



# Structural Monitoring Systems plc Annual General Meeting Presentation

**23 November 2007**

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## KEY ACHIEVEMENTS FOR 2007



- Accreditation of CVM products in both strategic civilian and military aerospace markets.
- Commencement of production of the PM200 Hand Held periodic monitoring system for aerospace use and the CVM Switch for non aerospace applications.
- Intensive marketing campaigns commenced in the March quarter for both products.
- New relationships established with regional and military aircraft manufacturers (in addition to those with Boeing and Airbus).
- Order volumes increasing and sales revenue are set to increase as CVM is exposed to an ever increasing customer base.



**SMS has achieved “first mover” status in a new area of business with high margins and high barriers to entry.**



## BUSINESS STATUS REVIEW

- On-going program with Boeing Product Support and Boeing aircraft operators in the US regarding the approval of specific applications – first approval expected in early-2008.
- Strategic new relationships established in both civilian and military aerospace sectors with sales to two regional aircraft manufacturers, and to military operators in UK, Europe, USA and China – first fleet wide applications expected in 2008.
- Diversification into non-aerospace markets with sales of the CVM Switch product into the automotive testing industry and development, and successful evaluation by a Sandia Lab in the US of the new remote monitoring system for structures such as steel bridges and large mining equipment.
- Opportunities opening for incorporating CVM sensor technology into new-build aircraft, and for in-flight monitoring with Airbus in civilian aerospace and EADS in military aerospace.

# CVM™ Market Overview



**The Market for CVM™ stems from the Value created by enabling reduced Cost of Ownership, and increased Asset Productivity.**

- **Aircraft - Retrofit:** SMS has created a “first mover” position in a significant emerging market for in-situ structural inspections on aging civil and military aircraft.
- **Aircraft - New Build:** Provides significant medium to long term opportunities for integration of CVM technology into new build metallic and composite aircraft structures.
- **Test / Infrastructure:** SMS is actively diversifying the use of CVM into other high value markets, such as the automotive test, bridge infrastructure and mining equipment sectors.
- **Military Vehicles:** On going discussions with the British Army and others about the use of CVM for applications on armoured fighting vehicles.



## Progress In The Civil Aircraft Retrofit Sector

### • Boeing

- CVM included into the Boeing Common Methods NDT Manual.
- Formal requests by three US based DC-9 / MD-80 operators to approve specific CVM applications are being considered by Boeing Product Support.
- Two other Boeing aircraft operators are actively pursuing specific applications.



### • Airbus

- Joint Development Agreement - CVM retrofit system to reach “technology ready” status by the end of 2007.
- CVM installed on an Airbus A320 Flight Test aircraft.
- Review of applications on A320 and A330 underway.



### • Regional Aircraft Manufactures

- CVM being evaluated for retro-fit applications by a major North American manufacturer.

# Progress In The Military Aircraft Retrofit Sector

- **Australian Defence Force**

- CVM accredited for use on ADF aircraft.
- Selected for monitoring of joint UK / Australian C-130 wing test program.

- **Royal Air Force / Royal Navy**

- In principal agreement for monitoring primary structure on Nimrod aircraft.
- Positive assessment of specific applications on Sea King helicopters.
- Three SMS staff (ex-RAF) based in the UK supporting the introduction of CVM into the RAF and RN, and other European military aircraft operators.

- **US Air Force**

- Order for equipment and sensors to evaluate specific application on C-130.
- Firm interest for applications on a trainer aircraft fleet.

- **Other Air Forces**

- Evaluation equipment and sensor orders from Chinese and Polish Air Forces.



## Progress In The Aircraft New Build Sector

### • Airbus

- CVM used in the full scale fatigue test qualification of the A380 and the GLARE material used extensively in its fuselage.
- Joint Development Agreement - Firm commitment to a CVM licence to be extended to the end of 2008 to align with revised Airbus aircraft development schedule.
- Agreements signed for Airbus to evaluate the incorporation of CVM technology into the designs of two new aircraft.



### • Regional Aircraft Manufactures

- CVM equipment ordered by two Regional Aircraft manufacturers for evaluation and use on a full scale fatigue test program, leading to incorporation into new-build aircraft.
- Embraer program worth \$1,200,000 over three years.

