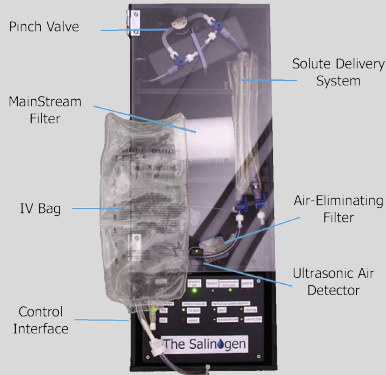




May 2007

The Salinogen-Creating IV Fluid in Space



Bioengineering Design Challenge

As space exploration becomes more and more frequent, the time astronauts spend in space increases dramatically. The International Space Station (ISS) routinely has crew members aboard for extended periods of time and, with the onset of returning to the Moon and possibly exploring Mars, the length of these stays in space will increase even more. A major concern of NASA is the insufficient supply of IV fluids available for long duration space flights and the lack of ability to produce these fluids as required. Key design factors for the new device such as weight, size, power consumption, ease of use and the ability to prepare IV fluids in a microgravity condition needed to be considered. Additionally, producing an IV fluid that was sterile, non-pyrogenic, and physiologically compatible was also desired.

Appropriate Solution

The Medical Devices for Spaceflight Team (MDS) in Dr. Maria Oden's BIOE451 Senior Design course decided to meet the challenges posed by NASA. Team MDS designed, built and tested a unique device they named "The Salinogen". The device meets the size, weight, power constraints set by NASA. The Salinogen is also able to produce a physiologically compatible IV fluid that is then packaged directly in the IV bag with minimal air. The Salinogen provides astronauts with an easy to use interface that not only creates the fluids, but also monitors flow rate, air infusion (bubbles in the fluid) and the total amount of fluid produced as well. The team was mentored by Dr. David Tomko, Debbie Mullins, Jimmy Wu, Terry Guess, Nafi Yasar and Leticia Vega. Project funding was generously provided by the Texas Space Grant Consortium and the Brown Foundation Teaching Grant. Technical support provided by Wylie Laboratories and NASA.

Current Status

Currently, a patent disclosure for the device has been submitted by Team MDS and Rice University.

BIOENGINEERING DESIGN AT RICE

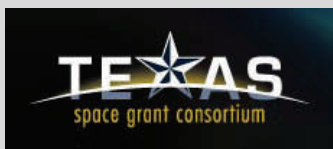


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Awards

NASA/TSGC Fall 2006
Best Oral Presentation (Fall 2006)



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