

# Aerospace & Defense

*While the Aerospace & Defense industry has very little movement atop the leader board, the industry continues to be driven by research and development activities for new commercial aircraft platforms and government-funded R&D for government defense contracts.*

New aircraft such as The Boeing 787 Dreamliner and The Airbus A380 aircraft contribute to increased patenting activity. These new airframes will launch an uptick in patenting activity for Aerospace & Defense component companies as they refine their

products for the new airframes. Other new platforms such as The Airbus A350 and the increasing demand for fuel-efficient regional and private jetcraft will also likely drive strong patenting activity.

From a quantity perspective, the annual patenting activity for most companies in the Top Ten increased in 2006 relative to the average patent issuance for the prior five years. It is noteworthy to call out GE Aerospace's decline in U.S. patents received and strong competition with Raytheon for the number 3 and 4 positions. Interestingly, GE's Technology Strength score, a measure of quality and quantity, approached Raytheon's third position ranking due to GE's extremely

high-quality and influential portfolio as measured by Industry Impact.

Another industry driver is indicated in Rockwell Collins' and Lockheed's patent portfolios which are tied to the defense build up. Both have high and increasing Research Intensity scores as these companies push the state of the industries technology. Northrop Grumman edged into the Top Five following improvements to the portfolio from both quality and quantity perspectives. This gain was encouraged by a precipitous decline in BAE Systems' patenting activity.

Generally, the leader board is quite competitive from a research and influence standpoint. The five global leaders in A&D generate Research Intensity scores that were at least 50% higher than the industry average. Further demonstrating that patent quality matters, nine of the top ten companies received Industry Impact scores at or above the average for the sector.

Figure 1. Industry Impact™



Figure 2. Patents Issued



Figure 1. In 2005 all leader portfolios trended upwards from quality and influence perspectives due to strong activity supporting military need. Boeing hovers around the industry average of 1.0 mostly due to its outsourcing and integrator strategy on the 777 and 787 that pushed patents to integration partners.

Figure 2. Yearly patenting illustrates Boeing's increased emphasis on patenting, related to recent commercial aircraft programs. The higher patenting of Lockheed and Raytheon who are more reliant upon military R&D, move in similar patterns indicating a post-9/11 defense spending increase as well as a focus on high-quality patents (see Figure 1).

Ranking & Movement		Technology Strength™	Company / Concern	Patent Count	Science Strength™	Industry Impact™	Research Intensity™
Feb 2007	Feb 2006	February 2007	Includes subsidiaries and majority-owned companies unless noted	Feb 2007	0 1,000 2,000 3,000	0.5 1.0 1.5 2.0	0 0.5 1.0 1.5 2.0 2.5
1	1	367.3	Boeing Co	491			
2	2	284.5	Lockheed Martin Corp	296			
3	4	165.6	Raytheon Co	201			
4	3	163.7	General Electric	194			
5	6	148.9	Northrop Grumman Corp	204			
6	7	117.4	United Technologies Corp	142			
7	8	98.7	Honeywell Inc	105			
8	5	79.2	BAE Systems Plc	94			
9	9	76.9	EADS/Eur Aero Def & Space	154			
10	10	65.4	Rockwell Collins Inc	157			

Compiled with data through February 2, 2007

■ 1 Year Average ■ 5 Year Average

Industry Impact & Research Intensity industry average is 1.

# European Aeronautic Defense and Space

*Despite benefiting from small increases in both quality and quantity, EADS remained in ninth place as others in the industry improved their patent quality metrics at a faster pace.*

*Due to the global competitiveness of this industry, intellectual property needs to be protected globally and particularly within the US. As such, USPTO filings reflect international patent activity. The Patent Board analyzed the US patents of EADS vs. the rest of the Top Ten Aerospace & Defense globally operating companies.*

EADS remains in the ninth position on the Aerospace & Defense Scorecard in terms of Technology Strength an aggregate measure of quantity and quality. Despite an increase in both Industry Impact (quality) up slightly to .71 from .67 in the prior year and the 154 Patents Issued (quantity) in 2006, EADS remained steady.

EADS has received a fairly consistent number of granted U.S. patents per year, receiving an average of 142 patents a year for the past ten years, with a noticeable annual increase in patent applications starting in 2002. This growth parallels the development of the A380 and A350

platforms. The enterprise's application filing has stepped up significantly over the past three years, averaging 245 applications for 2002-2005 vs. an average of 175 for the years 1996-2005. (See Historical US Patenting Activity) EADS' Technology Strength will increase as a result of this increased patent application activity.

