

Climb-out continues

Aerospace's big hitters are prospering as revenues and profits maintain their upward trend. But while the top 20 all display sustained growth, performance at some smaller suppliers is more volatile

HELEN MASSY-BERESFORD / LONDON & GRAHAM WARWICK / WASHINGTON DC

Five years ago, the aerospace industry was at the peak of its latest cycle. A downturn was just around the corner, but no-one could predict the deep trough into which aviation would plunge after 9/11. Five years on, the industry is a picture of health and stability, according to *Flight International's* annual Aerospace Top 100 survey – compiled in association with PricewaterhouseCoopers.

Barring unforeseen events, the industry should stay on this upward trend – until at least 2008-9 if this is one of the industry's normal cycles. Revenues are continuing to grow and overall industry profit margins are heading back towards their peak of 2000. But while the prime contractors and their Tier 1 partners are solidly profitable, there are signs that not all of the Tier 2 and 3 suppliers are so successfully turning increased sales into higher earnings.

The volatility in profitability among the base of smaller suppliers on which aero-

space is built is a continuing concern that underlies the industry's otherwise impressive performance. Based on publicly available data for 2005, including company reports, this year's survey shows that sales increased by 8% and operating profits by around 17% for the Top 100 aerospace companies – largely driven by the growth in commercial aircraft deliveries by Airbus and Boeing.

That growth took total 2005 sales and profits for the Top 100 to \$443.5 billion and \$34.1 billion respectively. "The trend since 2003-4 has been significant revenue increases and even more significant profit increases – as you would expect from a capital goods industry returning to growth," says Neil Hampson, a partner at PricewaterhouseCoopers. "But it is still pretty healthy growth."

Overall growth in 2005 was slower than in 2004, when Top 100 revenues and profits increased 13% and 22% respectively, but that is to be expected, Hampson says.

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PROFILE CRANE AEROSPACE & ELECTRONICS

Looking east for expansion

Like many of its European counterparts, USA-based Crane Aerospace & Electronics recognises the importance of gaining a footprint in the Far East, both to take advantage of a lower cost environment and to make its mark in a key growth market for aerospace, writes Helen Massy-Beresford.

The company has opened a manufacturing plant in Taiwan to feed into its facility in Washington, and expansion is likely. "There's lots of capacity left in Taiwan," says chief executive Eric Fast.

Lower labour costs are the key factor making the region attractive, he says, adding: "We have to continue to drive down the costs because there's pressure on prices across the chain. In the long term it's healthy for the whole industry." But the insistence on being able to supply a high quality product, on time, must not be compromised by the need to seek out low cost economies, he adds.

Crane's aerospace business, its ranking in the Top 100 by revenue unchanged this year at 73, manufactures products ranging from microwave to fluid management systems, and from electrical power to landing systems.

The company's strategy is to focus on highly specialised areas of the

business. "We are typically number one, with a very large market share because we focus on niche markets," says Fast.

The company's stability comes in part from the spread of its customers across the civil and military sectors. The modification and upgrade side of the business is also gaining momentum, accounting for more than half of the company's aerospace sales this year.

The company, which posted sales of \$554 million last year, sets a lot of store on research and development, investing on average around 12-13% of its revenues, according to Fast. It has performed well in the margin ranking in this year's survey, claiming the number 36 spot.

"Boeing and Airbus put such a premium on the advanced state of the technology," Fast says, and the company's priorities are to "make sure the technology works, deliver on time – and do both first and then make money".

Parent company Crane is a diversified manufacturer, with a presence in other industry areas such as fluid handling, controls, engineered materials and merchandising systems, and is able to take advantage of crossover between the various market segments. For example, microelectronic technologies that are currently aimed at the medical sector could find application in defence programmes, Fast says.

Crane Aerospace & Electronics is made up of seven separate companies, with the wider Crane company made up of subsidiary businesses totalling over 100.

Recruiting young people into aerospace is one of the biggest hurdles to growth in the industry, says Fast. "The challenge to the whole industry is finding the engineers to do the work," he adds.

The company has several initiatives in place to promote aerospace engineering at local colleges and Fast believes Crane offers an attractive prospect for potential employees, with engineers working in different areas of the business able to share their skills and transfer between sectors.



"Last year [2004] there was more growth through acquisition. This year [2005] there is more organic growth," he says, adding: "The rate of revenue and profitability growth will inevitably decline as the industry gets larger."

With no major foreign exchange shifts and few major corporate changes in 2005 there is little movement in the Top 100 ranking by revenue this year, with the positions of nine out of the 10 highest placed players unchanged from last year's survey. As in previous years, the Top 20 companies account for around 80% of the total revenues and profits. Top 20 revenues have increased 54% over the five years 2000 to 2005, but the sales of this year's Top 20 have outpaced that growth, increasing by 59% over the same period, showing the effect of consolidation at the top of the table.

