

# Aquadex system for congestive heart failure



CHF Solutions

**Development of an innovative medical device that removes fluid from the blood of congestive heart failure patients with fluid overload.**

**Expertise and domain knowledge**

- Cardiac patient care
- Medical device development
- Pump technology
- Electronics and software development





## Our client asked:

CHF Solutions asked Sagentia Innovation for help with the development of an innovative medical device that removes fluid from the blood of congestive heart failure patients with fluid overload. The Aquadex console needed to continuously withdraw blood from the patient, control the fluid filtration rate, and return the blood back to the patient.

In contrast to fluid reduction by diuretic or inotropic drugs, this system enables the medical practitioner to perform precise fluid extraction that is tailored to an individual's need. By removing excess salt and water in a rapid and controlled manner, the Aquadex system enables the focus to be on treating the underlying clinical condition.

## The project story:

We assisted CHF Solutions with the electronics and software of its Aquadex system console. This ISO 13485 compliant medical product development spanned hardware and software specification through to development and formal design verification. The combined expertise of our team of electronics, software and mechanical engineers enabled CHF Solutions to demo its first fully functional and assembled prototype within 9 months.

We worked with CHF Solutions to develop the Aquadex console, comprising:

- A pump for blood extraction and return
- A pump for filtration
- Dual servo motor controller
- A keypad and ¼ VGA display for the graphical user interface
- Flash memory for easy field upgrades
- A load cell to accurately measure rate of fluid removal
- An intelligent battery charger with fuel gauge
- Sensor interfaces to the disposable components of the system

## Results: deliverables and outcomes

Aquadex was launched into the market in 2003 and received FDA approval in June 2002 within two years of project start.

Early the following year, the product won the Gold Medal in the prestigious Medical Design Excellence Award in the General Hospital Devices and Therapeutic Products category.

## Contact us

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