

## HOW IT WORKS

# Suniva Solar Cells

SUNIVA, A NORCROSS-BASED COMPANY started by Georgia Tech professor Ajeet Rohatgi, specializes in manufacturing solar cells, which make up the heart of the surging market for rooftop “solar systems” (much like Intel microprocessors are the heart of computers). A crystalline silicon solar system is made up of how-

ever many three-by-five-foot solar panels the customer requests—usually about twenty for an average home. Each panel contains around sixty six-by-six-inch silicon wafers, or solar cells, which convert sunlight into electricity by the photovoltaic process.

To enable that process, Suniva starts with the cell, cleaning and texturing its surface so that it's better able to absorb light. Then special coatings are applied, which further improve the capture of light and the conversion to electricity. Suniva also applies silver electrical contacts to the front of each cell and aluminum to the back so they will create a flow of free electrons (electricity) when integrated into the panel. Suniva's cells are then shipped to panel manufacturers, who string and solder them together and laminate the panel so it can operate outdoors for thirty years or longer. Integrator companies then purchase the panels and install the systems on roofs, connecting them to the electrical grid.

Suniva holds more than thirty patents on various processes and products that enable the company to raise the solar cells' performance. The company's Norcross facility is already making cells that are about 20 percent more powerful than the industry average and plans to better the cells' output by another 15 percent in the next two years. These improvements significantly reduce the cost of solar energy, but they also have a compound benefit. “The price of energy generated by a solar system includes the price of installation and system components,” says J. Bryan Ashley, Suniva's vice president of marketing and sales. “So when you have more powerful solar cells, you get more powerful energy density in each module and more energy for every dollar spent on installation. This makes the entire system's payback time much shorter for customers.”

These cost savings have worldwide appeal. Just two years after forming, Suniva now has more than \$1 billion in orders from Indian and European solar-module makers (as well as from a senior home in Fairburn). Oh, sunny day.

—CHARLES BETHEA

