Gareth JJ Burgess

Our Top 100 ranking of aerospace manufacturers' 2011 financial performance reveals the beginning of a sharp divergence in fortunes between companies supplying civil programmes and those reliant on military sales

DAN THISDELL LONDON

For a quick summary of the aerospace industry financial situation today, think three words: civil versus defence. The 2011 financial data analysed by PwC to compile our latest Top 100 report on the following pages highlights the beginning of the end of the post-9/11 military spending surge, but the economic impact on defence-focused companies will not really hit hard until 2013.

Indeed, next year threatens to open with US military spending – the motor behind much industry growth – dropping off a so-called "fiscal cliff" of automatic cuts set for 1 January. Between now and then it would take an extraordinary outbreak of bipartisan collaboration to resolve this budget impasse, and even November's elections may fail to break Washington's political deadlock.

At companies where business is balanced between civil and defence, rising civil sales are typically more than offsetting declines on the defence side, and programmes such as the Boeing 787 and 737, or Airbus A320 and – soon – A350 are starting to drive revenue growth along their supply chains. But for those heavily reliant on defence, the response to this market schizophrenia is going to be the defining story of the aerospace industry for the next several years.

PwC strategy director Anna Sargeant, who leads the Top 100 analysis team, says the industry needs to recognise that the current round of military spending cuts is not a cyclical budget squeeze that will be reversed in time. Governments, she says, are changing their attitudes to risk and may not return to the market with deep pockets: "The wave is not really there to be ridden any more."

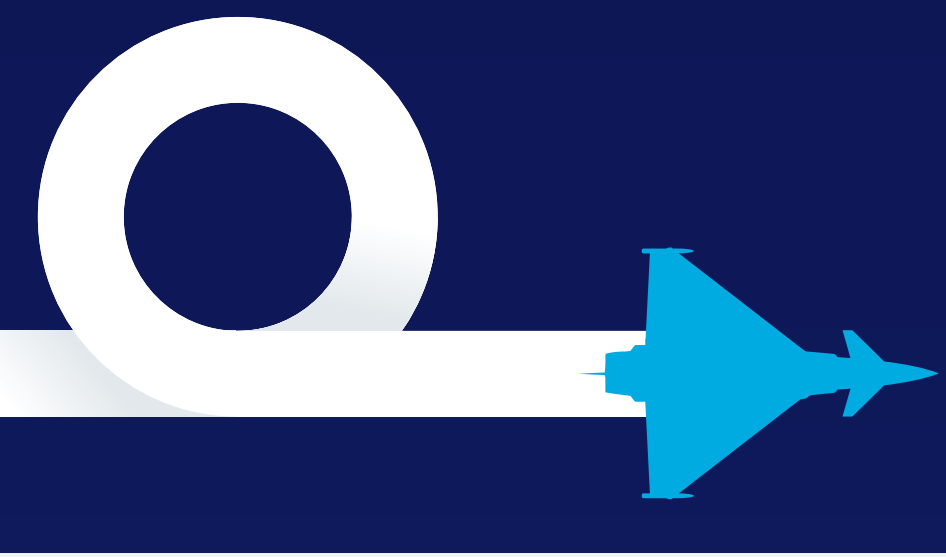
Meanwhile, with new large programmes in the pipeline mergers and acquisitions are the only route to significant civil business. Likewise on the defence side, at least for systems integrators; companies with niche specialities may still enjoy organic growth and could end up as acquisition targets.

However, the most dramatic response to the defence squeeze has been, and will continue to be, attempts to shift into cyber security, typically by acquisition. For military suppliers, the strategy is attractive because that sector shares many defence technologies and, critically, government customers.

But PwC's head of aerospace and defence Neil Hampson advises caution; the cyber industry culture resembles Silicon Valley more than it does the bureaucratic, process-driven defence industry. Management will have to be particularly skilful to beat odds which, he warns, are stacked against success.

So perhaps more than at any time in the past decade, management quality matters. After all, while the defence market is changing dramatically, the civil market cannot maintain its growth trajectory forever. If we have learned anything from the past several years, it is that all business is cyclical. ■

To view our full list of the Top 100 aerospace companies, including revenue and profit figures, visit **flightglobal.com/top100**



BillyPix

Boeing's 787 is finally coming in with the revenue

1 BOEING

Revenue: **$68.7 billion**
Profit: **$5.84 billion**
Seattle is back at the top for a second year after being briefly overtaken by European nemesis EADS

2 EADS

Revenue: **$65.1 billion**
Profit: **$2.14 billion**
Military sales lag behind Boeing, but EADS's Airbus division rules, with $41.3 billion revenue eclipsing its US rival

3 LOCKHEED MARTIN

Revenue: **$46.5 billion**
Profit: **$3.98 billion**
Aeronautics sales grew nearly 10% in 2011, but other units lagged and US defence spending cuts were yet to hit

4 GENERAL DYNAMICS

Revenue: **$32.7 billion**
Profit: **$3.83 billion**
Sales grew in 2011 – barely – but aerospace led other divisions as Gulfstream shone in a weak business jet market

5 UNITED TECHNOLOGIES +1

Revenue: **$26.9 billion**
Profit: **$3.92 billion**
The Pratt & Whitney, Sikorsky and Hamilton Sundstrand parent will get a boost in next year's Top 100 from its $18.4 billion acquisition of Goodrich (ranked 18th) and its $8.1 billion revenue, but divestments, including the sale of P&W Rocketdyne, mean UTC may fail to displace General Dynamics to move up to fourth

6 NORTHROP GRUMMAN -1

Revenue: **$26.4 billion**
Profit: **$3.28 billion**
Sales lost 6% from 2010 levels as all divisions went backwards. Shipbuilding business was divested in 2011

7 RAYTHEON

Revenue: **$24.9 billion**
Profit: **$2.86 billion**
Sales dipped for the missiles and defence electronics maker; intelligence systems were a bright spot

Seahawk flies the Sikorsky flag

Sikorsky

8 FINMECCANICA +1

Revenue: **$19.7 billion**
Loss: **$2.22 billion**
A third-quarter charge of €753 million ($998 million) characterised a miserable 2011 for the Italian industrial champion

9 GENERAL ELECTRIC +1

Revenue: **$18.9 billion**
Profit: **$3.51 billion**
Aviation is now a standalone reporting segment, which in 2011 accounted for a fifth of industrial revenues at GE

10 SAFRAN +3

Revenue: **$13.9 billion**
Profit: **$1.57 billion**
Engines are a Safran strong suit, particularly through its CFM partnership with GE, and security is a growth area

11 THALES +1

Revenue: **$13.1 billion**
Profit: **not available**
Profitability has been an issue at Thales, but a push to better co-ordinate sales and engineering may cut costs and help keep projects on track. The Paris-headquartered company is driving hard to be a technology leader, too, with a creative array of integrated cockpit, navigation and in-flight entertainment concepts. Talk of a merger or alliance with Safran led to speculation that the French government would initiate an industry shake-up in 2011, but all went quiet. Thales and Safran could, however, swap some assets to give each group a tighter focus

Touchscreen cockpit, Thales concept

Thales

12 ROLLS-ROYCE +2

Revenue: **$12.1 billion**
Profit: **$1.51 billion**
Rolls-Royce ranks behind engine leaders GE and United Technologies (Pratt & Whitney), but outgrew both in 2011

13 L-3 -2

Revenue: **$11.9 billion**
Profit: **$1.36 billion**
Sales edged down in 2011, but C3 and ISR showed some growth. Government services no longer figure in the Top 100