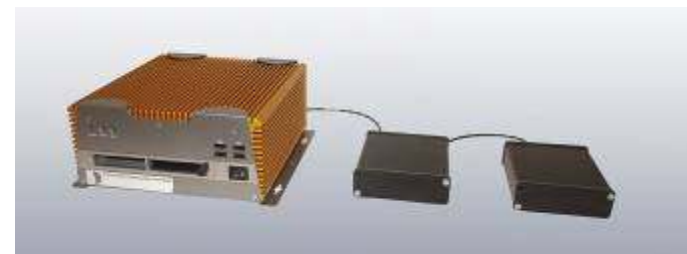


### • EADS Military Air Systems

- SMS invited to include in-flight CVM system in the Barracuda UAV Integrated Vehicle Health Monitoring demonstrator program.

## New Products & Markets For CVM™ Technology

- CVM Switch
  - Initial production run completed
  - Now a standard SMS system product
  - Being incorporated into new products
- Automotive Test
  - CVM Switch pilot production program on going with PBR.
  - Interest from PBR's new parent Bosch and GM in North America.
- Bridge Infrastructure & Mining Equipment
  - CVM Switch based remote bridge monitoring system demonstrated, and positively reviewed by the Sandia Labs.
- In-Flight CVM System
  - Prototype control and measurement system modules in development.



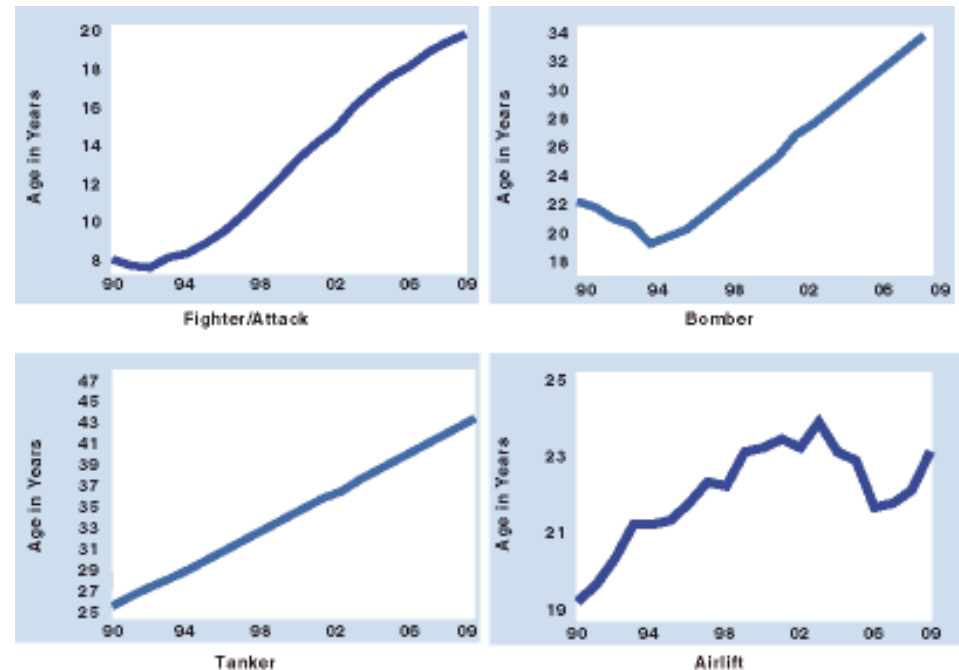




# CVM Market Development – Aging Aircraft

- The average US military aircraft is 16 years old.
- The average US civil aircraft is 14 years old.
- Increasing average US military and civil aircraft fleet age is a major issue.
- US DoD Joint Council on Aging Aircraft – Top Airframe Structure Concerns:-
  - Existing structural models and analysis do not account for the effects of aging and change in operational tempo; and
  - Insufficient data collection and analysis exists to allow effective decision-making and incorporation of Health Monitoring Systems.
- CVM instrumentation and sensors provide an accredited cost effective means of monitoring airframe structural integrity, and enables efficient data collection and analysis.