Boeing in pole position

In the revenue ranking, Boeing maintained its pole position and slightly extended its lead over European rival EADS in 2005, and the two companies continue to pull ahead of the pack as commercial aircraft sales accelerate while defence revenues stall. Boeing's revenues were up 5%, commercial aircraft returning to form with an 8% increase in sales after the 6% decrease suffered in 2004. At the same time, Boeing's defence growth slowed dramatically, from 11% in 2004 to just 1% last year, the company again showing the strength of its balanced business case.

Airbus doubled its sales growth to 12% in 2005, propelling EADS to 8% higher revenues. With delays to deliveries of the A380, the European giant is now projecting a 4.5% increase in revenues this year, to around \$44.5 billion. This will see EADS

Finding skilled engineers is a challenge for the whole industry, says Crane's Eric Fast





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lose ground against its US rival in next year's Top 100, with Boeing forecasting sales growth of 9.5-10.5% for this year, to \$60-60.5 billion, on higher airliner deliveries. Whatever the final figures, for the foreseeable future increased commercial aircraft revenues at Airbus and Boeing will be the engine driving Top 100 growth.

For the next five players in the Top 10, the expected slowing of US defence spending will be the main concern. Third-ranked Lockheed Martin saw revenues increase 5% in 2005, and is projecting 3.5-6.2% growth for this year, but fourth-placed Northrop Grumman expects sales to slip slightly this year after managing a 3% increase in 2005. After an 8% increase last year, sixth-ranked Raytheon is also forecasting flat revenues this year as the US defence budget comes under pressure.

The UK's BAE Systems saw sales increase 17% last year on its acquisition of US armoured vehicle manufacturer United Defense Industries (UDI), but it stayed firmly in fifth place. BAE's ranking next year will depend on whether it succeeds in divesting its 20% stake in Airbus to EADS, at what price, and what it does with the money. The UDI acquisition boosted BAE's US defence business, but acquisitions packing a similar punch are becoming harder to find.

General Dynamics is in a similar position, stabilised in seventh place after a rapid climb up the Top 100 propelled by acquisitions, its just-completed \$2.2 billion purchase of US information-technology services company Anteon unlikely to move the company up the aerospace rankings and few other large deals in prospect. That said, GD's healthy 11% revenue rise in 2005 was driven largely by strong organic growth in its aerospace business.

PROFILE DRS TECHNOLOGIES

Springboard into Europe

US-based DRS Technologies has grown significantly in its home market in recent years, climbing four places to 37 in the top 100, thanks to a \$431 million boost in aerospace revenues to \$1.74 billion in 2005, writes *Helen Massy-Beresford*.

But now the defence electronics specialist is increasingly looking abroad – its overseas business is “a footprint we'd like to expand on”, says president and chief executive Mark Newman. The latest step in its drive to increase overseas sales is the rebranding of its UK arm. The company plans to use DRS UK, formerly DRS Tactical Systems, as a “springboard” for other European markets. “The UK is a good place to start if we want to win business overseas,” he says. The company currently generates around 8% of its total revenues from overseas markets and plans to grow this to 20% within five years.

In the USA, DRS is paying more attention to commercial markets and is trying to move its military deployable flight-recorder technology into the commercial airliner market. “There has been some interest from the FAA, but no airframer has applied to get it certified,” says Newman, who does not rule out inclusion of the technology on commercial aircraft programmes as early as the Boeing 787. “We're starting to see the airline insurance industry put pressure on airlines for safety issues...it's about getting manufacturers and airlines attuned to this equipment.”

DRS is also focusing on service and support, following its \$1.97 billion acquisition of Engineered Support Systems (ESSI) in January. “We were always a company that made products but we never did a good job on support contracts because we didn't have to,” says Newman. “That all changed with the acquisition of ESSI.” The company now generates almost \$600 million a year from service and support contracts.

Newman sees the DRS as a company that has “significant technologies and products to offer as a prime contractor to the Department of Defense and as a significant supplier to the primes too”. Homeland security, intelligence and unmanned air vehicles are other areas in which DRS is poised for growth, he says, and DRS could expand its \$500 million infrared sensor business further both by organic growth and acquisition. “Over time it could be a billion dollar business: it's a growth area for the future,” says Newman.

The company wants to grow both organically and, eventually, through acquisitions. Newman says the company can be strengthened both through R&D investment and by adding technologies and capabilities from other companies. But there is no rush for more purchases. “This last acquisition was a large one. We decided to step back a bit for the next year or so and integrate this one,” Newman says, adding that DRS is unlikely to make more acquisitions before the second half of next year.