14 HONEYWELL +1

Revenue: **$11.5 billion**
Profit: **$2.02 billion**
Growth of 7% highlights strength in diversity – OEM and aftermarket products range from engines to avionics

15 BAE SYSTEMS -7

Revenue: **$8.92 billion**
Profit: **not available**
BAE drops down the rankings owing to improved analysis eliminating marine and cyber sales. Heavy US military market exposure will make for an interesting 2012

BAE is a key Lockheed Martin F-35 partner

Lockheed Martin

16 BOMBARDIER

Revenue: **$8.59 billion**
Profit: **$502 million**
2011 results are 11 months only, but both regional and business jet units are working under severe market pressure

19 EMBRAER

+3 NEW TO TOP 20

Revenue: **$5.80 billion**
Profit: **$318 million**
Steady progress marks Brazil's champion as commercial and defence growth offsets flat sales in business aviation

20 MITSUBISHI HEAVY INDUSTRIES

+1 NEW TO TOP 20

Revenue: **$5.65 billion**
Loss: **$124 million**
Sales grew 12% in 2011, a performance that should continue as Boeing relies on MHI for production of 787 wings

17 TEXTRON

Revenue: **$8.39 billion**
Profit: **$722 million**
The maker of Bell helicopters and Cessna business aircraft saw sales and profits rise despite continued difficulty for Bell's civil rotorcraft product line. Cessna posted very strong growth at nearly 17%, however, after plunging 23% in 2010

Citation X: plenty of sales thrust for Cessna

Cessna

18 GOODRICH

Revenue: **$8.08 billion**
Profit: **$1.34 billion**
The maker of systems ranging from landing gear and air-conditioning to nacelles will disappear from next year's Top 100 owing to its acquisition by United Technologies. At $18 billion-plus, that deal, which closed this summer, is the industry's biggest ever

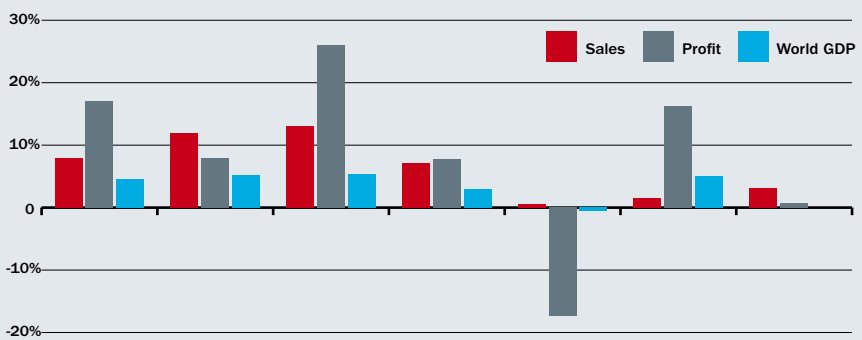
787's Trent 1000s work in Goodrich nacelles

Rolls-Royce

TOP 100

As the chart to the right clearly shows, Top 100 profit growth settled down to nearly zero last year after the financial crisis shock of 2009 and its dramatic near-reversal in 2010. Low single-digit sales growth is a far cry from the pre-crisis boom years, or even crisis-struck 2008, which only really turned bad in the fourth quarter. But these figures only tell part of the story – and it remains to be seen if a full picture would show more of the same or tell a different tale. What is missing are the contributions of the growing aerospace industries in China and Russia, where anecdotal evidence suggests a significant contribution to global growth. Sadly, though, company reporting in these countries is not (yet?) sufficiently transparent to be included in this analysis.

REVENUE AND PROFIT GROWTH OF THE AEROSPACE TOP 100 2005-2010



SOURCE: PwC

EADS

A400M assembly at Airbus Military

TOP 20 BY OPERATING MARGIN 2011*

Rank by margin	Rank by sales	Company	Operating margin
1	55	TransDigm Group	40.4%
2	23	Precision Castparts	25.2%
3	35	Hindustan Aeronautics	21.7%
4	96	Martin-Baker	20.6%
5	83	FLIR Systems	20.3%
6	94	Garmin	20.1%
7	70	Amphenol	19.1%
8	72	Heico	18.1%
9	43	Meggitt	18.0%
10	22	Rockwell Collins	17.6%
11	39	B/E Aerospace	17.5%
12	60	Ultra Electronics	16.7%
13	47	CAE	16.6%
14	18	Goodrich	16.5%
15	25	Harris	16.4%
16	30	Triumph Group	15.1%
17	14	Honeywell International	14.7%
18	79	Firth Rixson	14.6%
19	87	SKF	14.5%
20	58	Chemring	14.4%

NOTE: *Where possible, margin is for aerospace operations only. SOURCE: PwC

TOP 20 BY SALES GROWTH (%)

Rank by Growth %	Rank by sales		Sales growth (%)
1	55	TransDigm	45.7%
2	86	LISI	44.8%
3	51	ATI	44.1%
4	63	Diehl Aerosystems	30.3%
5	27	Zodiac	28.0%
6	78	Aernnova	26.6%
7	43	Meggitt	25.2%
8	23	Precision Castparts	24.8%
9	58	Chemring	24.8%
10	72	Heico	24.0%
11	39	B/E Aerospace	23.5%
12	61	Hexcel	18.6%
13	45	Teledyne Technologies	18.1%
14	31	Alcoa	17.9%
15	77	Crane	17.4%
16	30	Triumph Group	17.3%
17	79	Firth Rixson	16.9%
18	21	Spirit AeroSystems	16.6%
19	44	BBA Group	16.6%
20	80	Curtiss-Wright	16.3%

SOURCE: PwC

21 SPIRIT AEROSYSTEMS +4

Revenue: **$4.86 billion**
Profit: **$514 million**
Adding $692 million equalled 17% sales growth and prospects are strong, with major positions on A350 and 737

22 ROCKWELL COLLINS +2

Revenue: **$4.81 billion**
Profit: **$846 million**
Strength in communications systems mean retrofit prospects and a good shot at riding out US military spending cuts

24 DASSAULT AVIATION -4

Revenue: **$4.39 billion**
Profit: **$498 million**
Military sales plunged with a 2011 lull in deliveries to France, but an India deal for Rafale fighters looks like gold

23 PRECISION CASTPARTS +5

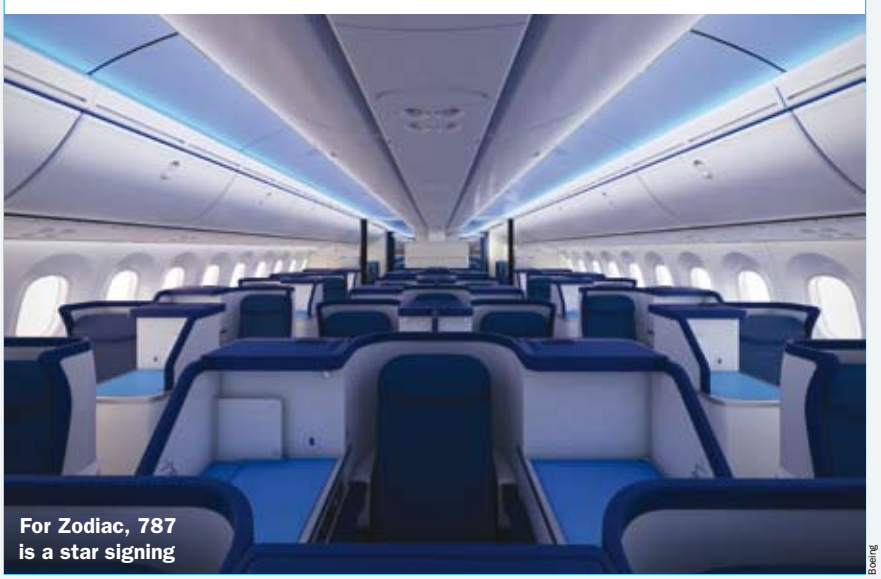
Revenue: **$4.46 billion**
Profit: **not available**
For Portland, Oregon-headquartered Precision, acquisitions – including the August 2011 purchase of aerostructures and components maker Primus International – are part of a growth strategy that looks to buy-in capabilities to enhance its core offering of complex component manufacture

