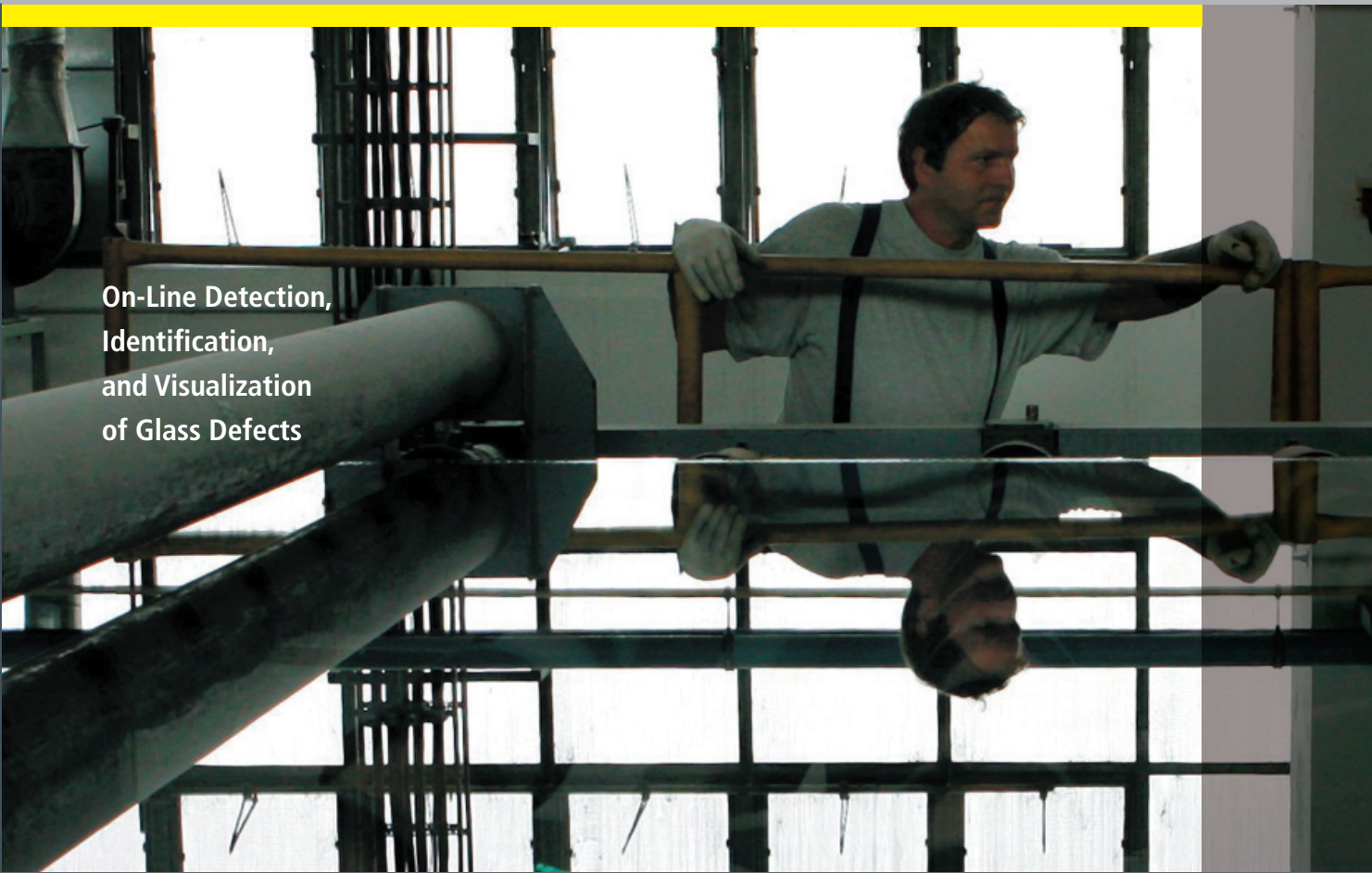# COGNEX

GLASS QUALITY INSPECTION

**On-Line Detection,
Identification,
and Visualization
of Glass Defects**

SMART VIEW®
GLASS

SmartView® Glass

SmartView has become the most trusted inspection system worldwide. With more installations on more lines, SmartView is relied upon by manufacturers around the world for web and surface inspection. For many of them, SmartView is the de-facto standard for on-line defect detection, identification, and imaging.

