrial design / competitive engineering

Product ► Inca Intra Cardiac Analyzer CD Leycom

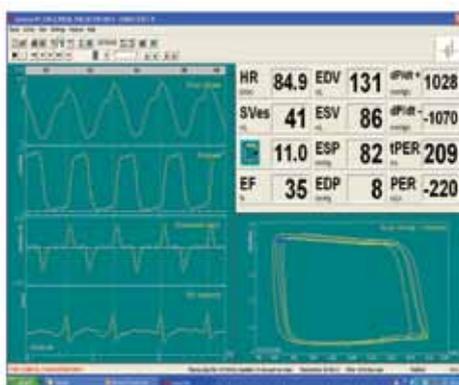
Technical data

General

- Medical class: IIa
- Communication with PC: Ethernet
UDP sockets over > 20m
- Setup: modular extendable
- Signal processing: digital filtering with
DSP, ARM9 embedded processors,
FPGA logic
- Protection: IP54

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System structure: the base module contains all the power and PC connections. The function modules for measuring volume and pressure are connected to the base module. An analog module is also available to connect signals from different medical devices to the measurement.

After extensive examination of all possible scenarios, Unitron developed a solution with various synthetic casings that are definitely not interchangeable. Eventually, only four templates were needed, which is very cost effective.

Customers can choose which Inca modules they need. The modules are partly protected by patents and only inherent catheters can be fitted to the system. In this way the know-how that is used in the system is protected, and revenues are derived from the consumer products.

Unitron about Inca

This project meant electronics and mechanics were intermingled, but knowledge was not a problem. Together with Smidesign in Antwerp, our team was able to make an uninterchangeable casing with only four synthetic templates. Six people worked on this project for months. Certification ran parallel with development.

The Inca will improve diagnosis and therapy outcomes and reduce complications. It has also been found that the effectiveness of medical surgery improves significantly by using CD Leycom's measuring technique. An example of this is the therapy that uses a pacemaker for certain heart conditions: multiple stimulation electrodes are placed in the heart. Unfortunately, only 50 % of patients respond positively to this treatment. More patients would benefit from this treatment, if the cardiologist would actively search for stimulation positions in the heart that would induce an immediate improvement in cardiac function.

The Inca provides the cardiologist with real-time intra-beat and beat-to-beat intraventricular measurement of cardiac function and performance, and thus improves the effectiveness of the pacemaker significantly.



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Unitron develops and manufactures complete products, such as medical equipment and specific industrial products. This may involve the realisation of a completely new concept, but also the modification and optimisation of existing products. This, in combination with our experience and business strength, will result in a complete business concept. Unitron is active in several markets throughout the world.