Precision's 777 presence includes engine structural castings

Dan Thisdell/Flightglobal

27 ZODIAC +8

Revenue: **$3.62 billion**
Profit: **$510 million**
At 28%, the Paris-based maker of seats, galleys and electrical equipment ranks fifth by sales growth and carries that momentum into 2012; 787 is a sales generator



For Zodiac, 787 is a star signing

Boeing

25 HARRIS -2

Revenue: **$4.07 billion**
Profit: **not available**
Secure communications systems, including air traffic control

26 MTU AERO ENGINES +1

Revenue: **$3.88 billion**
Profit: **$378 million**
MTU is part of the V2500 alliance and its successor, with P&W and Rolls-Royce

28 ALLIANT TECHSYSTEMS -2

Revenue: **$3.61 billion**
Profit: **$504 million**
Solid rocket propulsion, commercial and military aerostructures, armaments

29 ISRAEL AEROSPACE INDUSTRIES +1

Revenue: **$3.44 billion**
Profit: **not available**
The Israeli defence manufacturer is well-placed to grow export sales, with a good position in unmanned systems

30 TRIUMPH GROUP +3

Revenue: **$3.41 billion**
Profit: **$515 million**
Revenue growth of 46% leads the pack, owing to its $1.44 billion acquisition of 787 supplier Vought in June 2010

32 ISHIKAWAJIMA-HARIMA -1

Revenue: **$3.35 billion**
Profit: **$69 million**
At 16%, the maker of CF34 and V2500 components outgrew all engine makers

33 SAAB -4

Revenue: **$3.19 billion**
Profit: **$268 million**
Revenue grew only 3% but profit surged from gain on sales of a 3D mapping unit

34 COBHAM -2

Revenue: **$2.86 billion**
Profit: **$404 million**
Total revenue dipped, but solid growth in mission systems and aviation services

35 HINDUSTAN AERONAUTICS +1

Revenue: **$2.86 billion**
Profit: **$618 million**
HAL closed year by starting construction of Rolls-Royce joint venture in Bengaluru

31 ALCOA +3

Revenue: **$3.38 billion**
Profit: **not available**
The US aluminium giant classifies aerospace as a reportable segment rather than division. Alcoa believes its in-house development of innovative new alloys and construction techniques will keep aluminium competitive with carbon composites on cost, weight and performance criteria for years to come

Aluminium? Still shines brightly

Boeing

Eurocopter EC175 on approach to Farnborough

Billy Pix

36 ELBIT SYSTEMS +2

Revenue: **$2.82 billion**
Profit: **$116 million**
The Israeli defence electronics maker is seeing significant growth in areas outside the USA and Europe

37 AVIO +2

Revenue: **$2.69 billion**
Profit: **$267 million**
Cinven bought the Turin-based maker of gearbox and turbine components in 2007; an IPO plan was ditched in 2011

39 B/E AEROSPACE +3

Revenue: **$2.45 billion**
Profit: **$428 million**
The cabin and interior products maker is also a major distributor of fasteners and consumables

38 ITT EXELIS NEW ENTRY

Revenue: **$2.57 billion**
Profit: **$235 million**
The communications and electronic warfare expert was the defence arm of ITT until that conglomerate split itself into three separate companies in 2011. Joining the Top 100 as an independent company for the first time, McLean, Virginia-headquartered ITT Exelis works in networked communications, sensing and surveillance, electronic warfare, air traffic solutions and information systems, and also has growing positions in cyber security, composite aerostructures, navigation, logistics and technical services

Boeing Apache Longbow: electronic warfare, Exelis-style

ITT Exelis

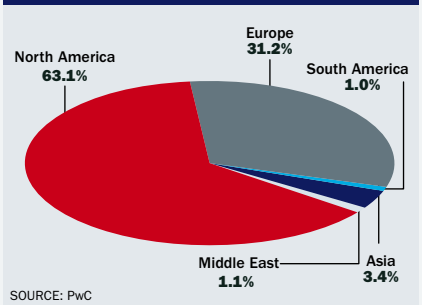
40 HAWKER BEECHCRAFT -3

Hawker's midsize business jets such as the 900XP have struggled for sales since the financial crisis broke

Hawker Beechcraft

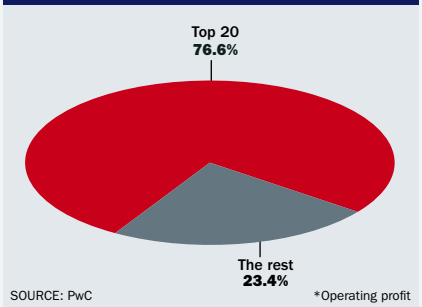
Revenue: **$2.44 billion**
Loss: **$482 million**
Hawker Beechcraft has become perhaps the highest-profile business jet casualty of the financial crisis, with an unsustainable debt burden leading to a filing in May this year for Chapter 11 bankruptcy protection. The origins of the crisis lie in the over-optimism of the mid-2000s business jet boom. In 2007, Goldman Sachs and private equity house Onex Partners bought what was then Raytheon Aircraft from the weapons systems maker for $3.3 billion, a price that turned out to be wildly optimistic. The 2008 financial crisis has left the business jet market in tatters, and while firms such as Dassault or Gulfstream – which make large-cabin models – are seeing some recovery, Hawker Beechcraft's small-to-midsize sector remains in depression. After three years of efforts at transforming the business, there may be little scope left for cost cutting, and the company is still a loss-maker, even without the asset write-downs that made 2011's losses so dire

