



ADVANCED ACTUATOR

Knee Replacement – Pre and Post-Operative Physical Therapy Machine

Description:

Read how Kyntronics helped Halley Orthopedics improve the functionality and portability of their X10 Therapy machine for Knee Replacement patients.



Challenge:

[Halley Orthopedics](#) an innovator in pre and post-operative Therapy machines for knee replacement patients had a critical project to implement a number of improvements in their next generation Therapy machine in development.

Key objectives of the project included:

- Portability:
 - The new generation X10 machine needed to weigh significantly less to make it portable. The previous actuation system weighed over 80 lbs. which prevented this.
 - Portability would significantly open the market for the X10.
- Special Sequencing and control features:
 - Incorporation of new safety features in the actuator to prevent over-travel.
 - Real-time communications with the patient for therapy settings and recording of leg travel.

Solution:

Kyntronics worked closely with X10 Therapy Engineers during the design phase to develop and configure a rotary actuator that would meet these requirements for their next generation machine.

The new system incorporated Kyntronics Electro-Mechanical SMART Actuator, a modified model R2400 which provided 2,400 in-lbs of torque capability. Using Kyntronics standard actuator building blocks, this modified actuator was configured to be compact and lightweight... only 8 lbs. compared with the previous competitors model that weighted over 80 lbs.

An innovative mechanical gear arrangement was also incorporated that prevented over-travel and provided an additional measure of safety for the patient. In addition, a Modbus communications interface to the patient graphical controller was provided along with special software that met all requirements the new X10 design needed for the next generation machine.



Kyntronics R2400 Electro-Mechanical SMART Actuator

Application:

Pre and Post-operative Medical Equipment

Products:

R2400 Rotary Actuator

Results:

Improvements with reducing weight and added functionality have enabled the next generation X10 Therapy machine to significantly increase its market potential by opening it up to the home therapy market. New features have added to its attractiveness as a therapy option for Orthopedic Surgeons. The Kyntronics modified R2400 SMART Rotary Actuator incorporated in the X10 contributed to the success of the next generation X10 machine.

[Click to view a short video on this system:](#)

Find out more about Kyntronics Electro-Mechanical SMART Actuators and how they can improve your company's machines and processes.

<https://www.kyntronics.com/products/electro-mechanical-smart-actuators>

Interested in how Kyntronics can help solve your actuation challenges, [contact our Engineering team.](#)

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