While EADS' patent portfolio remains clearly focused on Aerospace & Defense technology, an increasing number of recently granted patents have fallen in Electronics & Instruments and Automotive & Transportation technologies. (See EADS Portfolio Distribution) While the USPTO lists these patents in other industries, they are related to the development of aircraft capabilities.

Neither EADS nor the other European company in the Top Ten, BAE Systems, is positioned high in terms of Science Strength. This reflects a move away from research toward product engineering. As EADS implements its Power 8 cost reduction program it will need to protect its research activity to remain competitive.

## On the horizon

Overall, from a quality perspective the EADS portfolio is in need of tuning to remain in competitive in the top 10. Its recent focus

on cost cutting, while necessary from a business perspective, may have been a distraction to the level of management attention needed on high-quality R&D. The recent increase in application activity in 2003 through 2005 reflects a continued focus on improving its competitive IP standing -- particularly within technology application.

## Scorecard rankings

Aerospace & Defense Scorecard	9
Patent Board 500 position	241

Figure 1. Three industry sectors represent approximately 71% of EADS' U.S. patent holdings. Over half (51.84%) of EADS' U.S. portfolio is directly related to the A&D industry, with 12.73% aligned with Heavy Industrial Equipment and 6.07% related to Automotive & Transportation.

Figure 2. EADS saw a significant increase in patent applications from 2001 to 2003-04, reflecting development of the A380 to A350 AWB platforms. That uptick in applications is manifesting itself in an increase in EADS patents received beginning in late 2004. EADS' position will improve as these trends work their way through the indicators.

Figure 1. EADS Portfolio Distribution

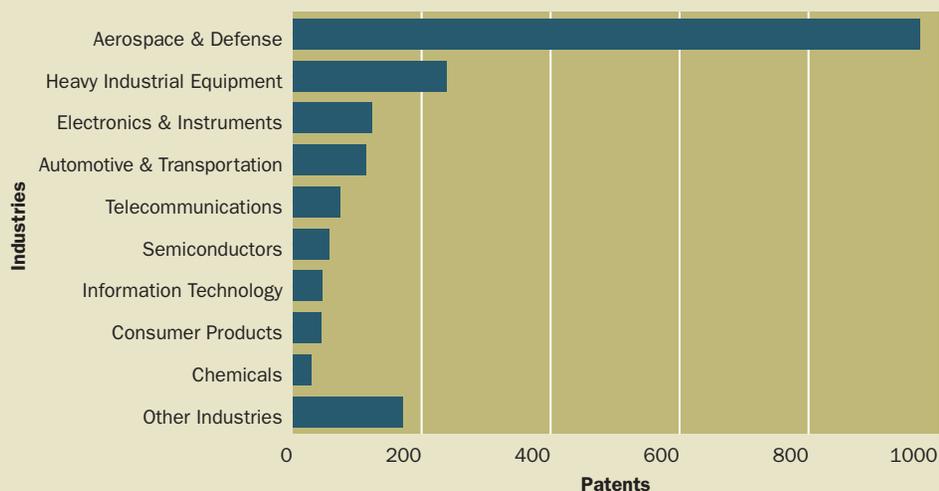
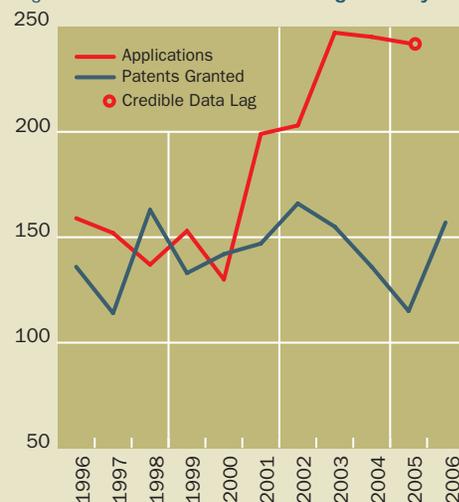


Figure 2. Historical US Patenting Activity



The Patent Board is the Official Ratings Partner to IAM magazine. [www.patentboard.com](http://www.patentboard.com)