TOP 100 REVENUE BY REGION



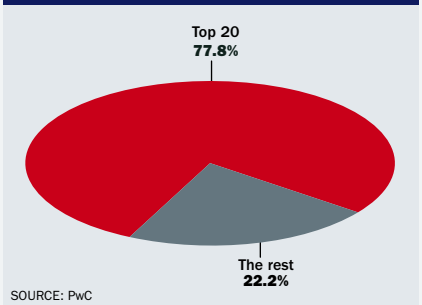
SOURCE: PwC

TOP 20 SHARE OF TOP 100 PROFIT 2011*



SOURCE: PwC *Operating profit

TOP 20 SHARE OF TOP 100 SALES 2011

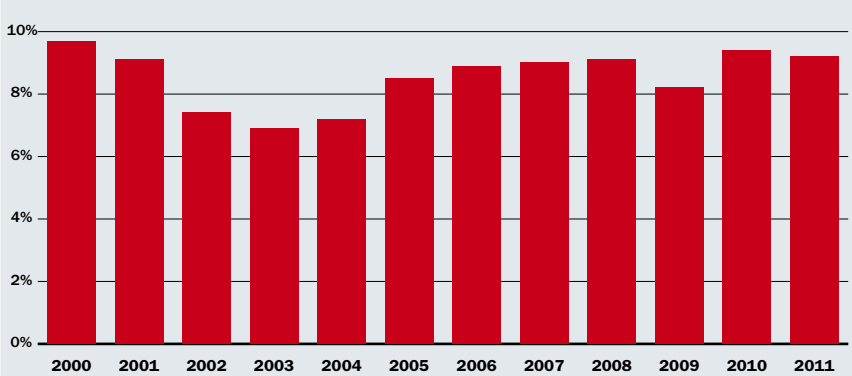


SOURCE: PwC

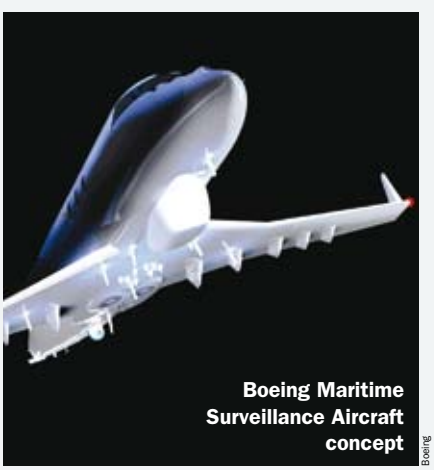
787 full-flight simulator at CAE in Montreal

Dan Thisdell/Flightglobal

AVERAGE TOP 100 OPERATING MARGIN 2000-2011*



SOURCE: PwC *Only includes those companies for which both aerospace revenues and aerospace profit is available



Boeing Maritime Surveillance Aircraft concept

Boeing

41 KAWASAKI HEAVY INDUSTRIES -1

KHI provides 787 main landing gear and forward fuselage

Boeing

Revenue: **$2.35 billion**
Profit: **$89 million**
The aerospace division of this Japanese industrial stalwart is a long-time key partner for Boeing, helping develop several models including the 777 and 787 and providing parts such as fuselage panels, doors and, for the 787, main landing gear and the fore section of the fuselage. Other clients include Embraer – KHI was a risk-sharing partner on the 170 and 190 regional jets. As with Mitsubishi and Fuji, Kawasaki is a favoured partner for Boeing in technology development. For all three, "heavy" is a misnomer

43 MEGGITT +1

Revenue: **$2.25 billion**
Profit: **$405 million**
Recent deals for the systems maker include fire protection systems for the A320neo

42 GKN -1

Revenue: **$2.29 billion**
Profit: **$256 million**
One of the UK's industrial champions, GKN has become indispensable to Airbus as a metal and composite wing components supplier. Rolls-Royce is another important partner – in a composite compressor blades development project. GKN will become a top-three supplier of engine components this year when its acquisition of Volvo Aero closes

First A350 wing at Airbus Toulouse: GKN milestone

Airbus

44 BBA AVIATION -1

Revenue: **$2.14 billion**
Profit: **$181 million**
Flight support and aftermarket services; London headquarters

45 TELEDYNE TECHNOLOGIES +2

Revenue: **$1.94 billion**
Profit: **$227 million**
Electronic components and subsystems for all aircraft types

46 PARKER HANNIFIN -1

Revenue: **$1.92 billion**
Profit: **$247 million**
Motion-and-control systems, and valves, pumps and fluid handling. Contracts include a design-and-produce deal for CSeries fuel and hydraulic systems

47 CAE +1

Revenue: **$1.77 billion**
Profit: **$293 million**
Flight simulators and training. Next year's results will show impact of debt-financed C$314 million purchase of Oxford Aviation Academy

48 RUAG -2

Revenue: **$1.72 billion**
Profit: **$105 million**
Maintenance, repair and upgrade services for civil, business and military aircraft, and assembly of the Dornier 228 New Generation twin turboprop

49 ESTERLINE +1

Revenue: **$1.72 billion**
Profit: **$199 million**
Avionics, controls, sensors, advanced materials; Bellevue, Washington headquarters

50 EATON -1

Revenue: **$1.65 billion**
Profit: **$244 million**
Power management, fuel systems, hydraulics; Cleveland, Ohio headquarters

51 ATI NEW ENTRY

Revenue: **$1.48 billion**
Profit: **not available**
Pittsburgh-headquartered Allegheny Technologies is a specialty metals and castings, forgings and machined components supplier. A highlight of 2011 was an agreement to supply Goodrich with forgings for landing-gear components for commercial, regional, and business aircraft until 2015, from ATI Ladish's ZKM Forging operation in Poland. Products include jet engine parts and fasteners, as well as structural parts. In the first half of 2012, aerospace sales were a third of ATI's total, up 3% on full-year 2011

Special aircraft, special metals

US Army

52 ST ENGINEERING

Revenue: **$1.41 billion**
Profit: **$178 million**
For Singapore Technologies, civil aircraft maintenance, repair and overhaul is a key business, through its ST Aero unit

53 ORBITAL SCIENCES

Revenue: **$1.35 billion**
Profit: **$80 million**
Satellites, space systems and launchers, including Pegasus rocket, air-launched from Orbital's modified L-1011 tri-jet

54 KONGSBERG -3

Revenue: **$1.34 billion**
Profit: **not available**
Norway's leading defence supplier produces components for fixed-wing aircraft, helicopters and spacecraft

55 TRANSDIGM +9

Revenue: **$1.21 billion**
Profit: **$487 million**
The fastest-growing company in the Top 100 also boasts a 40% operating margin – that is down from nearly 44% last time – but the components maker is still nearly twice as efficient as any other company in the league table. Chief executive Nicholas Howley says TransDigm focuses "very tightly" on proprietary aerospace products with significant aftermarket content. Most of its products are of its own design and manufacture, and sales are roughly split 50-50 between OEMs and operators. More than 90% of sales are of proprietary products for which TransDigm owns the design, and some three-quarters of sales are from products for which it is the sole source supplier. Revenue growth in recent years has been about 20% yearly, about half organic and half by acquisition. Howley, making a bold but reasonable claim, reckons TransDigm is possibly the most profitable industrial business in the country and "probably one of the biggest companies in Cleveland that nobody ever heard of"

Never heard of TransDigm? How about Boeing F-18?

BillyPix

ENGINES

Component makers top the growth league in a sector where revenue is necessarily tied to aircraft deliveries. With its acquisition of Volvo Aero set to close this year, GKN will feature on next year's list, comfortably within the top 10. Also in 2012 figures, profitability could take a step upward at GE and Rolls-Royce, as rising Boeing 787 deliveries have started to pull through increasing numbers of GEnx and Trent 1000 powerplants, although it will be 2013 before those programmes really start showing bottom-line performance. For Rolls-Royce, another highlight of 2013 will be first flight of the Trent XWB-powered Airbus A350, a programme that will not, however, deliver much revenue until deliveries begin in earnest in 2015. Meanwhile, the defining battle is between the GE-Safran CFM International venture's Leap replacement for the venerable CFM56, and United Technologies' Pratt & Whitney PurePower geared turbofan for dominance in the market for next-generation narrowbodies. Both engines have racked up impressive orderbooks, but the market will be scrutinising every scrap of available data during the next couple years as CFM and P&W push for certification.