DRS's Mark Newman: “The UK is a good place to start if we want to win business overseas”



COMMERCIAL AIRCRAFT

Rank	Company	Division (owner)	Sales (\$m)	
			2005	2004
1	Airbus	(80% EADS, 20% BAE Systems)	27,275	25,159
2	Boeing	Commercial Airplanes	22,651	21,037
3	Bombardier	Aerospace	8,087	7,944
4	Embraer		3,805	3,441
5	Cessna	(Textron)	3,480	2,473
6	Gulfstream	(General Dynamics)	3,433	3,012
7	Raytheon	Aircraft	2,856	2,421
8	Dassault Aviation	Falcon	2,052	2,632
9	ATR	(50% EADS, 50% Finmeccanica)	542	469

DEFENCE AEROSPACE

Rank	Company	Division	Sales (\$m)	
			2005	2004
1	Lockheed Martin	Excluding Government Systems and Space	26,383	28,634
2	Boeing	Integrated Defence Systems excluding Space	24,633	27,361
3	Northrop Grumman	Excluding Ship Systems and Space	21,550	20,756
4	BAE Systems	Excluding Commercial Aircraft and Land Systems	20,515	15,765
5	Raytheon	Excluding Commercial Aircraft and Space	16,406	14,933
6	EADS	Excluding Commercial Aircraft and Space	11,883	11,189
7	General Dynamics	IS&T	7,826	4,978
8	Finmeccanica	62% Aeronautics, 85% Helicopters, 74% Electronics, 7% Space	6,903	5,555
9	L-3 Communications	US DoD sales only (69% of total)	6,516	5,063
10	United Technologies	90% Flight Systems (Sikorsky and Hamilton Standard)	6,466	10,700
11	Honeywell	Estimated 35% of revenues	3,674	4,136
12	Thales	Air Systems + 50% Aerospace	3,471	8,471
13	Israel Aircraft Industries		2,340	1,870
14	Dassault Aviation	Defence	2,209	1,816
15	Textron	Bell Helicopter military	1,873	1,601

Source: PricewaterhouseCoopers analysis from company reports

ENGINES (CIVIL AND MILITARY)

Rank	Company	Division	Sales (\$m)	
			2005	2004
1	General Electric	Aircraft Engines	11,904	10,700
2	United Technologies	Pratt & Whitney	9,295	7,505
3	Rolls-Royce	Civil Aerospace and Defence	8,952	6,686
5	Safran*	Snecma Propulsion (Air & Space)	5,585	5,364
4	Honeywell International Aerospace (estimates)		4,724	3,966
6	MTU Aero Engines		2,670	2,147
7	IHI	Aero-Engines & Space Operations	2,402	2,082
8	Avio		1,592	1,412
9	Volvo Aero		1,009	993
10	ITP		469	412

Source: PricewaterhouseCoopers analysis from company reports

*From 2005 pro forma financial statements

SPACE (SATELLITES, LAUNCHERS AND SYSTEMS)

Rank	Company	Division	Sales (\$m)	
			2005	2004
1	Lockheed Martin	Space Systems	6,820	6,021
2	Boeing	50% of IDS Network & Space	6,158	2,969
3	Northrop Grumman	Space Technology	3,345	2,775
4	EADS	Space	3,341	2,739
5	Alcatel	Estimate	3,107	3,881
6	Finmeccanica	Space	914	867
7	Orbital Sciences	Launch Vehicles and Satellites	684	589
8	Loral Space & Comm's	Includes Satellite Services	430	770

Source: PricewaterhouseCoopers analysis from company reports

United Technologies outpaced rival General Electric in 2005, 12% sales growth across its Pratt & Whitney engines, Hamilton Sundstrand systems and Sikorsky helicopters businesses keeping the company firmly in eighth place and ahead of GE Aircraft Engines with its 7% revenue increase.

The one new Top 10 entrant is Italy's Finmeccanica, which saw revenues rise 24% with the full consolidation of AgustaWestland lifting helicopter sales 71% and the acquisition of BAE Systems' assets boosting defence electronics revenues 53%. The company is forecasting sales growth of 10-13% for this year across its aerospace and non-aerospace businesses. Whether this will be enough to keep the Italian giant in the Top 10 remains to be seen.

L-3 Communications, sitting at number 13 and poised to enter the Top 10 after a meteoric rise up the ranking fuelled by a multitude of acquisitions, may be taking its foot off the growth pedal after completing last year's \$2.65 billion acquisition with US government information-systems specialist Titan.

This has taken L-3 to \$12 billion-plus in sales, and could propel it into next year's Top 10, but meanwhile the company is focusing more on organic growth and smaller acquisitions.

Revenue risers

Finmeccanica and L-3 are among the companies making the Top 10 growth ranking this year (see table P42), the US firm at number three with an almost 37% increase in sales and the Italian giant at eight with almost 30%. But top ranking for the fastest growing aerospace company goes to French aerostructures manufacturer Latécoère, which managed an almost 150% increase in revenues. As with composites supplier Hexcel (46%) and systems supplier Liebherr (34%), the growth was mainly driven by Airbus and Boeing work, says Hampson. US company Textron (35% growth), meanwhile, experienced substantial civil and military sales increases at its Bell Helicopter and Cessna Aircraft businesses.

