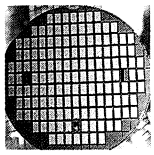

Hollow Retroreflectors

AN ADVANCEMENT OF A NASA SPACE SYSTEM OFFERS NEW EFFICIENCY IN OPTICAL ALIGNMENT AND BEAM POSITIONING

PLX, Inc., Deer Park, New York (formerly Precision Lapping & Optical Company) manufactures high technology optical equipment for aerospace and defense companies, government organizations, research laboratories and commercial instrument companies. The company is a leading producer of hollow retroreflectors, mirror-like instruments that reflect light and other radiations back to the source.

PLX's experience in that product line dates to the mid-1970s, when the company developed a hollow retroflector for NASA's use on the Apollo-Soyuz mission. As Apollo and the Soviet Soyuz orbited Earth a fixed distance apart, Apollo sent a beam of ultraviolet radiation to the retroreflector array on Soyuz, which bounced it back to an instrument in Apollo that measured the amount of radiation absorbed; that provided clues to the densities and concentrations of gases in the atmosphere. The Apollo-Soyuz work made PLX a pioneer in retroreflector development and over the years the company has developed a wide variety of retroreflector systems for applications involving the entire optical spectrum.

PLX has significantly expanded the technology with the introduction of a new Lateral Transfer Hollow Retroreflector (LTHR), shown in the foreground of the photo ***below left***, which accurately shifts a beam laterally while changing its direction 180 degrees — it uses a system of mirrors to return an exiting beam parallel to but laterally separated from the incoming beam as illustrated ***below right***. The device maintains precise separation of the two beams regardless of its own orientation and at any wavelength.

The first commercially available offset hollow retroflector, the LTHR can be used either as an instrument or as a component of an optical system. In measurement of laboratory equipment alignments, it offers a new, efficient means of beam positioning; much of the elaborate, costly optical setup normally needed can be eliminated, and the LTHR needs no monitoring or readjustment. In non-laboratory applications and as an instrument component, the LTHR is useful in general boresighting and alignment, connecting laser resonators, telescope mirror alignment, and alignment of laser designator systems for defense applications.

NASA, which provided the initial impetus for PLX's hollow retroreflector developments, is one of the company's LTHR customers. NASA has taken delivery of several of the devices for use in optical alignment and environmental research; one unit is a component of the Advanced X-ray Astrophysics Facility, an orbiting observatory being developed for service in the late 1990s. •