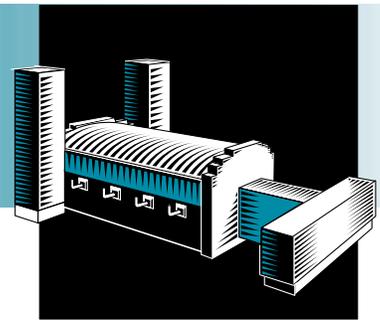


# GLASS

Project Fact Sheet



## SINGLE-CHIP COLOR SENSOR FOR GLASS RECYCLING OR QUALITY CONTROL

### BENEFITS

- Optimized process control and reduced waste as a result of accurate, real-time color separation
- Estimated energy savings of at least three percent in glass recycling process
- Increased industry accessibility to low-cost, robust, color sensor technology

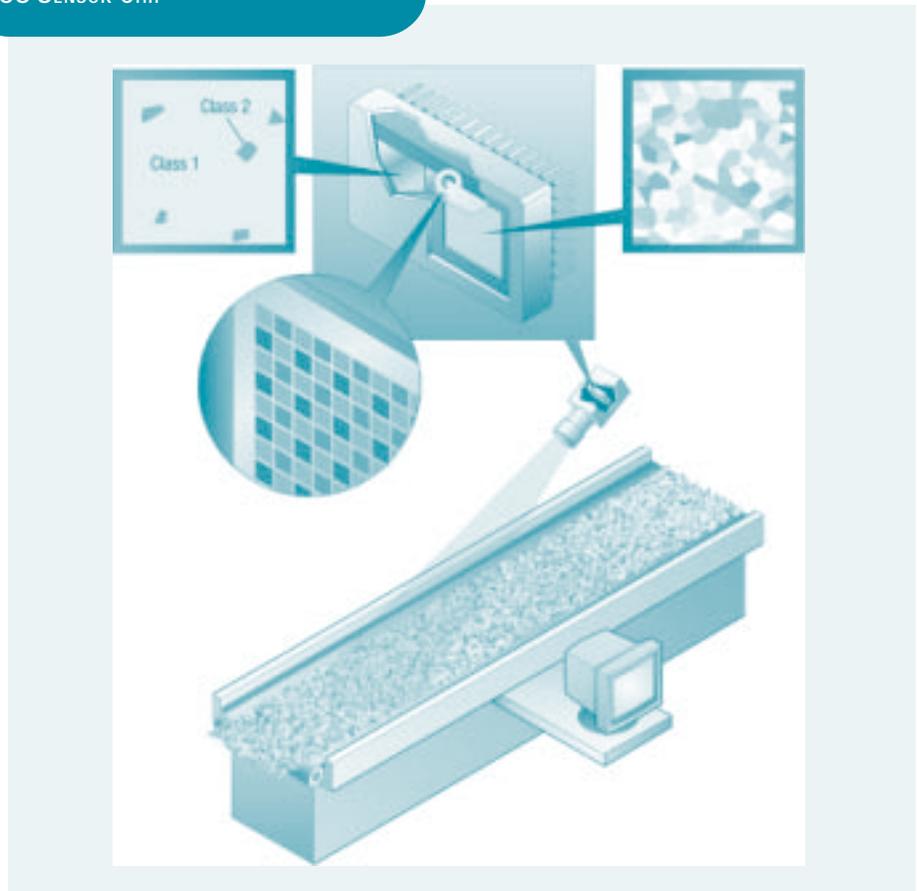
### APPLICATIONS

The compact, robust, single-chip color sensor offers the industry a fast and affordable way to perform real-time color separation, which can be used throughout the industry to sort colored glass in a recycling stream. The technology may also be used in other defect-detection applications, such as crack detection in glass containers. Other uses include monitoring and security, biomedical imaging, and various consumer applications.

## REVOLUTIONARY COLOR SENSOR WILL ENHANCE GLASS RECYCLING EFFORTS

Existing color sensors used in the glass industry are often too large, expensive, or slow to meet industry demands. Intelligent Optical Systems, Inc. (IOS) is developing a unique, affordable, color classification sensor integrated with a data preprocessor on a single compact microchip. This robust, one-chip design offers accurate, real-time color separation that can improve production efficiency and reduce waste in glass recycling.

### IOS SENSOR CHIP



**IOS** sensor chip controlling the quality of the production flow. In the depicted glass recycling context, “Class 2” represents undesired items (having undesired color or inferior quality), and “Class 1” represents everything else (the desired items, as well as background / conveyor belt).



## Project Description

**Goal:** Develop a reliable, flexible, color image sensor with a built-in data preprocessor that can operate in real time under harsh environmental conditions.

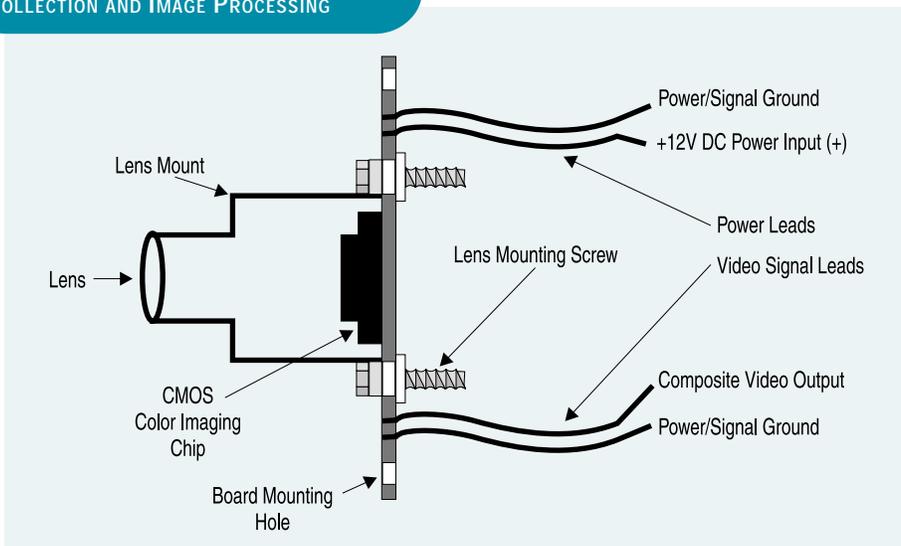
The chip captures images using advanced CMOS photodiode array technology and processes them in real-time, immediately identifying defects or undesired characteristics. Integrating the sensor and preprocessor on one compact (less than 1 cm x 1 cm) microchip creates a rugged chip that can be used in extreme environments. The chip is also reprogrammable for use in various applications or conditions.

## Progress and Milestones

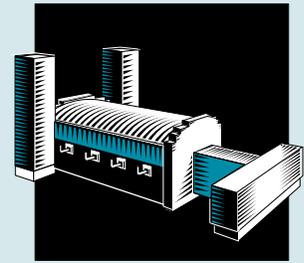
- Two test chips have been designed, laid-out, and fabricated. The technology is in its second phase of development, which will result in production of a prototype chip by mid-2001.

## Description

### COLOR CAMERA USED FOR DATA COLLECTION AND IMAGE PROCESSING



**The color imaging chip performs real-time color separation, enhancing and improving the glass recycling process.**



## PROJECT PARTNERS

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