	Number of Aircraft	Age 10+ years	Age 20+ years
Major US Airlines	3,696	90%	41%
International Airlines	3,646	83%	36%
US Cargo Carriers	982	97%	81%
International Cargo Carriers	95	96%	84%
US Air Force	4,421	71%	42%



USAF Aircraft Fleet Ages



## CVM Market Development - Condition Based Maintenance

- Increasing military operational pressures are forcing a fundamental change from traditional scheduled manual inspections to Condition Based Maintenance (CBM) to improve asset availability and reduce maintenance costs.
- CVM provides a simple and cost effective means of providing quality structural integrity data to CBM decision support systems.
- CVM is very well placed given its high level of maturity and accreditation for in-service use to meet this increasing demand.

***“Army Aviation is undergoing an unprecedented transformation to improve the maintenance, sustainment and availability of current and future aviation systems.”***

***“Yesterday’s Army sought to keep aviation systems operational through labor intensive scheduled and reactive unscheduled maintenance programs. Tomorrow’s Army will achieve much better system availability and readiness through implementation of the Army’s condition based maintenance plus (CBM+) plan, which is a predictive, proactive and reliability-centered maintenance program.”***

***Major General James Pillsbury, Commander,  
US Army Aviation & Missile Command***

## New CVM Market Opportunity - Bridge Infrastructure

- During 2007 SMS has worked with Sandia National Labs in the US to evaluate the use of CVM on thick steel structures for bridge and mining equipment applications.
- Sandia noted in the report that contained the CVM evaluation results that "...30% of the 600,000 bridges in the US are structurally deficient".
- Since the catastrophic Minneapolis I-135W bridge collapse in August, SMS has been working closely with Sandia to demonstrate an autonomous bridge monitoring system based on CVM Switch, mobile phone and solar power technology.
- Recent meeting with potential US distributor with extensive bridge monitoring experience.
- Initial indications are that this represents a significant new market opportunity for CVM.



## CVM Order Intake Has Increased As A Direct Result Of Intensive Global Marketing Activities During 2007.



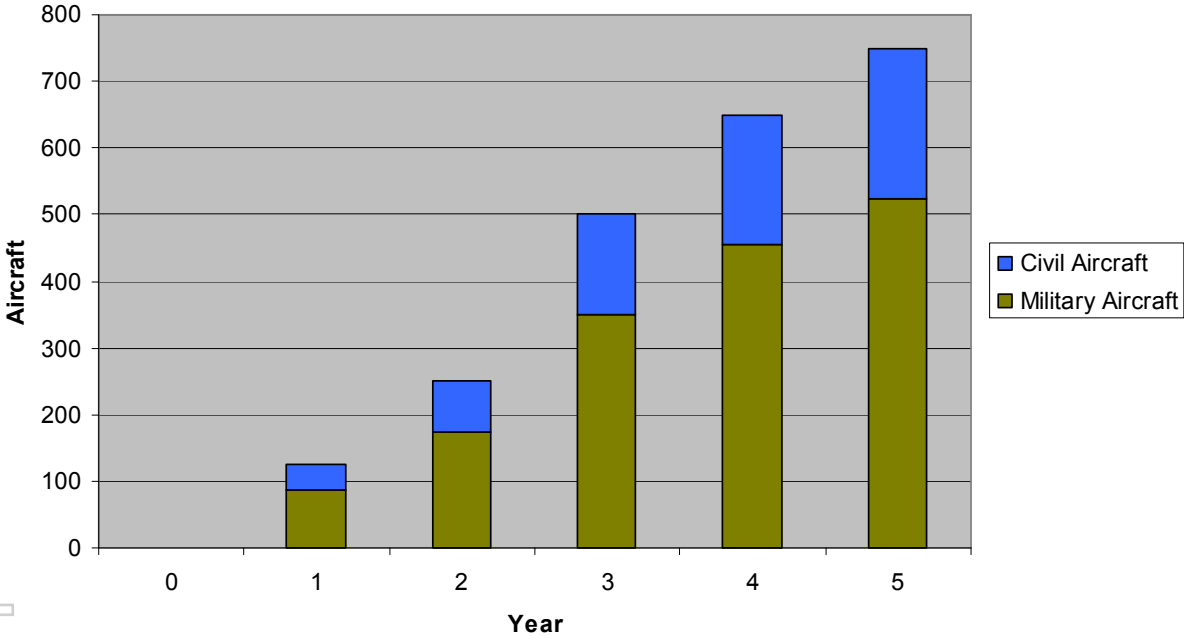
- Two existing and three new Military Air Force customers are evaluating CVM for retro-fit applications on existing aircraft fleets.
- Two Regional Aircraft OEM customers are evaluating CVM for fatigue test and retro-fit applications, as well as for longer term new build aircraft SHM systems.
- On going repeat sensor sales to Airbus for A380 test qualification programs.
- First sales of productionised CVM Switches for Automotive Test Pilot Program.

