Customer Story

Airport Tarmac Safety Initiative Takes Off with Precise GIS Mapping Data from ROMDAS and Applanix POS LVX

Trimble

Overview

Data Collection Ltd (DCL) is a New Zealand-based company specializing in developing and manufacturing tools for measuring and managing roads. Their premier tool is ROMDAS® (Road Measurement Data Acquisition System). ROMDAS products have been implemented in over 60 countries, with the goal of providing affordable road surveying capabilities that can be used to improve road safety around the world.

ABILITY TO SURVEY ANY LOCATION IN AN AIRFIELD PER HOUR

80-100km

APPROX. ESTIMATE PER RUN (4 KM)

4-5min

A Pioneer in Capturing Road Condition Data

ROMDAS equipment utilizes hardware sensors and proprietary software to collect a variety of road data outputs at a high speed. The sensors collect accurate, reliable and relevant data used to make sound engineering and maintenance decisions. The pavement surface condition data is critical in understanding how the pavement is performing. Traffic speed surveys provide a relatively quick tool to determine performance, construction compliance as well as the location and condition of surface defects and assets.

Challenge

In Search of a Mobile Mapping Solution to Incorporate Foreign Object Retrieval and Removal from Airport Tarmacs

In addition to collecting road condition data, ROMDAS equipment inspects airport runways and tarmacs for foreign object detection (FOD). Prior to utilizing the ROMDAS system, airports heavily invested in infrastructure to monitor 24x7 for runway debris, typically employing a team of 20 people to visually inspect the road - a costly and labor intensive solution. ROMDAS needed a mobile mapping solution to geo-tag the location of any FODs, and direct the surveying van back to the foreign object(s) for retrieval and removal. To reduce the margin of error, the ROMDAS system also requires precise positioning so the vehicle can maintain its position while driving the tarmac, avoiding overlap of multiple runs.

Solution

Precise Positioning Hardware and Market Leading Mobile Mapping Deliver Accuracy and Efficiency

As a long-time Trimble client, Ben Clotworthy, ROMDAS operations manager, was confident of the partnership,

> We turned to Trimble for ROMDAS' high accuracy positioning and our GNSS inertial and mobile mapping solutions. Our top priority is to correctly guide the driver with a precise map of the airfield, and to correctly identify the location of any FODs.

Working with Trimble ProPoint™ GNSS technology to maintain highly accurate positioning and Trimble's Applanix POS LVX

for mobile mapping and object geo-referencing, DCL enhanced their capabilities with the launch of ROMDAS LCMS with LFOD (laser foreign object detection).

The ROMDAS LFOD system is mounted on a vehicle and utilizes advanced 3D laser scanning technology and sub-meter GPS to automatically detect, alert and archive FODs over an entire airfield. Real-time FOD detection algorithms run during inspections and results can immediately trigger the in-vehicle alarm if a FOD is detected. The live map operator easily finds and retrieves potential FODs. With each survey, FODs are logged and exported post-survey for use in identifying hot-spots and developing FOD management policies.

ROMDAS LFOD operates with two 3D scanning lasers that record extremely high-accuracy transverse profiles. These sync with additional GPS, odometer and IMUs to deliver referencing profiles with precise location and orientation. In post-processing, the pavement analysis algorithms are capable of analyzing the raw

profiles to identify trends which correlate to common pavement defects like cracking, potholes, rutting, raveling and more. The processed data can then be imported into commonly used GIS or pavement management systems (PMS) for archiving, deterioration modeling and maintenance planning. According to Clotworthy,

> With the ability to both quickly identify FOD locations to help remove them and survey road conditions, the ROMDAS LFOD system with Applanix POS LVX integration promises to make busy airports safer, and lower the cost of tarmac management.

Results

A Unique Solution for both FOD Detection and Pavement Condition Management

Internationally, the impact of FOD on the aerospace industry cannot be overstated. According to an industry study* of Runway Safety from Insight SRI, Ltd, FOD's have an estimated cost impact of $13B on the aerospace industry. With the integration of Applanix POS LVX, ROMDAS LFOD can improve airport tarmac surveying and provide retrieval guidance for any found debris. Additionally, the same inspections can now be performed with 3 people in a vehicle in less than 2 hours, which is a huge saving in resources. With these efficiencies, routine inspections of the taxiway and aprons can be performed at any time without interfering with aircraft operations.

Unlike other FOD detection systems, the ROMDAS LFOD implementation of Applanix POS LVX allows for a collection of a wide variety of pavement condition data and makes it an ideal solution for small and medium-sized airports, which typically struggle to justify the expense of fixed FOD detection systems. The ROMDAS LCMS with LFOD delivers versatility and cost efficiencies as both a debris detection and pavement management system.

**Source:"The Economic Cost of FOD to Airlines", Insight SRI Ltd., March 2008.*

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