

# Building the Sakai Manufacturing Complex, a Production Model for a Low-Carbon Society



Artist's conception of Sakai Manufacturing Complex (Sakai City, Osaka Prefecture, Japan)

## The World's First 10th-Generation LCD Panel Plant and One of the World's Largest Thin-Film Solar Cell Plants on the Same Site

Sharp was among the first to become involved with energy-saving LCD TVs and energy-creating solar cells, products which will lead respectively to reductions in CO<sub>2</sub> by supplanting CRT TVs and thermal power generation. Demand for both is expanding tremendously in all parts of the world, and to respond to this burgeoning demand, Sharp is constructing a new manufacturing complex in Sakai City, Osaka Prefecture, Japan, as part of its efforts to contribute to achieving a low-carbon society.

This manufacturing complex will be home to new LCD panel and solar cell plants. Both facilities are scheduled to go into operation by March 2010.

The LCD panel plant will be the first in the world to use 10th-generation glass substrates for the efficient manufacture of LCD panels for large LCD TVs. In addition, the solar cell plant will mass-produce thin-film solar cells. Its slated production capacity of 1 GW (gigawatt) per year is one of the largest in the world.

With its commitment to solar cells, energy-efficient products, and environmentally friendly factories, Sharp, as the frontrunner, whose aim is sustainable manufacturing and technological competency, will make this manufacturing complex a model manufacturing complex befitting a low-carbon society. That is, Sharp will be introducing the latest environmental protection equipment based on entirely new concepts, and on a scale that far surpasses the Kameyama Plant.

In addition, Sharp is aiming to achieve vertical integration that transcends the boundaries between companies, in which the vertically integrated business model created at the Kameyama Plant—from LCD panels to assembled LCD TV sets—is extended further upstream in the supply chain. The result will be reduced environmental impacts during distribution, of course, but also greater efficiencies derived from unifying such operations as production planning. Sharp is also planning the joint management of supply and recovery of energy, process gases, and chemical solutions, waste disposal, and recycling systems, as well as the construction of highly efficient production systems that will minimize environmental impacts.

### Overview of the New Plants

Location: Sakaihamma District, Sakai Ward, Sakai City, Osaka, Japan  
Site area: 1.27 million m<sup>2</sup>

#### LCD Panel Plant

Main product: LCD panels for large LCD TVs in the 40-, 50- and 60-inch class  
Glass substrate size: 10th generation (2,850 mm x 3,050 mm)  
Input capacity: 72,000 substrates per month  
(initial capacity at start of operations: 36,000 substrates per month)  
Amount of investment: Approx. 380 billion yen (including land acquisition costs)  
Start of operations: By March 2010

#### Thin-Film Solar Cell Plant

Main product: Thin-film silicon solar cells  
Glass substrate size: 1,000 mm x 1,400 mm  
Plant size: 1 GW (gigawatt)  
(initial capacity at phase one of operations: 480 MW)  
Amount of investment: Approx. 72 billion yen  
Start of operations: By March 2010

## Bringing Together the Expertise to Build a Highly Efficient Production System That Minimizes Environmental Impacts

Sharp has set a goal for the Sakai Manufacturing Complex, to build a revolutionary production system featuring extremely high efficiency and extremely low environmental impact, by marshaling the expertise gained from the participation by a number of leading companies in various types of industry and business.

For the LCD panel plant, Sharp will develop adjacent infrastructure-related facilities and has invited several leading manufacturers of materials such as glass substrates and color filters. This proximity will work to improve productivity by enabling shared infrastructure, including gas and electricity. Sharp is also aiming to achieve new technological breakthroughs by integrating the knowledge and know-how developed through close cooperation with engineers from material manufacturers who have superb technical capabilities.

In addition, the installation of new manufacturing equipment developed jointly with Tokyo Electron Ltd., which uses large glass substrates, will dramatically improve manufacturing efficiency in the thin-film solar cell plant.

Plus, since April 2007, Sharp and the Graduate School of Engineering, Osaka University have set up a joint research course on next-generation environmentally conscious production technologies, to develop innovative manufacturing techniques for LCDs and solar cells. Through this program, Sharp plans to conduct R&D and introduce basic technologies that contribute to resource-saving, energy-efficient, and clean manufacturing.