	Value (AU\$)	Purpose
<b>Military Aircraft</b>		
RAF / RAAF	\$130,000	C-130 WFT Program <sup>1</sup>
US Air Force	\$39,900	C-130 Evaluation
PR China Air Force	\$33,000	CVM NDI Evaluation
Polish Air Force	\$74,000	CVM NDI Evaluation
<b>Civil Aircraft</b>		
Embraer	\$200,000	Full Scale Fatigue Test
Embrear	\$57,700	Fuselage Barrel Test
North American OEM	\$50,000	CVM NDI Evaluation
Airbus	\$30,000	Sensors – A380 Testing
<b>Non-Aviation</b>		
PBR	\$15,200	CVM Switch - Pilot Program
<b>Total</b>	<b>\$629,800</b>	

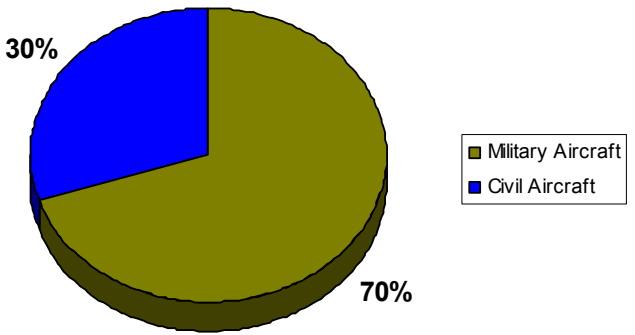
Note: 1 – Price Agreed Contract expected in early 2008

# Civil / Military Aircraft Retro-Fit Application Targets

Retro-Fit Application Aircraft Fit-Out Targets



Civil / Military Aircraft Fit-Out Ratio



5 Year Estimated Application Value = AU\$90 million

Significant Potential Revenue Upside

## Near Term Civil & Military Fleet Retro-Fit Programs

- **Civil Aircraft Fleets**

- DC-9 / MD-80
  - 250 Aircraft



- **Military Aircraft Fleets**

- US C-130
  - 300+ Aircraft
- US Fast Jet Aircraft
  - 450 Aircraft
- RAF / RN Sea King
  - 120 Aircraft
- RAF Nimrod
  - 20 Aircraft



## Current Programs – Fleet Retro-Fit Case Studies

- Civil Aircraft Retro-fit

- Three US Operators
- 250 Aircraft
- Estimated Value Range:-
  - US\$1.5m – US\$2.5m
- Roll-Out:- 2 – 3 years

- Military Aircraft Retro-fit #1

- US Operator
- 300 Aircraft
- Estimated Value Range:-
  - US\$15m – US\$27m
- Roll-Out:- 3 - 5 years

- Military Aircraft Retro-fit #2

- US Operator
- 450 Aircraft
- Estimated Value Range:-
  - US\$9m - \$15m
- Roll-Out:- 2 - 3 years



## Medium Term Civil Aircraft Fleet Retro-Fit Prospects - Established Relationships

### • US Airlines & Cargo Operators

- Large Mixed Boeing & Airbus Fleets.
- Well established relationships:
  - NWA – 356 aircraft
  - AA – 686 aircraft
  - Delta – 441 aircraft
  - SWA – 512 aircraft
  - ABX – 112 aircraft.