Latécoère, which like Liebherr has been actively taking risk-sharing stakes in aircraft programmes, is one of the companies further down the Top 100 that made a significant move up the ranking this year, climbing from 87 to 82. Others include US firms DRS Technologies (41 to 37) and Esterline (65 to 53), both seeing 14% sales growth; and Japan's Fuji Heavy Industries (74 to 57 on 8% growth), another active risk-sharer.

THE TOP 10 PERFORMERS, MEASURED BY MARGIN

Rank by margin 2005	Rank by margin 2004	Rank by sales	Company	Sales (2005) \$m	Profit (2005) \$	Operating margin (2005)	Operating margin (2004)
1	95	86	K&F Industries	384	104	27.1%	-3.4%
2	8	101	Heico	177	45	25.6%	15.3%
3	1	95	Ericsson	268	58	21.8%	20.2%
4	2	83	Amphenol	434	82	19.0%	18.1%
5	5	43	Hindustan Aeronautics	1,218	227	18.6%	16.7%
6	6	24	Rockwell Collins	3,445	624	18.1%	16.5%
7	3	48	Meggitt	991	164	16.6%	17.2%
8	97	77	Britax	478	77	16.1%	-10.8%
9	4	36	Cobham	1,764	278	15.8%	17.1%
10	9	31	Precision Castparts	2,488	391	15.7%	14.4%

Source: PricewaterhouseCoopers analysis from company reports

However, for every up there is a down, and companies dropping down the Top 100 table this year include Thales, slipping from number 10 to number 12 on flat sales. Bombardier continued its slide down the table, dropping from 15 to 16 as it eked out a 1% increase in aerospace revenues – a 52% rise in business jet sales just barely managing to offset a 17% decline in regional aircraft revenues as the 50-seat jet market evaporated.

France's Safran, created in May last year by the unlikely merger of communications company Sagem and engine manufacturer Snecma, makes its first appearance in the

THE TOP 10 PERFORMERS, MEASURED BY GROWTH

Rank by growth %	Rank by growth \$	Rank by sales	Company	Sales 2005 \$m	Sales 2004 \$m	Growth %	Growth \$
1	26	82	Latécoère	441	178	147.9%	263
2	28	59	Hexcel	738	505	46.1%	233
3	4	13	L-3 Communications	9,444	6,898	36.9%	2,546
4	9	17	Textron	6,361	4,727	34.6%	1,634
5	31	54	Liebherr	823	613	34.3%	210
6	38	78	Magellan Aerospace	469	355	32%	114
7	23	38	Zodiac	1,711	1,309	30.7%	402
8	3	10	Finmeccanica	11,491	8,861	29.7%	2,630
9	40	79	ITP	469	363	29.1%	106
10	30	49	Ruag	959	747	28.2%	211

Source: PricewaterhouseCoopers analysis from company reports



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PROFILE EDO

Big spender eyes UAV market

US-based EDO has grown substantially through acquisitions, racking up three purchases in 2005, and shows no sign of stopping, writes *Helen Massy-Beresford*. EDO, which specialises in armament carriage and release systems, communication and countermeasures, composite structures and engineering services, has moved up three places this year in the top 100 ranking by revenue, to number 67, after posting 2005 revenues of \$648 million compared with \$536 million a year earlier.

Unsurprisingly, the company scores highly when it comes to growth, securing its place as the 29th fastest-growing company in the survey.

The company has cash set aside for further expansion, says chief executive James Smith. Command, control, communications and computers and the intelligence sector are areas of focus, and that leaves it with a firm eye on the US market, but Smith does not rule out acquisitions in other areas.

One of the purchases the company made last year was in the composites domain and is designed to give it further inroads into the potentially lucrative unmanned air vehicle market. Fiber Innovation has the ability to make "very complex shapes, very efficiently, quickly and inexpensively", says EDO, adding the company gives it important access to the rapidly expanding UAV market, where there is increasing demand

for this kind of work. "We anticipate that we will make more acquisitions in 2006," says Smith.

Opportunities in the communications sector are primarily focused on the USA. "We don't see applicability outside the USA at this time but, if we did, the first door we would knock on would be the UK's," he adds.

EDO has also recently agreed to acquire engineering services and weapons-systems analysis company CAS and intelligence specialist Impact Science & Technology, both of which are expected to add to the company's earnings in the second half of 2006.

Smith is confident of the company's prospects for the remainder of the year, despite a slip in deliveries in the first quarter. "Quarter 1 is always light – the fact that milestones have slipped means it is lighter than light," he says.

Revenues slipped again in the second quarter, to \$152.4 million, compared with \$156.1 million in the same quarter last year, but profits edged up 3% to \$6.3 million. The forecast for 2006 as a whole is for 5-7% growth over 2005 to revenues of \$680-695 million. The company is predicting 8-10% organic revenue growth for next year.

As in previous years, a significant chunk of those revenues will be ploughed back into research and development projects. "R&D is our lifeblood. We spend a fair amount of our discretionary funds on R&D," Smith says. "A number of the technologies we've invested in have become big programmes with good returns," he says.

