





*Fabrico offers slitting, laminating, die-cutting, and printing services to its solar customers. Shown here is the rotary die cutting press.*

mirror is employed to direct sunlight to a smaller secondary mirror located on the same axis as the primary mirror. Light from the secondary mirror is then reflected and magnified through optics before impinging on the single cell. Mini-dishes can be packaged into modules somewhat similar in appearance to conventional PV panels.

Other approaches use a Fresnel lens for high concentration of light on individual cells. One approach combines a Fresnel lens with a proprietary concentrator. Another utilizes a short focal length, acrylic concentrating lens. The design of this system is somewhat unique, in that it is comprised of three arrays, each 15 meters in diameter, that float in water for cooling and stability.

Still other approaches focus and magnify sunlight on individual cells through designs based on reflective metal troughs that concentrate light on strips of monocrystalline silicon cells; mirror collectors that beam sunlight to solar modules; and a thin, molded acrylic concentrator that traps and guides light to the center of the optic. In the case of the latter, a glass lens mounted in the center amplifies the light, bends it 90°, and directs it to a high-efficiency solar cell.

### **Fabrico's Role in CPV Manufacturing**

In the design and manufacture of concentrator photovoltaic systems, materials play as valuable a role as they do in conventional PV systems: sheet and liquid adhesives, foil and foam tapes, overlay films, laminates, die-cut parts, vibration

damping materials, and sealants. In fact, the inclusion of electrical and hydraulic-actuated tracking systems and the incorporating of optics in assembly of modules require a wider need for materials and finished parts.

As with PV products, Fabrico assists solar concentrator manufacturers in the design and development process to ensure the specification of materials and parts that result are the most functional and cost-effective solution for the application. In such instances, Fabrico's materials knowledge is brought to bear on performance requirements and manufacturing capabilities of the customer.

In the conversion of a material for solar applications, specifications may include temperature resistance; performance at upper temperature limits; shear, tensile, and peel strength; outgassing; dielectric strength, thermal conductivity; slitting widths and tolerances, etc.

Fabrico's materials lab enables both testing of products and the development of new materials. The facility enables testing to governing specs, not only to confirm incoming materials supplied by vendors, but also to certify that performance specs are met by materials and parts being delivered to the solar manufacturer. For global applications, customers may mandate UL specs. IEC standards may also apply to ensure both performance and safety in the design and manufacture of solar modules.

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