InspectCam SDMS Laser Measurement System

Fast & Accurate

Inspection and measurement of scribe mark damage to the fuselage skin of aircraft.

The STTR InspectCam SDMS Laser Measurement System (SDMS)* is a surface deformation measurement system that was developed, in conjunction with Qantas, to specifically address the issue of fuselage skin "scribe mark" damage on aircraft. SDMS inspects and measures scribe mark damage to the fuselage skin of aircraft. The STTR solution for assessing and measuring fuselage skin damage is cost effective and highly reliable.

Wide Range of Fuselage Inspection and Measurement Applications

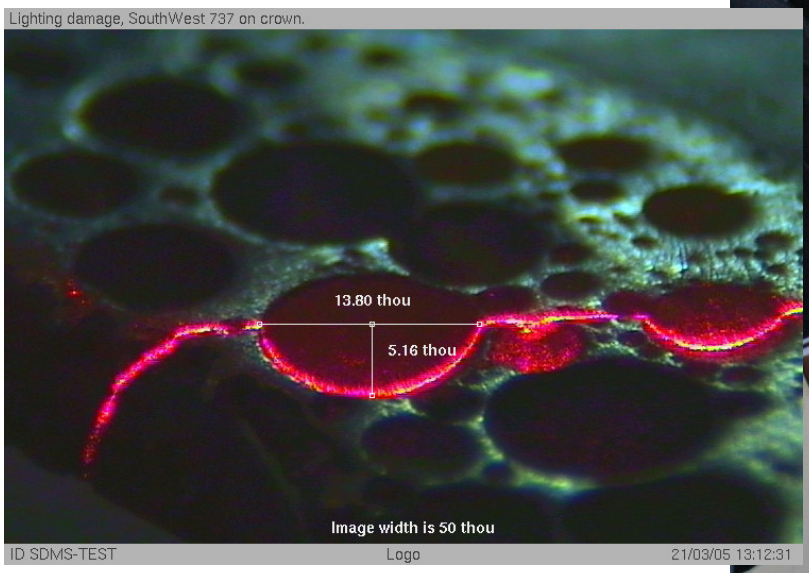
Using SDMS, an operator is able to:

1. **Detect, identify and measure scribe mark damage at Lap Joints and Butt Joints in one continuous inspection at the rate of 1-3 feet per minute;**
2. **Measure Gouge and Dent depths and profiles caused by ground equipment;**
3. **Provide an immediate damage assessment of the impact of Hail damage, Lightning or Bird strike;**
4. **Assess the regularity of fuselage surface smoothness around the pitot static tube area. Following the reduction in vertical separation minimum levels, smoothness of the surface is essential to its performance;**
5. **Measure Windshield and Passenger Window crazing and scratch depths and profiles; and**
6. **Assist the repair process to determine if the damage is within limits to undertake a simple blendout repair process or require more substantial repair processes.**

SDMS operates on most surfaces including aluminium, glass, acrylic and composites.

Additionally STTR InspectCam is able to incorporate a light source and interface to Industrial Endoscopes such as Videoscopes, Borescopes (most brands) and Flexiscopes for the purposes of condition monitoring. The combination of the above will provide the user with a complete inspection kit for all inspection needs.

Lighting Damage Inspection



Window Inspection

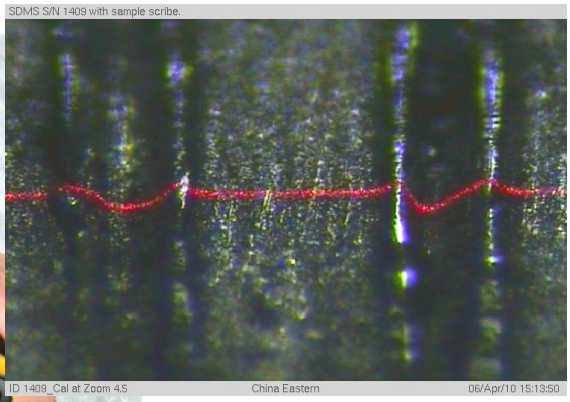
Fast, accurate and easy to use.