A company-wide R&D committee annually reviews areas that are worthy of funding. In situations where there could be overlaps with other companies, EDO prefers to team up. It has recently won a contract with Denmark's Terma to supply ejector racks to the Danish air force.

The company is also keen to focus on technology which is exclusive. "We don't invest discretionary money to be like someone else – we make sure we don't do too many 'me toos'," says Smith, adding: "For good or for bad, the company is run by engineers so there's always going to be plenty of R&D budget."

Top 100 at number 15, in part because the company's consolidated financial statements for 2005 include only nine months of Snecma's revenues. Using pro forma statements intended to reflect the group's financial performance would rank Safran at number 12, with aerospace revenues of \$10.2 billion, up 7% from 2004.

Others moving down include the UK's GKN (28 to 45 following the sale of its AgustaWestland stake to Finmeccanica), South Africa's Denel (57 to 70 on lower contract volume) and Loral Space & Communications (59 to 81 after emerging from bankruptcy as a smaller company focused on satellite manufacturing).

Other than these relatively small moves, the table is predominantly stable and likely to stay that way. Hampson does not expect any further major consolidations, because the easier-to-achieve domestic deals have all been done. "From now on they are going to be international, and that means they are going to be political," he says. Instead, a lot of smaller deals are expected as the bigger companies sell non-core business and buy to fill niches. "We will see a lot of cleaning up of portfolios and a lot of investment in homeland security and information systems," Hampson says.

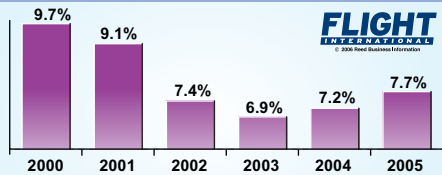
Further down the table, the many smaller Tier 2 and 3 suppliers are ripe for consolidation – something the primes and Tier 1s want, Hampson says. This is also the sector of the industry where financial performance is much more variable, and where potential trouble lies when aerospace enters its next downturn. The greater variability in financial perform-

EDO has cash set aside for further growth, says chief executive James Smith



MARK WAGNER/AVIATION-IMAGES.COM

AVERAGE OPERATING MARGIN OF TOP 100



Source: PricewaterhouseCoopers

ance among the smaller suppliers is reflected not only in the wide range of rankings by revenue but, in particular, in the wider spread of their operating margins both between suppliers and from year to year (see graph).

Tier 1, 2 and 3 players performed well in the 2005 Top 100 survey as the trend towards risk- and revenue-sharing partnerships pushed value down the supply chain. This year's survey shows that they have again achieved good results when it comes to operating margins as they continue to take on more responsibility for designing, developing and supporting their products and more complex roles in programmes. Their performance is anything but consistent, however.

Risk elements

While the possibility of earning significantly higher revenues than available under straightforward supplier-customer contracts is attractive, the risk element of risk and revenue sharing should not be underestimated, as it leads to greater variability in margins among players who take this approach to the business. "Lower down the supply chain is a much more volatile sector of the market to be in," Hampson says.

"The primes used to be much more volatile," he adds. "But they learned their lessons from the most recent downturn, and now make sure they are well hedged where possible across different sectors of the industry such as the defence and civil markets, and across different areas of the business like original equipment manufacture and aftermarket support."

As lead systems integrators passing risk and financial volatility down the supply chain, the primes are "doing a very good job of sustaining constant margins", Hampson says. "The systems integration role of the primes allows them to manage their return better than a supplier." On the flip side, while the primes' margin variability may have reduced significantly, they have paid for this stability with a more modest increase in margins.

There are higher margins to be made among the lower tier players, if they are

PROFILE HINDUSTAN AERONAUTICS

HAL looks to collaboration

Aviation growth may be a new phenomenon in India, but the country's major aircraft manufacturer, Hindustan Aeronautics (HAL), can trace its roots back beyond its formation in 1962 to 1940 and the original Hindustan Aircraft, writes *Helen Massy-Beresford*.

Today HAL focuses on the defence, coastguard and border control sectors with key products including the Dhruv advanced light helicopter, Tejas light combat aircraft and Sitara intermediate jet trainer.

Moving up one place to number 43 in this year's Top 100 ranking by revenue, and with an improved operating margin of 18.6%, allowing HAL to claim the number five slot in the ranking by operating margin, the company is poised for future success, says chairman Ashok Baweja, and is actively addressing future markets through ambitious projects in key growth areas. HAL's revenues grew from \$1 billion to \$1.2 billion in 2005 and the company posted an order book worth \$4.5 billion as of March last year.

HAL is hoping to break into the unmanned air vehicle market, targeting naval applications in particular, by taking an existing platform, adapting it for automatic take-off and landing and adding some systems to create a 2.5-3t vehicle that would support the Indian navy. "We're looking for a suitable partner," says Baweja.

