# FIBER OPTIC ATTENUATORS

One of the routes by which many spinoff products are brought to the commercial marketplace is personnel technology transfer, wherein an individual acquires a particular skill or technological know-how in the course of his work as an employee of NASA or a NASA contractor, then moves to a new job or a new industry and applies that skill or knowledge to a useful commercial product. An example is the experience of Mike Buzzetti **(below),** now president and owner of Nanometer Technologies, Santa Clarita, California, who designed a fiber optic attenuator while working at NASA's Jet Propulsion Laboratory (JPL), subsequently commercialized the device and founded a company to produce it.
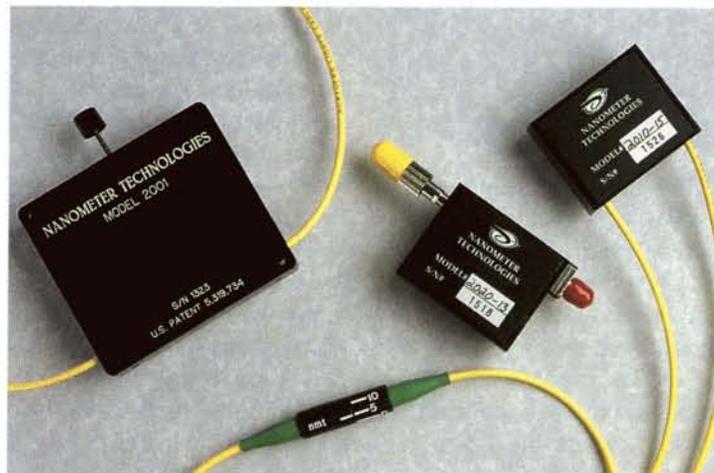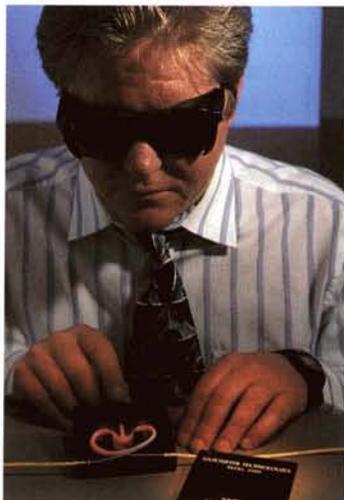
In 1990, Buzzetti was a contract technician at JPL engaged in research on a very low noise Fiber Optic Distribution Assembly for use in NASA's Deep Space Network. In the course of this research, the JPL team discovered that all of the fiber optic attenuators tested showed instability due to variations in temperature and shock, and had too much back-reflection (reflected light in a fiber system). Test results were unacceptable.

Buzzetti then designed a new, adjustable fiber optic attenuator that utilizes bending loss to reduce the strength of the light transmitted along it. The attenuator functions without introducing measurable back reflection or insertion loss, and it is relatively insensitive to vibration and changes in temperature.

Buzzetti applied for and received a patent for the device, negotiated an exclusive licensing agreement with California Institute of Technology, JPL's parent organization, and started Nanometer Technologies to manufacture and market the product, which has applications in cable television, telephone networks, other signal distribution networks, and laboratory instrumentation.

Above are three units of Nanometer's Model 2000 Series single mode fiber optic attenuators. By midyear 1995, the company had sold more than 1,000 units.

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