Rolls-Royce

Rolls-Royce lift system for Lockheed Martin F-35


Pratt & Whitney

Pratt & Whitney GTF; check it out

ENGINE AND COMPONENTS SALES 2011

		$ million
1	General Electric	18,859
2	United Technologies	13,430
3	Rolls-Royce	12,056
4	Safran	8,094
5	Honeywell	5,738
6	MTU	3,884
7	IHI	3,351
8	Avio	2,239
9	Volvo	903
10	ITP	688

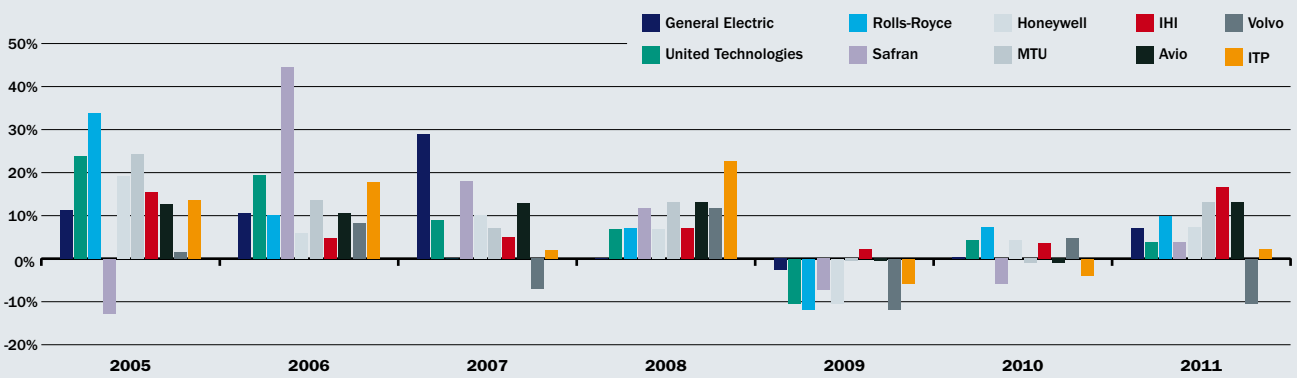
SOURCE: PwC

ENGINES AND COMPONENTS SALES GROWTH

		2011 v 2010
1	IHI	16.6%
2	MTU	13.2%
3	Avio	13.2%
4	Rolls-Royce	9.8%
5	Honeywell	7.4%
6	General Electric	7.0%
7	Safran	3.9%
8	United Technologies	3.8%
9	ITP	2.3%
10	Volvo	-10.4%

SOURCE: PwC

ENGINES AND COMPONENTS SALES GROWTH 2005-2011



SOURCE: PwC

57 KOREA AEROSPACE INDUSTRIES

-1

Korea Aerospace hopes to ride on the T-50 Golden Eagle

Korean Aerospace Industries

Revenue: **$1.16 billion**
Profit: **$96 million**
Korea's national champion co-developed the F-16-derived T-50 Golden Eagle trainer and attack variant with Lockheed Martin, but an attempt to consolidate a diversified shareholding structure to streamline decision-making has so far failed. Six of KAI's shareholders hoped to sell a combined 41.75% stake in the company, 11.4% of which comes from state-owned Korea Finance Corporation, but Korean law demands at least two bidders, and only airline Korean Air had come forward by an August 2012 deadline

56 MOOG

+2

Revenue: **$1.21 billion**
Profit: **$133 million**
The motion-control specialist boosted its spacecraft capability with a $46 million buyout of American Pacific in July 2012

58 CHEMRING

+4

Revenue: **$1.15 billion**
Profit: **$165 million**
The UK maker of pyrotechnic devices saw its shares soar in August on interest from private equity investor Carlyle

59 PANASONIC

-4

Revenue: **$1.14 billion**
Profit: **not available**
Panasonic's California operation is a leader in the growing market for in-flight entertainment and communication

60 ULTRA ELECTRONICS

-3

Revenue: **$1.13 billion**
Profit: **$189 million**
Ultra provides a huge range of electronic systems, including leading edge ice protection for the Boeing 787

EADS, Finmeccanica and BAE Systems all have a stake in Eurofighter

BillyPix

61 HEXCEL -1

Revenue: **$1.13 billion**
Profit: **not available**
The Cambridge, UK-based composite materials specialist is supplying all prepregs and fibres for the Airbus A350

62 LORAL SPACE & COMMUNICATIONS -8

Revenue: **$1.11 billion**
Profit: **$93 million**
Satellite communications hardware and services provider; New York headquarters

63 DIEHL AEROSYSTEMS +6

Revenue: **$935 million**
Profit: **not available**
Cabin interiors and avionics solutions unit of Diehl Group; Laupheim, Germany

64 FUJI HEAVY INDUSTRIES -3

Revenue: **$914 million**
Profit: **$33 million**
Fuji is another example of the Japan-US alliance fostering strong industrial ties. Boeing's 767, 777 and 787 all feature significant content from Fuji, which also makes the AH-64D helicopter under licence from Boeing and the Bell/Fuji UH-1J helicopter. The company is best known for its Subaru autos brand

Fuji makes versions of the Apache under licence from Boeing

Boeing

67 VOLVO AERO -8

Revenue: **$903 million**
Profit: **$47 million**
The aircraft and spacecraft engines division of Volvo Group is making its last appearance in the Top 100 following its £633 million ($987 million) acquisition by GKN, agreed on the eve of this year's Farnborough air show. The deal will turn GKN's relatively small engine components business into what it believes will be the third-largest in the world, with annual turnover of £800-900 million – behind MTU (26th) and Avio (37th)

Volvo turbine expertise keeps Viking rocket engines firing

Volvo Aero

65 GENCORP -2

Revenue: **$910 million**
Profit: **$75 million**
GenCorp's Aerojet unit specialises in missile propulsion – and helped land NASA's Curiosity rover on Mars

66 STORK -1

Revenue: **$907 million**
Profit: **not available**
The Fokker Services unit supports legacy Fokker jets and Fokker Technologies is a major structures maker

68 WOODWARD GOVERNOR

Revenue: **$843 million**
Profit: **$130 million**
Actuation and flight control systems for military and commercial fixed-wing aircraft; Fort Collins, Colorado

69 INDRA
-3

Revenue: **$827 million**
Profit: **not available**
Air transport management, surveillance and avionics systems; Madrid

70 AMPHENOL
-3

Revenue: **$788 million**
Profit: **not available**
Interconnect systems for harsh environments; Whitstable, UK headquarters

72 HEICO
+3

Revenue: **$765 million**
Profit: **$138 million**
Parts for avionics systems, aerostructures, landing gear, engines; Florida

71 BALL
-1

Revenue: **$785 million**
Profit: **$80 million**
Ball technologies range from antenna and attitude sensors to beam-steering mirrors, star trackers and cryogenic cooling systems for aircraft and spacecraft. The company was recently chosen by NASA to demonstrate a "green" replacement for efficient, but highly toxic, rocket propellant hydrazine. Lockheed Martin also chose Ball to design, develop and manufacture the communications, navigation and identification integrated body antenna suite for the F-35. Headquartered in Boulder, Colorado

Ball optics: the guts of NASA's James Webb space telescope

Ball Aerospace

ATR 500MP in service with Italy's customs force. EADS and Finmeccanica build the aircraft jointly

Dan Thisdell/Flightglobal

73 PILATUS
-1

Revenue: **$749 million**
Profit: **$104 million**
Delivery of a $523 million deal for 75 PC-7 MkII basic trainers to India begins in the fourth quarter of 2012

74 AEROFLEX
-1

Revenue: **$729 million**
Loss: **$35 million**
Losses have continued for the microelectronic components maker, with an operating loss of $21 million in its fiscal year 2012 to end-June. Plainview, New York

75 LATECOERE
+1

Revenue: **$690 million**
Profit: **$59 million**
The French aerostructures and wiring supplier to Airbus, Boeing and Dassault was linked to partnership talks in 2011

CIVIL

While Boeing retains number-one ranking in the Top 100, arch-rival Airbus still holds the bragging rights in airliners – although 2012 may see the Americans close the gap as 787 deliveries build. In business jets, Dassault Falcon's plunge and Gulfstream's rise tell a story; both play in the large-cabin segment, which has weathered the financial storm well, but market-maker NetJets (active fleet: 540 aircraft) has been ordering Gulfstreams and shunning Falcons. With Gulfstream's ultra-long-range G650 set to enter service imminently, some experts think it is time Dassault reached beyond its 7X flagship.