Features

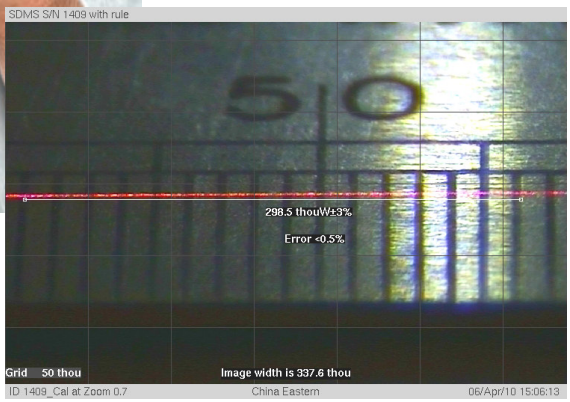
• SDMS dynamically profiles the entire length of a Lap Joint;
• SDMS provides an immediate indication to an operator of the dimensional details of surface deformations;
• SDMS operates along curves of the aircraft surface. When a scratch is located, accurate measurement of both depth
and width can be generated with measurements and comments overlaid onto captured images;
• SDMS allows captured images to be stored and subsequently recalled for the purpose of analysis and measurement;
• Inspectors can be certain that the deepest point in a scribe mark can been located;
• Special plates enable the inspector to look at wall of Lap Joints and to recessed scribe lines;
• A surface marker automatically identifies the precise point where an image was captured;
• Ergonomically designed for ease of use;
• Inspections are not impacted by poor light conditions;
• Images can be emailed for further analysis; and
• A large LCD screen allows collaborative viewing of images for rapid
consultative analysis.

Laser Measurement Module.

Two Scribe Lines



Quick Calibration Check



Benefits

•SDMS provides improved accuracy, traceability, reliability and effective maintenance risk management in comparison to other methods of fuselage skin inspection.

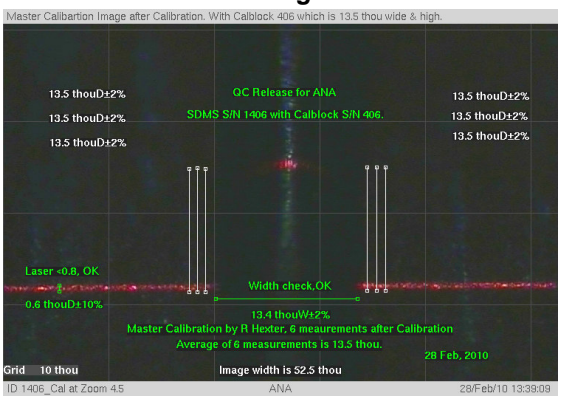
•SDMS allows an inspector to dynamically examine from 1 to 3 feet of cleaned lap joint per minute.

•SDMS provides immediate and substantial cost and efficiency savings as well as ergonomic and safety improvements in conducting the required inspection task.

•SDMS will significantly reduce aircraft downtime and enhances the ability to do pre heavy maintenance planning.

•The SDMS comes with a full Calibration kit allowing the user to ensure system is fully Calibrated. The kit consists of a Certified Calibration Block with full details on Verifying Calibration as well as preforming a Master Calibration.

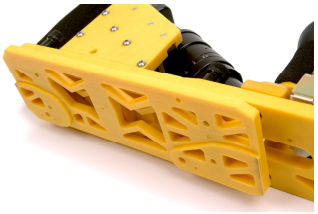
Master Calibration Image



How Does The SDMS Operate?

SDMS comprises a **Laser Measurement Module** and **InspectCam**. The **Laser Measurement Module** is a light-weight unit that is ergonomically designed for sliding along an aircraft surface. A range of slides are available that facilitate operation on lap joints in both right and left directions, butt joints, and other applications previously referred. The slides are constructed from a special "oil filled nylon" which will not damage or mark the fuselage skin surface. The module has a 5 inch removable LCD screen which enables the operator to monitor the profile of any fuselage skin damage.

InspectCam provides a video display with a laser line across the screen which will profile any deformation detected. Images are simultaneously displayed on a 15 inch high resolution LCD screen integral to InspectCam and on the screen on the Laser Measurement Module. Direct measurement is provided on InspectCam. Images of exceptional quality can be stored or exported for use in reports or emailed.



