Commercial

Laser Light Show Teaches Kids Physics

Most people agree that the declining numbers of graduating scientists and engineers is a problem that has to be faced in the pre-college years, but few are making real progress in turning kids on to science. Mel Drumm, physics coordinator at Cranbrook Institute of Science, Bloomfield Hills MI, is an exception. "We were finding that young people were not coming to science museums. Now 50,000 to 60,000 school kids come through here every year."

The major attraction? A light show from one of the most powerful indoor laser projectors in the country that produces virtually every color of the rainbow. Drumm designed the show, which uses primary colors to light moving shapes such as stars, spheres, tear drops, cross hatching, squiqqles, and more, all moving in time to rock music. Since the show first opened, it has been sold out over 90% of the time.

Drumm, who hated science as a child, now teaches all the physics courses at the institute. He saw his first laser light show as a teenager and "kept thinking about it." In 1980 he started working with lasers as a means of getting kids interested in science.

At first there were problems. "We couldn't find anything that would fit our 30-foot planetarium," he said, "and nobody could build anything to our specs." They managed to set up a krypton laser system, similar to one used in most other laser shows. However, the system broke down after a couple of years. "We couldn't get all the colors out at once—it came apart."

So Drumm and his colleagues took four months to build a new one. The improved system features two lasers—a 6-watt argon (blue and green) and a 2-W krypton (red), both Coherent's Innova 90. Each beam passes through an acousto-optic modulator where the light is chopped and recombined to produce various colors. "With the graphics system, we can put any color anywhere within any kind of pattern we can generate."

The system is unique in that its two basic components, the color generator and the graphics control, are located in different rooms. The lasers are housed underneath the planetarium and send beams through the ceiling where they are picked up by a pylon 6 inches wide by 3 meters high in the center of the room. The pylon contains a miniature optical tower which projects the beams onto the dome. Basic graphics are on tape, but the bulk of each performance is live, with Drumm controlling the size, color, movement, and placement of images.

The current configuration has not been tested to its full capacity. "We can't bring the power up as much as we'd like because we haven't worked out all the safety interlocks," Drumm said. "Laser light shows are very highly regulated."

Drumm is working on his next project, an in-depth laser technology study program for high school students, for which he will use a 40-W CO_2 laser and a 5-W argon laser. "My goal is to use these lasers to show kids that physics isn't as bad as it sounds."

—Holly Bigelow

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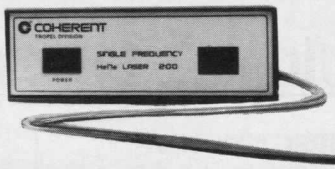

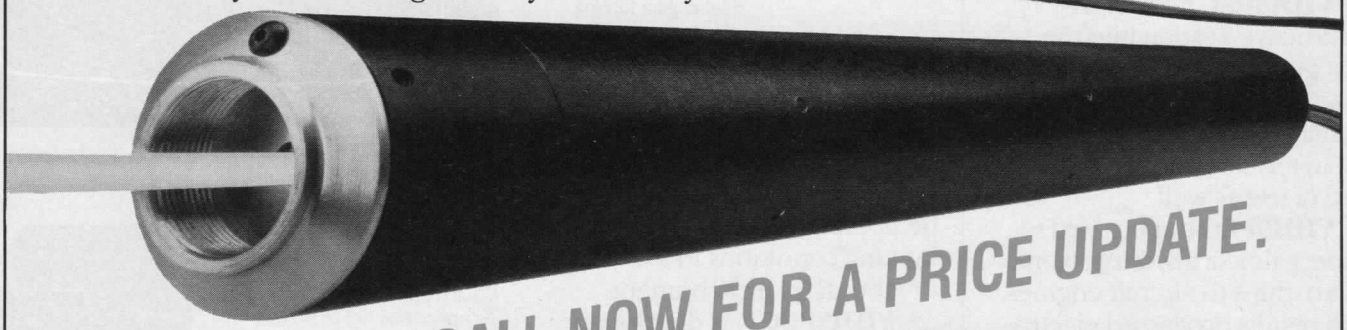

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