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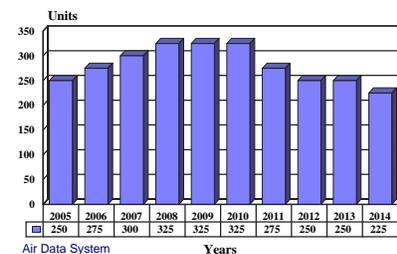
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Air Data System (ADS-3000) - Archived 1/2006

Outlook

- System's inclusion in Pro Line 21 Continuum suite negates need for this report
- See separate report for Pro Line 21 Continuum

10 Year Unit Production Forecast
2005 - 2014



Orientation

Description. The civil avionics Air Data System (ADS-3000) conveys all flight movement data in digitized form to the pilot.

Licensees. No production licenses have been granted.

Status. In production and service.

Total Produced. An estimated 1,000 ADS-3000 systems are believed to have been produced through 2003.

Application. These systems are designed for general aviation, including business jets and regional aircraft. Aircraft that are known to have the ADS-3000 included in their avionics suites include the Airbus A320, Bombardier Learjet 60 and Challenger 604, and Hawker 800Xp business jet, to name a few.

Price Range. No pricing data are available on the ADS-3000 through public sources. Per unit costs for the Rockwell Collins Pro Line 21 Continuum suite (which ADS-3000 is a part of) have been reported at approximately \$1.5 million.

Contractors

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Technical Data

Design Features. The ADS-3000 provides totally digital information from its Air Data Computer (ADC) component to the cockpit air data displays. For use by Rockwell's AHS-3000 Altitude Heading Reference System, the ADS-3000 provides ARINC 429 digital outputs. These outputs are also provided for such

aircraft systems as flight data recorders, navigation computers, and altitude transponders.

Overall, features of the ADS-3000 include the monitoring of all the aircraft's essential functions, on-board fault isolation, and solid-state synchronization circuits.

Operational Characteristics. The ADS-3000's ADC component translates pressure and temperature information into digital data that are then distributed to the rest of the system. According to the system's manufacturer, the ADS-3000 exceeds FAA technical standard order (TSO) accuracy requirements. The system is also characterized as being ideal for reduced vertical separation minimum (RVSM) requirements and can be adapted to fit the customer requirements of a large variety of aircraft users.

Aircraft known to be using, or about to use, the ADS-3000 include the following:

Airbus A320 passenger jet
Bombardier Learjet 60
Bombardier Challenger 604
Cessna Citation CJ1/2/3 business jets
Hawker 800Xp business jet
Raytheon Beechjet 400A
Raytheon King Air 350 and B200

Note: Most recent orders for the ADS-3000 call for the acquisition of dual systems as part of the Pro Line 21 suite.

Variants/Upgrades

There are no known variants or upgrades at this time.

Program Review

Background. Rockwell Collins developed ADS-3000 out of its family of successful similar systems, the ADS-85/86/850. The company claims that over 4,000 of these earlier variants have been produced and delivered. (Prior to this, well over 2,000 of the even earlier ADS-80/81/82 series systems were reportedly delivered.) From this work, the company seems to have established itself as one of the primary suppliers of flight data systems for business and regional air transport. It is into this atmosphere of virtual dominance that one of the latest offerings, the ADS-3000, has been introduced.

Aircraft manufacturers and operators have been quick to pick up the latest Rockwell Collins avionics packages, many of which are now featuring the ADS-3000 as standard equipment.

In January 2001, the aircraft leasing company Boullioun Aviation Services Inc chose Rockwell Collins to be the standard avionics supplier for its fleet of Airbus A320 airplanes. While not directly specified, it is believed that the ADS-3000 was included in this deal. In early 2002, the delivery of these 30 planes began.

Raytheon Aircraft selected the Rockwell Collins Pro Line 21 avionics suite (which includes ADS-3000) in

April 2001 for integration into the flight deck of the Hawker 800Xp business jet.

