

FSI Treats Prostate Cancer with Ultrasound —and Galil Helps Them Do It

A new investigational device developed by Focus Surgery, Inc. uses high-intensity focused ultrasound to destroy cancer in the prostate gland. During treatment, a Galil motion controller moves an ultrasonic transducer with pinpoint accuracy so that the prostate tissue selected for destruction by the doctor is actually destroyed. This then leaves key functioning landmarks in the prostate unaffected, thus greatly improving continence and potency for the patient.

If clinical trials are successful, the new device could replace radiation, hormone therapy and surgery in the treatment of prostate cancer. Prostate cancer is currently the second leading cause of all male deaths due to cancer.

This new groundbreaking device is called the Sonablate® 500. The system combines FSI's multi-focal length transducer technology with a custom, transrectal imaging and therapy probe to destroy the desired tissue. Proprietary software allows the surgeon to select multiple treatment zones, as needed.

A Galil DMC-1822 two-axis PCI motion controller directs the transducer in the probe precisely, allowing the transducer to focus to a point the size of a grain of rice. The probe sweeps the transducer back and forth to accomplish the image-guided therapy.

The Galil controller provides the Sonablate® 500 with both the accuracy and speed needed for this exacting work. Positioning accuracy to 0.1 mm is required, well within the Galil controller's limits. The controller easily handles the longitudinal imaging requirements of four 45-mm moves per second and the transverse imaging requirements of six moves per second.

The PC gives high-level position commands and Galil makes sure the motors get there precisely. The controller was easy to program and was able to store a 1,000-line program and still run complex move profiles and programs. Because of

Galil's flexibility, FSI purchased the exact number of axes and I/O needed without paying for excess capacity.

All time-critical motion profiling is done on the Galil controller. The Galil software allows PID parameters to be changed easily. A particular probe can be disconnected from the main PC base and other probes having different PID parameters can be plugged in.



The Sonablate® 500 focuses ultrasound to destroy cancer tissue in the prostate.

Inside the probe a Galil MSA-12-80 miniature servo amplifier drives a brush-type servomotor and an MBA-6-60 servo amplifier drives a brushless motor for the XY positioning needed to focus the probe. Both amplifiers are low cost and easy to use.

The Sonablate® 500 system has been designed for the noninvasive treatment of both benign prostatic hyperplasia and prostate cancer. The patient is anesthetized to prevent him from moving during the treatment.

Because the ultrasound does not harm the surrounding healthy tissue and does not involve radiation, the prostate can be retreated if necessary. Typical treatment time is two to three hours, depending on the size of the prostate. Because the therapy is non-invasive—the patient is walking around soon after treatment.

Galil's DMC-1822 focuses accurately to a small point the size of a grain of rice.

Focus Surgery, Inc. (FSI), a privately owned company based in Indianapolis, Indiana, is a pioneer in the development of products using high-intensity focused ultrasound (HIFU) for the treatment of cancer and soft tissue diseases. The Sonablate® is now in clinical trials in the U.S., and is being used for treatments in Europe. ■

Focus Surgery, Inc.
Indianapolis, Indiana
www.focus-surgery.com