Components and Functions

Description Part	**Number**
InspectCam SDMS Laser Measurement System	STTR-SDMS-001
SDMS InspectCam P/N SDMS-VM-004	**Detailed Specifications**
Rugged Case:	(W) 470mm x (D) 387mm x (H) 175mm
Weight:	12Kgs
Case Material:	Copolymer Polypropylene to Mil – Std 4150-H
Panel Material:	Aluminium.
Power:	110v – 250v, 47/440Hz
Processor:	Industrial Pentium3 ® class ultra efficient x86 processor
Keyboard:	Full function tactile sensitive waterproof keyboard
Viewing Screen:	15 inch, High resolution TFT rear lit LCD screen
Video input:	Multi-purpose, Video, Component & Digital
Video output:	Multi-purpose, Video, Component & Digital
Software	**Detailed Specifications**
Operating System:	Multi-tasking, Linux based
User Interface:	Custom Graphical User Interface
Image Formats:	Bitmap or custom jpeg format
Text Annotation:	Auto insertion on image
Software updates:	Via USB device, manual up-date included via email
USB Capabilities:	Large range of USB devices supported – VER 1.0/2.0
File storage capabilities:	Greater than 25,000 images
SDMS Laser Measurement Mod P/N SDMS-PM-001	**Detailed Specifications**
Weight:	2.5 kg, 2.0 kg without monitor
Module Material:	Oil Filled Nylon – PA6 GOL Nylon
Laser:	**Visible Red Laser, Class 3R, <5mW Maximum Power. Wavelength 532-680nm. See warning label attached. Do not stare into Beam. Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50 dated July 26th, 2001**.
CCD Resolution:	795(H) x 596(V)
Pixel Count:	480,000
Transducer sensitivity:	0.1 Lux
Module Controls:	Capture, Laser and Light control
LCD Monitor:	5 Inch
Connecting Cable:	5 meters & 23 meters
Calibration:	Certified calibration block provided with module
Accuracy	+/- 10% at 0.001" (Trained Operator Required)
Resolution	=<0.00007" at Zoom = 4.5
Operating Environment	**Detailed Specifications**
System Operating Temp:	+5°C to +40°C
Storage Temp:	-10°C to + 50°C
Relative Humidity:	0% to 90%, non condensing

The InspectCam SDMS Laser Measurement System STTR-SDMS-001

is Manufactured, Tested and Calibrated in Conformance to the following Directives and Regulations

EMC Directive:	**89/336/EEC**
Generic Standards:	**EN55013:2001**
	EN61000-4-2
	EN61000-4-4
	EN61000-4-5
	AS1053:1998
	AS2211.1:2004
FDA	**21CFR1040-10**
	21CFR1040-11

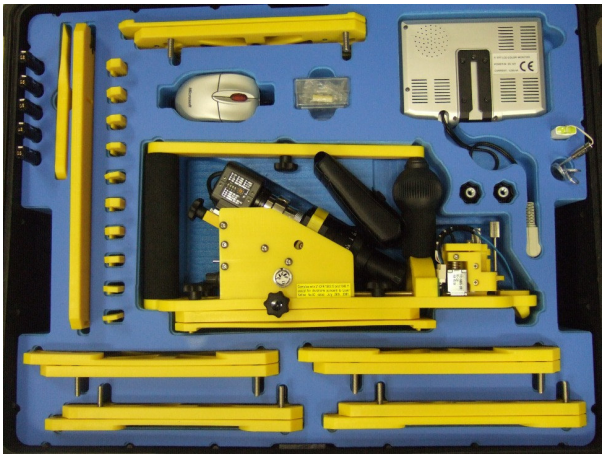
Boeing-SB 737-53A1262 Revision 3, Oct 16/2008
Boeing-SB 737-53A1289 NG, Jan 14/2009
Boeing-SB 747-53A2563 Revision 2, Jan 03/2008
Boeing-SB 757-53A0092 Revision 1, Jan 10/2007
Boeing-SB 767-53A0193, Nov 25/2008
Boeing-SB 777-53A0054, Aug 07/2008
Boeing-NDT part 10, 53 30 01 Rev April 2007
Boeing-AMOC- MOM [MESSAGE NUMBER:1-206228662-1]
FAA-AD-2010-05-13-737
FAA-AD-2007-19-07-757
FAA-AD-2009-24-08-777

The Technical Construction Files and supporting data files for this product are maintained at the Engineering offices of STTR P/L at 154 Margetts Rd Yea, Vic 3717 Australia.

Packing

InspectCam & Cables

LMM & Accessories



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