Meanwhile, the manufacturer is making progress on its most important existing projects – Baweja expects 50 more deliveries to the Indian armed forces this year and 40 next year for the Dhruv, to add to the current total of 72. And he insists progress is being made on the long-awaited Tejas.

"The programme is starting to gain momentum," Baweja says. He adds that with two more prototypes being added this year, and three next year, HAL should have a total of eight to nine machines by the end of 2007. "We're starting to expand the flight envelope. The certification must be done by 2008 so that we can comply with contracted deliveries in 2009.

We've restructured the whole process of managing the programme – now

the focus is shifting to production and we're pushing the programme forward."

A large part of HAL's business is producing aircraft under licence. Baweja predicts that the first Indian-produced BAE Systems Hawk will be delivered in March 2008. International co-operation is important in HAL's strategy: it has three overseas joint ventures in place – BAeHAL Software with BAE Systems, Indo-Russian Aviation (IRAL) and Snecma HAL Aerospace.

Baweja is confident about prospects for the 60t multirole transport aircraft the manufacturer is developing through its Russian partnership. "The issue is that both companies must have an adequate commitment. We have interacted with the Russians for years. All the homework has now been done – hopefully we should be able to make an announcement in the next few months," he says. HAL sees a market for 45 of the aircraft in Russia, as well as a further 100 in India.

Further international partnerships are on the cards for the Bangalore-based manufacturer, which posted an order backlog of \$4.5 billion as of March last year.

In particular the company is looking to team up with another manufacturer to develop a 10t multirole helicopter. Several potential partners – including AgustaWestland, Eurocopter, Kazan and Sikorsky – are being considered and, while a decision has not yet been taken he says: "We have to look for an optimum partner and Eurocopter is certainly very much there."

And Baweja believes that his company has more international collaboration to look forward to: "Because of changes in the world India and the USA are looking forward to a very positive interaction."

India is a new growth market for the aerospace industry, and a crucial target for many Western manufacturers. From his position at the helm of one of the country's key players, Baweja is confident about the future of his company.

"There's a nice feeling that the aviation sector is overflowing," he says.

PROFILE K&F INDUSTRIES

Aftermarket business puts no brake on profit growth

US-based wheel and brake manufacturer K&F Industries is a prime example of a company thriving on its aftermarket business, writes Helen Massy-Beresford. Many of the companies ranked highest by profitability are to be found in mechanical aftermarket-rich sectors of the business, and this year K&F has found its way to the top of the table.

The company is a major player in two key markets for the wheel and braking systems that make up

the bulk of its business – business aircraft and regional jets. Present on all Bombardier regional jets, K&F's Aircraft Braking Systems (ABSC) subsidiary has also secured a place on Embraer's large regional jets. "The regional jet market is the most attractive for wheel and brake suppliers because of the frequency of landings," says chief executive Ken Schwartz.

Another key market will be very light jets and K&F has already won

significant contracts, with ABSC chosen to supply wheels, brakes and control system for Embraer's Phenom 100. "Our strategy is to expand further into that area," says Schwartz. "We will be a leading player – not the only player."

The company's tight focus also contributes to its success. Schwartz says the company is focused on the wheels and brakes business of ABSC, while the Engineered Fabrics division, which makes fuel tanks and de-icing equipment, accounts for less than 10% of revenues. ABSC earns the most of its revenue from the civil market, while the reverse is true for the smaller business segment.

Across the company, still in 86th place after posting sales of \$384 million in 2005, Schwartz says: "We do not have multiple positions on the aircraft. We focus on the high-cycle jets. That's the strategy we've been implementing for 10-12 years." With a presence on all of the Canadian manufacturer's

regional aircraft, "if Bombardier were to launch a new programme we would be well positioned to aggressively push to be a supplier", he says.

Although it may not account for a large proportion of K&F's total revenues, high levels of US military spending are bolstering the company's profits. A shift in focus from procurement to supporting and upgrading existing systems will "play into K&F's hands", Schwartz says.

While the company has benefited from the growth in business aviation in recent years, indications that this sector could have peaked are doing nothing to dampen Schwartz's confidence. The company's "extremely oversubscribed" initial public offering a year ago demonstrated the financial community's confidence in K&F, he says. "The markets were very supportive – it reaffirmed the strength of our business model."



K&F's Ken Schwartz believes very light jets will be a key market

PROFILE PARKER AEROSPACE

All eyes on narrowbody airliner family replacements

Parker Aerospace is one cog in a much larger machine – parent company Parker Hannifin. The aerospace division manufactures components and develops systems across all aerospace sectors and has grown significantly in recent years, writes Helen Massy-Beresford.



Parker is both supplier and partner to the primes, says Mark Czaja

Mark Czaja, Parker Aerospace vice-president technology and innovation, says the company's approach is to be both supplier and partner to the primes. Regional aircraft is an important market for the company and Parker has positions on the Russian Superjet 100 and Chinese ARJ21 programmes. "We still see growth in that sector, though we won't experience the same levels as in previous years," he says.