COMMERCIAL AIRCRAFT REVENUE 2011

		$ million
1	Airbus*	41,277
2	Boeing	36,171
3	Bombardier	8,594
4	Gulfstream**	5,998
5	Embraer	4,828
6	Dassault Aviation***	3,199
7	Cessna	2,990
8	Hawker Beechcraft	2,435
9	ATR****	1,300

NOTES: *Excluding ATR **Part of General Dynamics ***Falcon division ****EADS-Finmeccanica joint venture; sales figure from company press release. SOURCE: PwC

COMMERCIAL AIRCRAFT REVENUE GROWTH

		2010 v 2011
1	Embraer	19.7%
2	Cessna	16.7%
3	Boeing	13.6%
4	Gulfstream**	13.2%
5	Airbus*	7.3%
6	Bombardier	-2.4%
7	ATR****	-3.7%
8	Hawker Beechcraft	-13.2%
9	Dassault Aviation***	-28.7%

NOTES: *Excluding ATR **Part of General Dynamics ***Falcon division ****EADS-Finmeccanica joint venture; sales figure from company press release. SOURCE: PwC

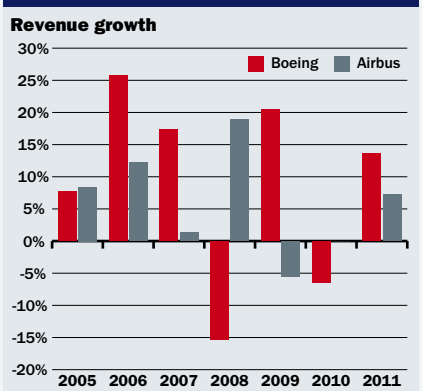
Farnborough 2012: the balance is shifting to civil among Top 100 manufacturers

BillyPix

Dan Thisdell/Flightglobal

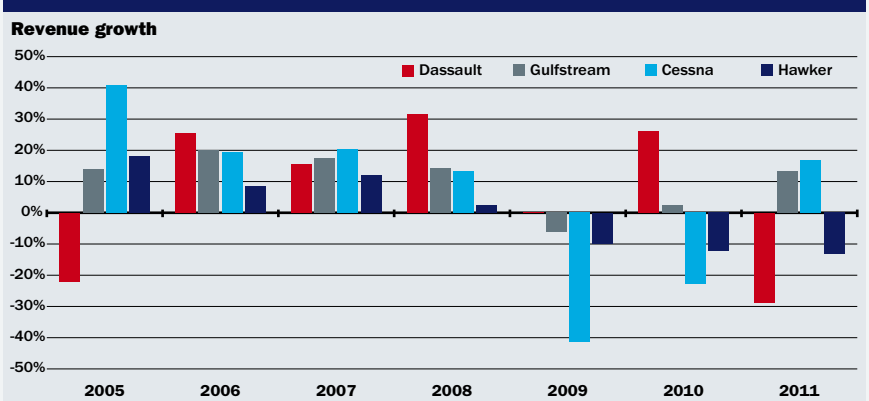
Air France A320, Charles de Gaulle

AIRLINERS 2005-2011



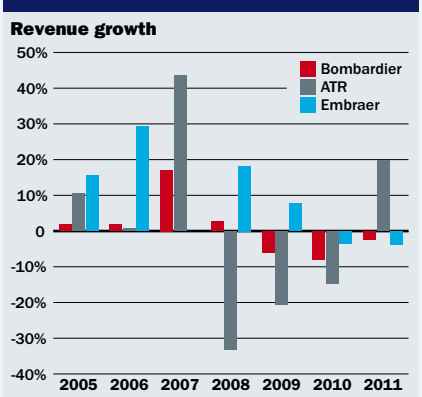
SOURCE: PwC

BUSINESS AIRCRAFT 2005-2011



SOURCE: PwC

REGIONAL AIRCRAFT 2005-2011



SOURCE: PwC

76 ITP

-2

Revenue: **$688 million**
Profit: **not available**
The Spanish engine components maker, is enjoying its position on the Rolls-Royce Trent 1000 now Boeing's 787 is in service. It is also a supplier to the Rolls-Royce Trent XWB, which will power Airbus's A350

Soon enough, they can ride on one

Airbus

77 CRANE

+1

Revenue: **$678 million**
Profit: **$146 million**
Systems and components for commercial and military engines, landing gear and other applications

78 AERNNOVA

+4

Revenue: **$631 million**
Profit: **not available**
Concept, design and manufacture of aerostructures and composite and metallic components; Vitoria, Spain

79 FIRTH RIXON

Revenue: **$621 million**
Profit: **not available**
Seamless rolled rings and forgings for engines and other extreme applications

Eurocopter EC135

Eurocopter

80 CURTISS-WRIGHT +1

Revenue: **$616 million**
Profit: **not available**
Motion and flow control, metal treatment; Parsippany, New Jersey

81 MAGELLAN AEROSPACE -4

Revenue: **$592 million**
Profit: **$51 million**
Aero and rocket engine and structural components; rising sales to single-aisle airliner programmes featured in 2011

82 SENIOR -2

Revenue: **$591 million**
Profit: **$92 million**
Metal and composite aerostructures; engine components including seals and casings; fluid systems; London-listed

83 FLIR SYSTEMS -12

Revenue: **$578 million**
Profit: **$209 million**
The Portland, Oregon-based optical systems maker is another star performer, with a 36% operating margin. Its 14% year-on-year decrease in revenue also left it in fourth place on that scale, although sales are volatile with significant government business

A FLIR view of the flight display at Farnborough 2012

FLIR Systems

84 JAMCO

Revenue: **$567 million**
Profit: **$12 million**
Interiors engineering and modifications, metal components; Japan headquarters

86 LISI

Revenue: **$540 million**
Profit: **$66 million**
Fasteners and assembly components. Claims to be world's third-largest; Paris

87 SKF

Revenue: **$459 million**
Profit: **not available**
Bearings, seals, rods, struts, elastomeric devices and fly-by-wire equipment

85 KAMAN

Revenue: **$547 million**
Profit: **$80 million**
The maker of the legendary SH-2 Super Seasprite, H-43 Husky and K-Max helicopters looked to be out of the rotorcraft business until the US Navy and Marines selected an unmanned K-Max, co-developed with Lockheed Martin, for Afghanistan cargo deliveries. Aerostructures and composites work also figures heavily, with defence sales making up a short two-thirds of 2011 revenue. Late 2011 brought the acquisition of Vermont Composites, with positions in the intelligence-surveillance-reconnaissance market and on the V-22 Osprey and P-8 Poseidon

