Flat Panel Inspection System

**Chess**

*C*ontinuous

*h*igh-speed

*e*fficient

*s*urface

*s*canner
Introduction

The flat panel inspection system Chess is based on high-resolution cameras using Dr. Schenk proprietary pattern elimination technology. Chess is a modular optical system capable of inspecting all panel sizes and types, including bare glass substrates, coated glass, color filters and OLED structures.

A variety of resolution ranges is provided by the Chess flat panel inspection system in order to accommodate customer specific manufacturing and inspection environments.

Continuous Self Learning Pattern Adaptation
Continuous self learning pattern adaptation results in heretofore unmatched cycle times of 10 seconds. And Chess flat panel inspection results are not influenced by uncritical variations on the panel.

Modular System Design
The Chess flat panel system inspects a wide range of panel sizes. Its modular design also allows the system resolution and configuration to be adjusted in order to optimize the price / performance ratio. In-line as well as stand alone systems are available with loading and unloading capability.

Optional Measurement Channels

Thickness Measurement
• White Light Spectrometer Modules
• Laser Interferometer Modules

Warpage Measurement
• High Precision Triangulation Sensors

Color Measurement
• Spectrometer Modules
• Single Sensor Modules
**Inspection Items**

**Bare Glass Substrates**
- Bubbles (Blisters, Awa),
- Inclusions (Stones, Knots),
- Platinum (Tin), Cullets, Glass Chips, Protrusions (Tokki),
- Particles, Scratches, Surface Spots, Stains, Streaks (Brush Lines, Cords), Water Marks, Broken Corners, Edge Chips, Edge Cracks

**Coated Glass**
- Coating Voids, Missing Coating,
- Pinholes, Coating-Burns/Arcs,
- Coating Scratches, Coating Splashes (Metal Spots), Peelings

**Color Filters**
- Black Matrix (Metal or Resin),
- R, RG, RGB Photo Spacer Patterns, Dust Particles,
- Scratches, Pinholes, Missing Edge and Shape, Muras,
- Color Misalignment, Stains

**System Highlights**

- Unique pattern elimination technology - CAPE
- Unmatched cycle time
- Superior defect sensitivity
- Wide range of panel sizes and types
- Innovative glass handling technology

**Sample Images of the Flat Panel Inspection System Chess**

- Blister
- Glass Chip
- Metal Inclusion
- Platinum
- Inclusion
- Glass Chip
- Metal Inclusion
- Scratch

**Proprietary Dr. Schenk Flat Panel Inspection Technology CAPE**

The CAPE continuously adapting pattern elimination technology was custom-developed for the Flat Panel Display industry. CAPE is based on hardware video compensation at a very early scanning stage which effectively overcomes the shortcomings of conventional image processing systems.

This revolutionary technology enables the Chess flat panel inspection system to scan and process structured surfaces at the highest speed in the industry. And structured as well as unstructured surfaces can be inspected with the same cycle time.

CAPE pattern elimination for flat panel inspection systems is yet another innovative milestone from Dr. Schenk in the field of quality assurance and process control equipment.
The combined contribution of the proprietary technologies of pattern compensation, measurement modules and modular system design maximizes the inspection performance of the Chess system in order to best serve the needs of the flat panel display manufacturer.

Dr. Schenk GmbH, established in 1985, is an innovative high tech company based in Munich, Germany.

For more than 20 years, the range of products and services offered by Dr. Schenk includes comprehensive solutions for automated quality assurance and production process monitoring – areas where we continue to set new standards for the inspection of surfaces and the measurement of optical and mechanical properties, through the continuous utilization of the latest technical advances in optics and electronics.

The focus of all our activities is the perfect synergy between practical ideas and innovative solutions.

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