### • Airbus

- A320 Life Extension FSFT -> 1400 aircraft

### • Eurocopter

- 180 Helicopters

### • Regional Aircraft

- CVM currently being evaluated by Embraer & North American OEM.

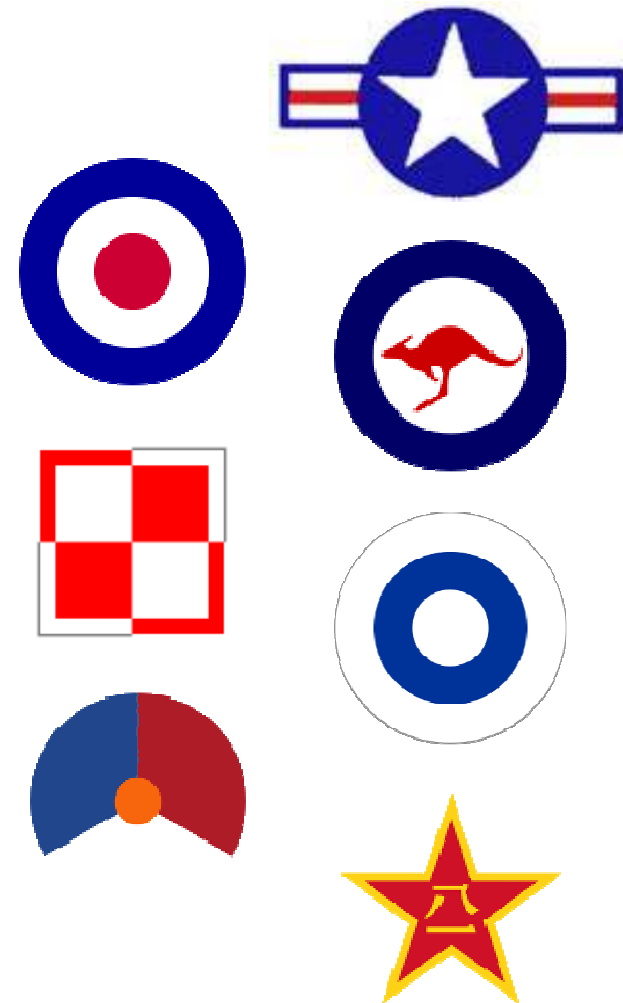




## Medium Term Military Aircraft Fleet Retro-Fit Prospects - Established Relationships



- US Air Force
  - 4,282 Aircraft
- RAF / RN
  - 998 Aircraft
- RAAF
  - 257 Aircraft
- Polish Air Force
  - 493 Aircraft
- Finnish Air Force
  - 173 Aircraft
- RNLAF
  - 177 Aircraft
- People's Liberation Army Air Force
  - 2300 Aircraft



## Civil Aircraft – 2008 Objectives

- To commence installation of CVM instrumentation on the Boeing aircraft fleets of two US airlines.
- Have CVM incorporated in the design of a Structural Health Monitoring system for a new Airbus aircraft.
- Negotiate technology access licence with Airbus.
- Complete an initial program to have CVM applications qualified for retrofit applications on regional civil aircraft.



## Military Aircraft– 2008 Objectives

- To commence installation of CVM instrumentation on both a UK and US military aircraft fleet.
- Broaden and consolidate SMS global military air force customer base via focused evaluation and structural fatigue test programs.
- Position CVM technology for incorporation into Condition Based Monitoring maintenance systems.
- Demonstration of in-flight CVM capability leading to integration with future Health & Usage Monitoring Systems.





## Conclusions

- **Major civil and military accreditation milestones have been achieved, and have led to opportunities for specific fleet wide retrofit applications.**
- **Commercial production of the PM200 hand held monitoring equipment and CVM Switch for non-aerospace markets has commenced.**
- **Intensive marketing activities have broaden SMS's customer base, and has resulted in increased order intake.**
- **SMS's focus is firmly on sales, marketing and product delivery in aerospace, automotive, and new military armoured vehicle and infrastructure monitoring market sectors.**
- **SMS is positioned for a substantial increase in orders and to be cash flow positive during 2008 with strong projected earnings.**

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**QUESTIONS?**



**STRUCTURAL  
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