Parker, which climbed two places to 41 in this year's Top 100 ranking, sees the potential replacements for the Airbus A320 and Boeing 737 narrowbody airliner families as highly significant for the coming years. "That will be the most relevant change in the market because of the size of the market. It's something everyone in the industry is playing very close attention to," Czaja says.

The company is also present on many of the unmanned air vehicle

programmes in development. "That sector hasn't seen the sales volume, but it could be the case in the years to come," says Czaja.

Increased use of composites has changed the way Parker approaches its products. "Because of the technological requirements of the parts and systems, the installation is different to aluminium and steel airframes," Czaja says. While Parker will gradually increase the use of composites in its own products, "the biggest influence will be how our products need to function in airframe systems with increased composites".

Research and development investment is key, according to Czaja. "We try to stay closely aligned with our customers at a group and at a division level. We work collaboratively to meet R&D investment needs," he says. "We get together on a quarterly basis to share information and work on

technologies that benefit each of the divisions and deploy them." This involves collaboration on R&D investment at group level between the aerospace and other industry sectors of the business.

Parker Hannifin "has a long tradition of acquisition and organic growth", says Czaja. The aerospace division's 10% growth over the last two years has been divided between organic and external expansion. "We will continue to look at acquisitions. Most of the divisions have done, and will continue to do, a lot of acquisitions," he says.

"In the past years most of the focus has been on domestic acquisitions," Czaja says, but he expects the company to "really open doors for acquisitions overseas". Parker already has a presence in Brazil and sees growth potential in India and China. "We have become a global company," says Czaja.

willing to take on the significant risks that the primes are pushing down the supply chain towards them. There is much greater variability in the ranking by operating margin in this year's survey than in the main ranking by revenue table. While some of the same players appear year after year in the top 10 by margin – eight of this year's top 10 were included last year – others show a more erratic performance.

The average operating margin in this year's survey is 7.7% across the Top 100 companies but, for those appearing in the top 10, operating margins range from tenth-placed Precision Castpart's 15.7% to top-ranked K&F Industries' 27.1%. The highest-margin companies have certain common factors beyond the high-risk versus high reward tier of the industry that most of them occupy.

A strong presence in the aftermarket is a good indicator that a company will do well in the current market when it comes to operating margins. K&F Industries (*see profile p44*), which posted the highest score in the survey and also performed well last year, claiming second place, earns over 90% of its revenues in the aftermarket.

Tier 3 diversification

Lower-tier players generally have much more exposure to individual programmes, making their position in whatever sector of the market they inhabit more precarious. Hand in hand goes the issue of diversification across several industries. Tier 3 players will often tend to be present in a range of different industries, with their aerospace business accounting for only a proportion of their total workload.

Along with K&F, other high-margin businesses with a significant proportion of aftermarket business, particularly in the mechanical sector, include Heico in second place and Meggitt at seventh. These are also companies that operate in "consumable, low unit-cost areas" of the industry such as brakes and blades, says Hampson.

Another company from the same market segment, Precision Castparts, boosted its Top 100 ranking by revenue from 34 to 31 this year. The company should see a bigger jump next year as the impact of its acquisition of Special Metals filters through. In the meantime it has retained a place in the top 10 by margin, with a score of 15.7%.

Heico, which supplies replacement parts for aircraft and engines, is another example of a company with a strong mechanical aftermarket presence, coming in at number two with a margin of 25.6%, a leap up from the previous year's 15.3%. But as its revenues fell in 2005 to