Only SmartView Glass provides advanced inspection technology ensuring superior real-time detection of all glass defects, while our special inspection software can easily be configured to provide unparalleled, automatic identification, and visualization of your defects.

Real-time inspection enables faster process correction and better yield optimization.

Our Value

SmartView provides more value to users than any other surface inspection system:

- **- Improve product quality**
- **- Maximize yield**
- **- Detect, identify, and visualize defects before value added processes**
- **- Reduce the need for manual inspections**
- **- Provide the reports you need in a form you can use**

We have been successfully inspecting surfaces for almost two decades. In fact, SmartView systems inspect over 3 billion square meters of materials every day! We have customers on all continents and more customers worldwide than anyone else in the industry. More companies guarantee their quality with SmartView systems than any other inspection system.

Our Detection

The SmartView Glass system is highly modular, allowing the use of appropriate technology for your application using standard system components. We install appropriate light and camera configurations for each line. Our standard lighting components are configured to detect glass defects in a way that they can be easily classified and identified. Cognex offers the most comprehensive selection of lighting solutions in the industry. For example, the use of LED collimated light allows us to employ our exclusive Synchronized View technology with two sets of cameras looking into the surface from different angles. This means that we can detect your defects in both transmission and reflection and use the combined information to identify the important defects and ignore the rest. Defects like tin can be reliably detected and classified while the numerous dust and dirt that accumulates on the surface can be ignored. In addition, our collection of thresholding algorithms can be optimized for your particular requirements, all performing on-line in real time. You never have to wait for SmartView results.
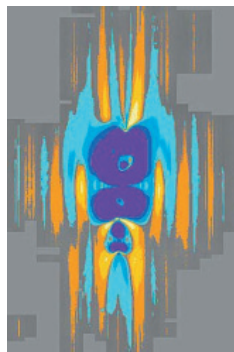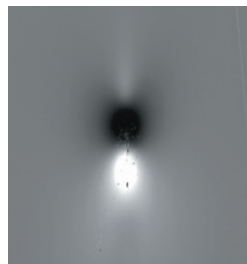
Our Classification

The SmartLearn® multi-step classifier is a patented classification tool set for SmartView Glass inspection systems. SmartLearn provides the flexibility to implement classification schemes tailored to your particular process and requirements. The advanced SmartLearn architecture allows the use of various learning classifiers. Combining automatic learning classification with expert knowledge, SmartLearn maximizes the potential of your inspection system for improved product quality, higher production yield, and decreased customer returns. SmartLearn easily differentiates glass defects like bubbles, stones, top tin, bottom tin, ream, and zebra distortions while filtering dirt and waves. All this can be done by merely collecting samples of the defects and allowing SmartLearn to determine the best way to differentiate them.
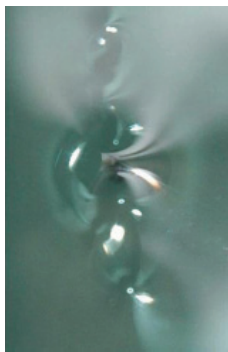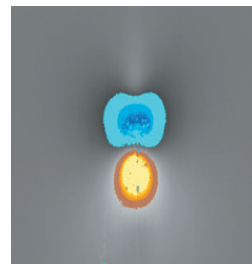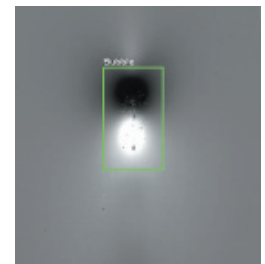
Stone Defect

Thresholded Image of Stone Defect

Bubble

Thresholded Bubble Image

Classified Bubble

Applications:

- Display Glass
- Float Glass
- Insulated Glass
- Coated Glass
- Architectural Glass
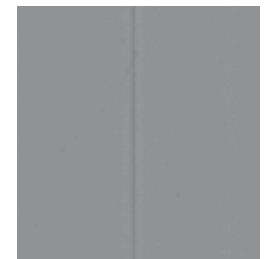- Draw Glass
- Mirror Glass

Typical Defects:

- Tin Drip (Hot End)
- Tin Drip (Cold End)
- Tin Pickup
- Ream
- Bubbles
- Scratches
- Stones
- Zebra Distortion
- Coating Voids
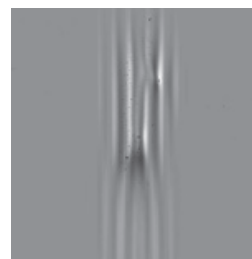- Coating Streaks
- Chips
- Inclusions
- Foreign Objects

Bubble

Filament

Ream

**Tin Drip (Cold End)**

Tin Drip (Hot End)

Zebra Distortion

Our Through-Process Visibility

The Windows®-based SmartView Glass system, connected to your mill network, provides information for mill-wide users, from the manufacturing floor to the front office. SmartView Glass uses industry standards like OPC and ODBC to ensure easy integration with other plant, business, production, and quality systems. A real-time operator interface shows current inspection results on-line all the time. The Open Network Inspection Viewer, distributed across the plant network, enables any user to view current or historical inspection results remotely from any step in production. Using SmartView's open communications interfaces, SmartView can connect to the marker bridge for marking defects, the cutting bridge for cutting the glass into panes, and the allocation system for determining where to cut and what to discard.

View Real Time or Historical Defect Images and Data.
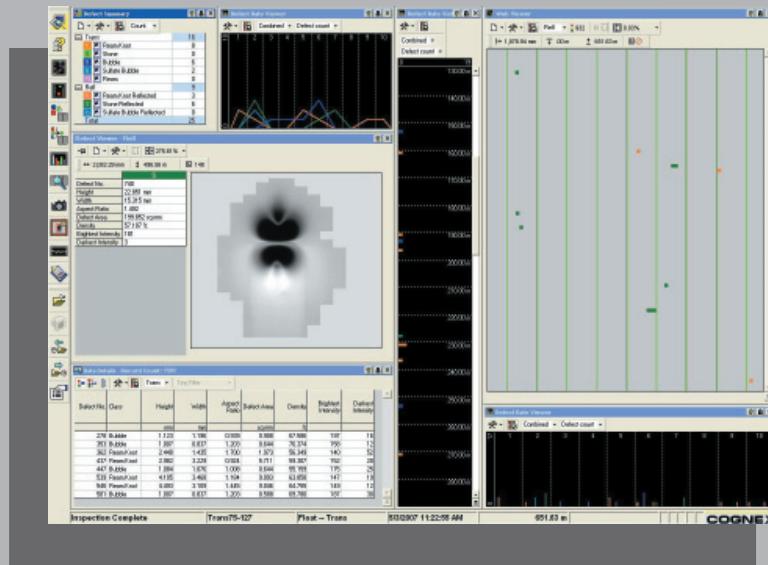
On-Line Users

Each user performs a different function within the plant and needs job-specific information. The user interface of the SmartView Glass inspection system is easily configured so that operators, inspectors, process engineers, and production managers have the information they need at their fingertips, when they need it, and in the format that they want.

Since 1981, Cognex Corporation has achieved industry leadership by focusing its expertise exclusively on vision inspection technology. The success of our surface inspection division is enhanced by Cognex's financial stability and continued commitment to Research & Development, with more than 300 vision engineers worldwide. Our network of service and support professionals has made us the world's leading supplier of machine vision systems. Our goal is to exceed our customer's expectations by providing real, lasting value through innovative surface inspection solutions.
Let Cognex ensure your success and guide you through your next generation of quality improvements.

Cognex Corporation designs, develops, manufactures, and markets machine vision sensors and systems, or devices that can "see". Cognex vision sensors are used in factories around the world to automate the manufacture of a wide range of items and to assure their quality. Cognex is the world's leader in the machine vision industry, having shipped more than 350,000 machine vision systems, representing over $2 billion in cumulative revenue, since the company's founding in 1981. In addition to its corporate headquarters in Natick, Massachusetts, Cognex also has regional offices and distributors located throughout North America, Japan, Europe, Asia, and Latin America. Visit Cognex on-line at http://www.cognex.com/.

COGNEX
SURFACE INSPECTION SYSTEMS DIVISION

Corporate Headquarters

Cognex Corporation
One Vision Drive, Natick MA 01760-2059 USA

United States
Phone: +1 508-650-4141 Fax: +1 508-650-3344
www.cognex.com

Europe
+49 721-66390
www.cognex.de

Japan
+81 3 5977-5400
www.cognex.jp