Sales of the Pro Line 21 suite yielded more production of the ADS-3000 in September 2002 when Cessna selected the system for the Citation CJ3 business jet. As with many of these avionics purchases, the exact number of planes involved in the deal (as well as the cash amount) was not announced. First deliveries of the new Citation CJ3 were to begin in 2004.

Prospective sales of the ADS-3000 received a significant boost in October 2003 with the announcement that Raytheon Aircraft had chosen the Pro Line 21 suite for its King Air 350 and B200 aircraft. According to Forecast International's civil aircraft analysts, an estimated 150 King Air 350s and 239 B200s are expected to be produced through 2013.

The Italian manufacturer Piaggio Aero became the latest customer for ADS-3000 with its October 2004 selection of Pro Line 21 for their line of P180 business aircraft. Over the next ten years an estimated 187 of these jets are expected to be produced.

Funding

Development of the ADS-3000 was privately funded by Rockwell Collins.

Recent Contracts

Although there have been plenty of orders for the ADS-3000 and its parent, the Pro Line 21 suite, no detailed contractual information has been released through public sources.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Jan	2001	ADS-3000 chosen for Airbus A320
Apr	2001	Rockwell Collins Pro Line 21 (with ADS-3000) selected for Hawker 800XP
Early	2002	Deliveries of Airbus A320 scheduled to begin
Sep	2002	Pro Line 21 (and ADS-3000) selected for Cessna Citation CJ3
Oct	2003	Pro Line 21 (and ADS-3000) selected for Raytheon's King Air 350 and B200 aircraft
Oct	2004	Piaggio Aero selects Pro Line 21 (and ADS-3000) for P180 aircraft
	2004-2013	Ongoing production of ADS-3000

Worldwide Distribution

It is expected that the ADS-3000 is already widely distributed in the U.S. aboard a large number of business and regional passenger and transport aircraft. It has not been established which, if any, non-U.S. aircraft manufacturers and carriers have picked up the system.

Forecast Rationale

The need to equip new build business jets and regional aircraft with the latest in aviation technology is expected to continue to pay off for the ADS-3000 Air Data System. Rockwell Collins' ADS-3000 continues to be highly sought after as part of the company's Pro Line 21 avionics suite. The U.S. civil aviation industry continues to tap the system for installation on new-build aircraft. The system provides digital information from its Air Data Computer (ADC) component directly to the cockpit air data displays.

ADS-3000 has already been incorporated into some of the newest, most sophisticated civil aircraft available. Planes equipped with the system include (but are by no means limited to) the Airbus A320 passenger jet, the Bombardier Learjet 60 and Challenger 604 business jets, and the Hawker 800XP business jet. It has also been chosen by Raytheon for use on its King Air 350 and B200 aircraft.

One of the ADS-3000's most important business jet applications is the Cessna Citation CJ3. Cessna selected the system in a September 2002 contract. First deliveries of these aircraft began in 2004. About 488 of these planes are expected to be built by Cessna over the next 10 years.

The market for business jets and regional transport over the next several years should provide ample opportunity for ADS-3000. Through 2013 around 3,728 regional aircraft and 10,809 business jets are expected to be produced. If Rockwell Collins captures just a fifth of this market, that will result in ten-year production of an estimated 2,800 systems.

(Forecast International's "World Market for Business Jet Aircraft 2004-2013," as well as market intelligence reports on the various aircraft that ADS-3000 is certified for, can be found in our *Aircraft Forecast* and *Civil Aircraft Forecast*.)

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Designation	Application	High Confidence Level					Good Confidence Level				Speculative			Total 05-14
		Thru 04	05	06	07	08	09	10	11	12	13	14		
AIR DATA SYSTEM	AVIONICS (BUSINESS)	725	150	175	200	225	225	225	175	150	150	125	1800	
AIR DATA SYSTEM	AVIONICS (REGIONAL TRANSPORT)	500	100	100	100	100	100	100	100	100	100	1000		
Total Production		1225	250	275	300	325	325	325	275	250	250	225	2800	