MEDICAL REHABILITATION DEVICE IMPROVES PATIENT RECOVERY

ACDi partnered with a medical rehabilitation firm to assist in the development of a controller used in conjunction with a monitor for ergometers utilizing functional electrical stimulation (FES). The FES ergometer provides electrical impulses to stimulate muscles that have diminished nervous control and are at risk for atrophy, circulation issues, muscle spasms, and decreased range of motion.

The controller is easy to use and reports information from each use back to the database which is shared between patient and practitioner. This multiuse controller functions with five styles of ergometers, as well as having standalone capabilities. Ergometers exercise muscles through active therapy, where the muscles are able to perform work that they are unable to do without stimulation. The controller assists in monitoring the levels of stimulation administered to the patient.

The ergometer controller provides automatic progression with the patient's physical improvement through a monitored database, shared between patient and practitioner.

KEY FEATURES

- Five optional devices for receiving FES
- Assists in control of muscle spasms
- Ergometer-free capabilities
- Tones and balance muscles
- FES is delivered consistently and reliably
- Varying levels of motor resistance
- Smooth motion cycling
- Automatic speed control
- Multiple muscle groups in conjunction with one another
- Automatic motor and stimulation control
- 140 mA, 200v
- Fatigue detection
- 6 to 16 channels of stimulation
- Spasm detection

APPLICATIONS

- Spinal Cord Injuries
- Multiple Sclerosis
- Muscle Weakness/Paralysis
- Cerebral Palsy
- Stroke/Brain Injury
- Chronic Pain
- Muscular Dystrophy
For the development of the controller for the FES ergometer, ACDi was able to provide cost-saving program management and assembly services. These included:

**ENGINEERING DESIGN**

ACDi's design engineers provided recommendations and modifications for the layout and design to ensure DFM, DFT, and DFA.

**PROCUREMENT SERVICES**

ACDi provides complete materials management, ensuring on-time production through the MRP system and relationships built with local suppliers.

**PRODUCTION**

ACDi and the customer worked together to meet production goals including cost, volume and schedule.

**INTELLECTUAL PROPERTY**

ACDi provided the customer with configuration-managed documentation that ensures the customer will be able to maintain and manage the product.

**TEST AND QUALITY**

ACDi tested all units for functionality at the board and systems level prior to shipment to ensure reliability.