K-Max unmanned features distinctive intermeshed blades

Lockheed Martin

88 ITT

-69

Revenue: **$339 million**
Profit: **not available**
The one-time conglomerate shrank dramatically in 2011 with the spin-offs of its water business and defence operation, which now trades as ITT Exelis (ranked 38). ITT Corporation's own aerospace business segment now focuses on fluid control devices, electromechanical actuators, switches, connections and vibration absorption for both civil and military programmes. Products such as seat-positioning controls for business and first-class cabins are an ITT speciality, as are weapon shock management systems, missile control dampers and plasma shape-cutting products

ITT provides the sonobuoy launcher for Boeing's P-8A

Boeing

89 HEROUX-DEVTEK

+1

Revenue: **$336 million**
Profit: **$31 million**
Its focus will be on landing gear after the disposal of aerostructures unit to Precision Castparts (ranked 23) closes in 2013

90 MARSHALL AEROSPACE

NEW ENTRY

Revenue: **$326 million**
Loss: **$6 million**
The family-owned business, based in Cambridge since 1937, specialises in the conversion, modification, maintenance and support of military, civil and business aircraft, and is investing heavily to help turn Cambridge airport into a major business aviation hub

Coup for Marshall: C-130J wingbox refurbishment contract

USAF

91 ASCO

+2

Revenue: **$321 million**
Profit: **$9 million**
High-lift structures, mechanical assemblies, functional components; Belgium

92 DUCOMMUN

-4

Revenue: **$293 million**
Profit: **$26 million**
The Los Angeles components maker should leap up the table next year on its acquisition of electronics-maker LaBarge

93 SONACA

+4

Revenue: **$290 million**
Profit: **$16 million**
Aerostructures and subsystems, with products on every Airbus including the A400M military transport; Belgium

94 GARMIN

+2

Revenue: **$285 million**
Profit: **$72 million**
Avionics systems, with a leading position in synthetic vision and touchscreen controllers, especially on small aircraft

95 DENEL

-3

Revenue: **$275 million**
Loss: **$58 million**
The largest defence manufacturer in South Africa is wholly-owned by the government

96 MARTIN-BAKER -1

Revenue: **$273 million**
Profit: **$56 million**
The company traces its origins to 1934, but it was the 1942 death of co-founder Valentine Baker during a test flight of the Martin-Baker MB3 prototype that led James Martin to develop the first ejection seat. With 7,400 lives saved in 60 years – most recently in a 15 August ejection from a Pakistani Mirage III – Martin Baker is now responsible for the Lockheed Martin F-35's fully integrated escape system

Joint Strike Fighter features a Martin Baker fully integrated escape system

Lockheed Martin

97 DONCASTERS -3

Revenue: **$263 million**
Profit: **not available**
Forged, machined and superalloy components and assemblies; Staffordshire, UK

98 TERMA

Revenue: **$238 million**
Profit: **$19 million**
Electronic warfare and alternate mission equipment structures, including a multi-mission pod for the F-35; Denmark

99 CIRCOR INTERNATIONAL +1

Revenue: **$137 million**
Profit: **$13 million**
Valves, motors, actuators and landing-gear products, including for the Boeing CH-47 Chinook; Corona, California

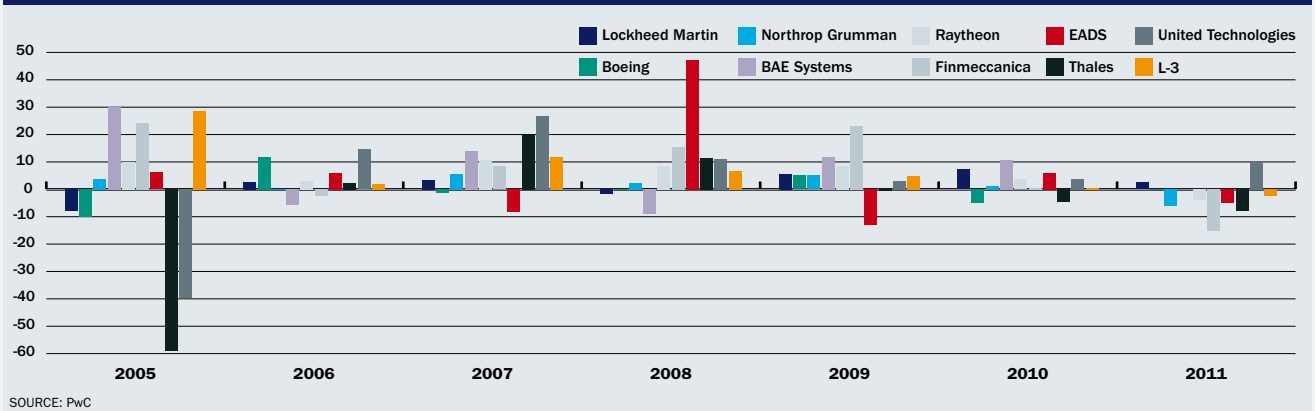
100 UMECO -17

Revenue: **$126 million**
Profit: **not available**
The composite materials supplier makes its last Top 100 appearance as an independent after Cytec buyout in July 2012

EADS-Finmeccanica joint venture ATR is enjoying a bright turboprop market

EADS

DEFENCE AEROSPACE SALES GROWTH 2005-2011



SOURCE: PwC

DEFENCE

Although the big US military budget crunch is still to come, cuts started to kick in during 2011, especially in the UK. Another factor holding revenue growth down last year was the beginning of the run-down in Afghanistan – indeed, as the chart above suggests, spending on that conflict in the mid-2000s drove much revenue growth, especially as US and allied forces ramped up deployment of unmanned aerial systems. Now, though, with the military spending debate apparently deadlocked in Washington, defence companies are reporting little or no forecast visibility but are preparing for cutbacks that may go far beyond a mere post-war spending hiatus. For BAE Systems and Finmeccanica, then, these are challenging times; after spending heavily during the 2000s to gain access to the lucrative US market, growth may prove elusive.

DEFENCE AEROSPACE REVENUE GROWTH

		2010 v 2011
1	United Technologies	9.9%
2	Israel Aerospace Industries	9.1%
3	Textron	4.8%
4	Lockheed Martin	2.5%
5	Boeing	0.1%
6	L-3	-2.2%
7	Honeywell	-3.3%
8	Raytheon	-3.7%
9	EADS	-4.9%
10	Northrop Grumman	-6.2%
11	Thales	-8.0%
12	BAE Systems	-9.9%
13	Finmeccanica	-15.2%
14	Dassault Aviation	-82.5%

SOURCE: PwC

DEFENCE AEROSPACE SALES 2011

		$ million
1	Lockheed Martin	38,365
2	Boeing	27,180
3	Northrop Grumman	26,412
4	Raytheon	19,602
5	EADS	14,591
6	Finmeccanica	13,152
7	United Technologies	10,804
8	L-3	10,724
9	Thales	9,608
10	BAE Systems	8,923
11	Honeywell	5,164
12	Textron	4,171
13	Israel Aircraft Industries	3,436
14	Dassault Aviation	233

