Case Study

William Beaumont Hospital Phasing In LAP Lasers

Photo by Peter Roberts

William Beaumont Hospital
Royal Oak, Michigan, USA

William Beaumont Hospital is replacing the non-solid-state lasers in its radiation oncology department with solid-state diode lasers from LAP. Staff physicists there have found the LAP lasers to be very reliable. This case study describes their experience.

Beyond the critical concern of ensuring that laser alignment is as exacting as possible for the patient's benefit, radiotherapy department physicists want their treatment room laser alignment systems to be as hands-off and problem-free as possible. Frequent adjustments and time-consuming set-ups are unacceptable. William Beaumont Hospital (Royal Oak and Troy, Michigan) is in the process of replacing the non-solid- state lasers installed with its existing linear accelerators, with solid-state diode laser systems from LAP to enhance stability and simplify adjustment.

William Beaumont staff physicist David A. Jaffray, Ph.D., says he was dissatisfied with the wide laser lines, instability issues and other difficulties associated with its previous gas lasers.

Switching to solid-state technology, therefore, was the logical choice to address these issues, Dr. Jaffray notes. William Beaumont's first acquisition was a LAP sagittal rail laser for its CT scanner, which led to an evaluation of laser alignment systems for its radiotherapy treatment rooms.

The two-hospital facility has four linear accelerators, three of which are at the Royal Oak facility and the other at the Troy location. One of the linacs is also used for stereotactic radiosurgery. The hospitals conduct about 160 patient treatments per day.

According to Dr. Jaffray, there were several other solid-state laser system providers in the market, but he found LAP offered superior quality products. Dr. Jaffray specifically noted the lasers' adjustability, mechanical integrity and overall design.

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Dr. Jaffray continues, "Radiosurgery, in particular, is where you want the finest line and most stable laser possible for the highest degree of precision."

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"In the other room, PatPos lasers [two crosshair, one sagittal laser] have been stable on the projected wall to within a millimeter for a year, so they're quite stable," he says. "We suspect this minimal apparent drift was caused by instability in the structure of the building, not in the laser system. Regardless, it only takes a minor adjustment to realign the beam."

The hospital plans to equip the two remaining treatment rooms with PatPos systems on the immediate horizon.

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LAP laser alignment systems have no measurable drift, so the only adjustments physicists make are during the original set-up. In contrast, non-solid-state systems are prone to spatial drift after set-up, necessitating a tedious adjustment process.

"If drift occurs we want to be able to adjust it in as controlled a fashion as possible, but occasionally with the previous lasers, we had to turn multiple adjustment screws until the laser was back in alignment," Dr. Jaffray explains.

"During set-up of the PatPos systems, it's a convenient, single adjustment on a specific screw and the laser comes in line. It's the independence of the movements — the rotation and translation of the laser — which is critical to obtaining a well-defined set of orthogonal planes. It allows you to make an intelligent adjustment to the laser during set-up and installation."

Set-up of the LAP PatPos system is facilitated by its unique internal, six-axis beam alignment system, with fine adjustment of tilt. No other solid-state laser offers this degree of precision within a single adjustment parameter. This capability also permits laser installation in unusual locations or recesses. The beam can be rotated, moved up or down, left to right and tilted in two axes. Being able to steer the beam in all axes eliminates the need for large mounting brackets.

Solid-state is one aspect that has moved lasers substantially forward in terms of stability. The other aspect is the mechanical

quality of the device. Everyone can buy the same laser diode. But it's the incorporation of that solid-state diode into a high quality mechanical package that makes the difference. And only LAP delivers it.

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But Beaumont's experience proves that this choice can have a direct impact on a user's overall satisfaction with an RT room's performance. Specifiy a LAP laser and you can eliminate a potential area of dissatisfaction.

Maximize your investment with a simple choice

During the equipment purchase process, many radiotherapy professionals do not specify a particular laser. Often, in the context of a million-dollar capital equipment acquisition, they rely on their account representative to make this seemingly low-involvement decision.

When you spend over $1 million on equipment, it makes abundant sense to ensure that investment is maximized. As patient positioning has a direct impact on the overall effectiveness of your equipment, it makes sense to install the best lasers available. With this in mind, we suggest you consider LAP lasers.

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William Beaumont Hospital

William Beaumont Hospital, Royal Oak, Michigan is a 929-bed tertiary care, teaching, research and referral center, and is one of the 10 busiest inpatient hospitals in the country. A second Beaumont Hospital, built in nearby Troy in 1977, is a 189-bed acute care community teaching hospital, and is among the nation's busiest smaller community hospitals.

Photo by Peter Roberts

David A. Jaffray, Ph.D.
staff physicist
William Beaumont Hospital

A total of 91 medical and surgical specialties are represented on Beaumont's medical staffs of nearly 1,200 attending physicians.

Radiation Oncology

Beaumont's Radiation Oncology department is one of the state's largest providers of radiation therapy. In addition to treating people who have cancer, department researchers are pursuing treatment advances with grants from the National Institutes of Health, the U.S. Army and private funding sources. These advances have included developing innovative brachytherapy techniques (radiation implants), enabling brachytherapy for breast cancer and prostate cancer.

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