

REFRIGERATOR MANUFACTURER USES MTII SENSORS TO TEST FREEZER DRAWER SAG/DROOP



Introduction

A major appliance manufacturer had a requirement to measure the amount of freezer drawer “sag” or “droop” during long term durability/reliability testing. Today’s new style of “French Door” refrigerators have massive bottom freezer drawers that can easily be overloaded, making them prone to premature failure and slide mechanism fatigue. In one typical failure mode the drawer rubs across the liner, breaching the sealing gasket and compromising seal integrity. Long-term durability testing was required to determine the wear and design life and aid in design modifications.

Requirements:

The application required a sensor with a measurement range of 1/2” (12.5-mm) capable of operating at freezer temperatures as low as 0°F (- 18° C). It had to be unaffected by water and moisture, as frequent condensing and frost conditions occurred. The sensor also had to be highly stable in order to determine long term drawer deflection and reliability.



The Solution:

MTII engineers reviewed the application and offered a practical solution using the Apex series of eddy current sensors. A steel target was attached to the top of the freezer drawer and the Apex sensors were fixtured in several locations to monitor the amount of sag during the test period. The sensors easily handled the expected low temperatures and

proved the long term deflection was well within acceptable limits.

Benefits:

The Apex Series provides cost effective solutions for multiple



channel measurement applications. They offer a measurement range up to 35-mm and are extremely durable for operation in harsh, dirty environments. Operating temperatures up to 400°F (200°C) are possible. Being non-contact, they add no additional “loading” to the target, eliminating dampening of the measurement results and target wear. Armored cable jacketing is optional to provide additional sensor protection and a variety of outputs are provided for easy system integration and monitoring.



Additional Uses:

In addition to refrigerator drawers, other types of mechanisms can be tested using Apex eddy current sensors. Filing cabinets, desk drawers, motion stages and hydraulic rams that can be overloaded beyond their rated capacity can benefit from similar testing during the manufacturing and quality control process.

In addition to other laser, fiber-optic and capacitance non-contact measurement products MTII also offers monitoring and data acquisition solutions. “EVE” is a powerful, “out of the box” system designed to control virtually all of your application testing and measurement needs. The user configurable, intuitive software interface displays instantaneous measurements, provides alarm outputs and stores data for future display, analysis and trending. EVE accepts inputs from MTII’s complete line of sensors along with virtually any 3rd party signal such as temperature, strain and pressure.

If you have a difficult or challenging measurement application contact MTII’s experienced team of application specialists who will thoroughly analyze your requirements and guide you to a practical, yet cost-effective solution. Call MTII at +1-800-342-2203 or visit our website www.mtiinstruments.com for more information on any of these products.