SOURCE: PwC

Rex Features

Dassault Rafale: India deal is first export win

NavAir Photo

Missile defence from Raytheon

TOP 100 BY COMPANY NAME

Company	Company ranking 2011	2010
Aernnova	78	82
Aeroflex	74	73
Alcoa	31	34
Alliant Techsystems	28	26
Amphenol	70	67
Asco	91	93
ATI	51	new
Avio	37	39
B/E Aerospace	39	42
BAE Systems	15	8
Ball	71	70
BBA Group	44	43
Boeing	1	1
Bombardier	16	16
CAE	47	48
Chemring	58	62
Circor International	99	100
Cobham	34	32
Crane	77	78
Curtiss-Wright	80	81
Dassault Aviation	24	20
Denel	95	92
Diehl Aerosystems	63	69
Doncasters	97	94
Ducommun	92	88
EADS	2	2
Eaton	50	49
Elbit Systems	36	38
Embraer	19	22
Esterline	49	50
Exelis	38	new
Finmeccanica	8	9
Firth Rixson	79	79
FLIR Systems	83	71
Fuji Heavy Industries	64	61
Garmin	94	96
GenCorp	65	63
General Dynamics	4	4
General Electric	9	10
GKN	42	41
Goodrich	18	18
Harris	25	23
Hawker Beechcraft	40	37
Heico	72	75
Heroux Devtek	89	90
Hexcel	61	60
Hindustan Aeronautics	35	36
Honeywell International	14	15
Indra	69	66
Ishikawajima-Harima	32	31
Israel Aerospace Industries	29	30
ITP	76	74
ITT Corporation	88	19
JAMCO	84	84
Kaman	85	85
Kawasaki Heavy Industries	41	40
Kongsberg	54	51
Korea Aerospace Industries	57	56
L-3 Communications	13	11
Latecoere	75	76
LISI	86	86
Lockheed Martin	3	3
Loral Space & Communications	62	54
Magellan Aerospace	81	77
Marshalls	90	new
Martin-Baker	96	95
Meggitt	43	44
Mitsubishi Heavy Industries	20	21
Moog	56	58
MTU Aero Engines	26	27
Northrop Grumman	6	5
Orbital Sciences	53	53
Panasonic	59	55
Parker Hannifin	46	45
Pilatus	73	72
Precision Castparts	23	28
Raytheon	7	7
Rockwell Collins	22	24
Rolls-Royce	12	14
RUAG	48	46
Saab	33	29
Safran	10	13
Senior	82	80
Singapore Technologies Engineering	52	52
SKF	87	87
Sonaca	93	97
Spirit AeroSystems	21	25
Stork	66	65
Teledyne Technologies	45	47
Terma	98	98
Textron	17	17
Thales	11	12
TransDigm Group	55	64
Triumph Group	30	33
Ultra Electronics	60	57
Umeco	100	83
United Technologies Corporation	5	6
Volvo	67	59
Woodward Governor	68	68
Zodiac	27	35

SOURCE: PwC

DATA SOURCE

The *Flight International* Top 100 was compiled by aerospace experts at Pricewaterhouse Coopers LLP (PwC). The information used to prepare this report has been obtained solely from company annual reports, public filings and other publicly available information. PwC has not sought to establish the reliability of this information and has not verified such information. Accordingly, no representation or warranty (whether express or implied) is given by PwC as to the accuracy of this information.

COMPANY/DIVISIONS

The top line of the financial figures refers to consolidated results for the overall group, including non-aerospace businesses. The divisional figures are for those businesses that are fully or largely concerned with aerospace. Groups have been ranked by aerospace sales in 2011, calculated from divisions that operate primarily in the industry. Sectors involved with aircraft, engines, avionics, missiles, space and aerostructures are largely straightforward, but telecommunications, network centric and C4I systems and some overhaul operations are included only where these are largely concerned with aerospace . Satellite services have been excluded where possible, as have companies and divisions that derive more than 50% of their revenues from services such as leasing. Where acquisitions were made within the accounting period, pro-forma accounts have been used for the 12-month consolidated performance. Joint ventures have been included in the financials. Intersegment sales have been excluded from operating results and profits for divisions where possible, but when not possible, each divisional result has been presented inclusive of inter division sales, resulting in aerospace revenues greater than group sales.

EXCHANGE RATES

An average exchange rate for the period 1 January 2011 to 31 December 2011 has been used for all non-US companies, regardless of fiscal year definitions. The percentage changes in financial figures are given in local currency terms to avoid unnecessary distortions.

COUNTRY

All companies have been listed by country of headquarters or incorporation, independent of production or operating territories.

OPERATING RESULTS

Results are generally taken as profit (or loss) before interest, tax and exceptional items and after deduction of depreciation. The measure gives a generally accepted guide to a business's operational performance. Discontinued or discontinuing operations are included where they fall in fiscal year 2011 for that business.

ROCE

Return on Capital Employed is calculated as earnings before interest expense, taxes, unusual items and minority interests divided by year-end total assets less year-end non-interest-bearing current liabilities.

Airbus

Getting it out the door is just part of the challenge

COMMENTARY **PWC** NEIL HAMPSON

SUPPLY CHAIN UNDER PRESSURE FROM PRICE, RISK AND EXPANSION

PROGRAMME MANAGEMENT is moving well beyond its traditional heartland of scheduling, progress tracking, managing risk and pressurising suppliers. Aerospace executives interviewed for PwC's report *A&D Insights: Programmes Under Pressure** agree. Aerospace and defence companies face a new intensity in the delivery of their programmes – the need to be faster, fitter and lower-cost while managing the growing programme complexity which goes with the territory.

These are considerable challenges in their own right, but have been given a new intensity by the unprecedented environment in which today's programmes are being delivered. A&D companies are experiencing more pressure from more directions than ever before — on price, supply chain risk, the need to expand globally, the risks associated therewith and broader macro-economic uncertainty. Alongside this, customers expect that innovation will continue while costs come down or are capped. Innovation is a must-have but can no longer come at any price.

How can companies respond to this convergence of pressures? In the past, companies would respond to pressure by majoring on excellence in one of solutions leadership, operational excellence or customer intimacy. But today's environment means excellence in one alone is not enough. Companies, and in turn their programme managers, need to be top of their game in all three – and they need to be able to deliver innovation and affordability in tandem.

We invited the senior executives we interviewed to identify the programme-management attributes they feel are most important in the current and future environment. They painted a picture of a different kind of programme-management mindset, in which partnership, internationalism, inclusivity and innovation are as much to the fore as really good "get it out of the door" programme management.

For example, 64% of the senior executives we interviewed stressed the importance of innovation as a source of competitive advantage when asked to identify the most important aspects of their programme delivery strategy. They also emphasised the importance of being able to deliver programmes in a way that is much more strongly integrated into the customer, market and supply chain forces that are shaping the sector.

The downturn in western defence markets and the continued internationalisation of the defence and commercial sectors have accelerated the trend to greater globalisation of supply chains. But as supply chains extend, so too does risk. More inclusive relationships across and down the supply chain can help manage these risks and ensure they are jointly identified and mitigated rather than debated and litigated. Such an intense and complex environment brings dangers. How can companies cut through this? Our discussions with senior executives, and our review of what they said, led us to identify the following things that companies need to make sure they get right:

Customers expect innovation to continue while costs fall or are capped

- Stay focused on your core: Identify and understand what you do best and make sure focus guides your key decisions. You must know what you do well, focus on that, and measure performance.
- Put an emphasis on co-creation and customer intimacy: Develop relations with your customers and suppliers that are really tight, so that requirements are exactly understood, developed together and put at the heart of programme design and execution.
- Get innovation and cost control working in tandem: The previous ability of customers to tolerate price drift no longer exists. Companies will need to deliver more capability at lower cost, becoming adept at combining cost reduction strategies with "innovation-ready" derivative platforms. ■

***For more information on the report, email Neil Hampson, global aerospace and defence leader, at neil.r.hampson@uk.pwc.com**

Read the full report at **flightglobal.com/PwCa&D**