

Major TV Manufacturer Utilizes MTI's Laser System To Improve Quality Control

Introduction

As more consumers expect the best possible picture quality, increased demands are being placed on manufacturers to ensure that their products offer the highest performance, are uniform from one TV set to another, and that broadcast signals are faithfully reproduced. This is even more relevant in today's marketplace due to the increased proliferation of HDTV sets, home theaters and the public's expectation of a superior overall "theater-like" viewing experience.

The Problem

Rear Projection TV makers require that the CRT gun project a clear and crisp image on the front TV screen for optimum television viewing enjoyment. The CRT/front screen combination must be kept in precise alignment with each other under all possible extremes of temperature and humidity. Without proper alignment, parts of the picture image can appear blurry, or otherwise distorted. A consistent and repeatable method was needed to ensure that the viewing screen position did not shift under temperature extremes of from -10 C to 40 C and with humidity as high as 95%. A system was needed to sense the small relative movement between the front viewing screen and a fixed location on the TV housing. Since any standard contact device could affect the readings, a noncontact sensor would be required for this application.

The Solution

MTI Instruments' proven Microtrak 7000 Series Dual Channel Laser was selected for the task. The system can be easily configured to make relative motion measurements. Laser #1 senses screen position and Laser #2 measures a fixed reference point on the TV screen front housing. Within the Microtrak controller a subtracted, or "difference" signal derived from both readings is obtained. This signal represents the amount of movement, or shift in the position of the front screen, before and after exposure to temperature and humidity swings as the TV set passes through an environmental chamber. Since the viewing screen is transparent and the Microtrak 7000 laser requires an opaque target, a small temporary white adhesive paper target was affixed to the screen. This target ensured that the maximum amount of signal was reflected back to the laser head and resulted in data with the highest possible accuracy and repeatability.



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The Results

The Microtrak 7000's easy-to use menu-driven display, coupled with the systems high resolution and fast response, allowed the customer to quickly and accurately inspect the final product. This helped to decrease the amount of warranty returns and resulted in increased customer profit.

The customer utilized Microtrak MT250-200 laser heads which have a working distance of 2.5" (62.5-mm) and a measuring range of 0.200" (5-mm). A pair of longer range 0.800" (20-mm) lasers were also used. The overlapping measurement ranges guaranteed that one controller can easily handle a broad variety of TV sizes and models. Another benefit of using the Microtrak 7000 is that any of MTI's family of available laser head models can be quickly and easily connected to the controller without the need for factory recalibration, resulting in minimized production line downtime.

The Benefits

In addition to the above application, Microtrak lasers can be used for other similar demanding requirements such as LCD glass thickness, flatness, straightness, position and for lens motion and alignment. MTI offers a wide variety of laser head models, as well as fiber-optic and capacitance-based systems to solve just about any application need. Please contact our experienced team of applications engineers who can offer a practical, yet cost effective solution to meet your non-contact gaging requirements.