TOP 100 LISTED BY COMPANY

Company	Ranking		Company	Ranking	
	2006	(2005)		2006	(2005)
Aeroflex	80	(101)	Kaman	91	(92)
Alcatel	19	(17)	Kawasaki Heavy Industries (KHI)	35	(36)
Alcoa	29	(31)	K&F Industries	86	(86)
Alliant Techsystems (ATK)	26	(26)	Kongsberg	84	(80)
Amphenol	83	(83)	Korea Aerospace Industries (KAI)	65	(67)
Avio	40	(38)	L-3 Communications	13	(16)
BAE Systems	5	(5)	Latécoère	82	(87)
Ball	61	(61)	Liebherr	54	(52)
BBA Group	39	(40)	LISI	89	(90)
B/E Aerospace	52	(54)	Lockheed Martin	3	(3)
Boeing	1	(1)	Loral Space & Communications	81	(59)
Bombardier	16	(15)	Lord	72	(71)
Britax	77	(84)	Magellan Aerospace	78	(77)
CAE	50	(50)	Martin Baker	100	(99)
Chemring	98	(94)	Matsushita Electrical Industries	66	(66)
Circor	96	(96)	Meggitt	48	(53)
Cobham	36	(37)	Moog	71	(72)
Crane	73	(73)	Mitsubishi Heavy Industries (MHI)	21	(22)
Curtiss-Wright	64	(69)	MTU Aero Engines	30	(30)
Dassault Aviation	20	(20)	Northrop Grumman	4	(4)
DeCrane	94	(97)	Orbital Sciences (OSC)	60	(56)
Denel	70	(57)	Parker Hannifin	41	(43)
Doncasters	93	(93)	Pilatus	87	(82)
DRS Technologies	37	(41)	Precision Castparts (PCC)	31	(34)
Ducommun	97	(95)	Raytheon	6	(6)
EADS	2	(2)	Rockwell Collins	24	(25)
Eaton	25	(24)	Rolls-Royce	14	(14)
EDO	67	(70)	Ruag	49	(46)
Elbit Systems	46	(47)	Saab	28	(27)
Embraer	23	(21)	Safran (merged Snecma/Sagem)	15	(11)
Ericsson	95	(62)	Senior	92	(91)
Esterline	53	(65)	Sequa	51	(49)
Finmeccanica	10	(13)	Singapore Technologies Engineering	58	(58)
Fuji Heavy Industries (FHI)	57	(74)	Smiths Group	27	(29)
Gamesa (now Aernnova)	85	(81)	Sonaca	88	(88)
Garmin	99	(102)	Standard Aero	56	(51)
GenCorp	69	(75)	Stork	62	(63)
General Dynamics (GD)	7	(7)	Teledyne Technologies	44	(45)
General Electric	9	(9)	Teleflex	75	(78)
GKN	45	(28)	Textron	17	(18)
Goodrich	18	(19)	Thales	12	(10)
Harris	33	(35)	Triumph Group	55	(55)
Hexcel	59	(60)	Ultra Electronics	68	(68)
Hindustan Aeronautics (HAL)	43	(44)	Umeco	74	(79)
Honeywell International	11	(12)	United Industrial	76	(85)
Indra	63	(64)	United Technologies (UTC)	8	(8)
Ishikawajima-Harima (IHI)	32	(33)	Volvo	47	(48)
Israel Aircraft Industries (IAI)	34	(32)	Vought Aircraft Industries	42	(42)
ITP	79	(76)	Woodward Governor	90	(89)
ITT Industries	22	(23)	Zodiac	38	(39)

\$177 million – from \$216 million in 2004 – the company narrowly missed out on a place in the Top 100 by revenue, coming in at number 101. UK-based Meggitt fell four places in this year's operating margin ranking to number seven, with 16.6% compared with 17.2% last year. But the company fared better in the main Top 100 ranking, climbing five places to 48.

Primes are well aware of the importance of the aftermarket sector in improving profitability. UK-based Rolls-Royce, which earns more than half its revenues from the aftermarket, posted margins of 13.3%, almost double last year's figure of 7%. Recent developments including the launch of Boeing's GoldCare programme – which will allow the manufacturer to

COMMENTARY SIMON YOUNG & NEIL HAMPSON

Unlocking the value from aerospace manufacturing

Shareholders have reason to be pleased with the recent profit performance of many of the lower tier Top 100 aerospace and defence suppliers. Shrewd acquisitions and market positioning have helped companies such as the UK's Meggitt and DRS of the USA outpace the industry average. These strategies have seen them focus on high-margin sectors, where a technology niche is coupled with long-standing equipment supply contracts, often with a high aftermarket content.

However, for several Tier 2 and Tier 3 supply chain companies there could be some bitter medicine still to swallow. Defence spending has peaked and lucrative re-supply contracts are thin on the ground as ageing platforms are withdrawn. Additional cost pressures as a result of more streamlined contracting processes are stretching the time over which companies would traditionally expect a return on investment. All this means that suppliers at this level are having to look more carefully at their cost bases across group structures in order to keep margins at a level shareholders have become used to.

In manufacturing terms, most forward-thinking Tier 2 and Tier 3 suppliers have followed the example of the big primes and begun implementing "lean" processes to cut waste and improve productivity. They will also have reduced the amount of working capital they have tied up, by implementing better inventory management and more mature relationships with their customers and suppliers, and may have outsourced some manufacturing to low-cost regions.

However, these actions alone are no longer enough. The challenge for the more visionary chief executives is often unlocking additional synergies and value from "decentralised governance" company structures that have encouraged the formation of silo mentalities in divisions and business units. This has seen the emergence of new forms of

corporate organisation with a beefed-up role for head office in IT, strategy, human resources and, most importantly, purchasing. Some, such as Crane Aerospace & Electronics, have centralised most functional organisations and processes, but for others too much of a shift to the centre is seen as disruptive to an often rapidly changing organisation.

The question is: 'How can we unlock additional value from the business without significant organisational upheaval – at least in the short-term?' The answer lies in two areas of purchasing: materials and commodities that support the manufacturing process; and indirect services.

Opportunities involve varying degrees of complexity, resources and payback. That may mean finding a catalyst that can deliver savings, without encroaching on an organisation's structure, and operate 'under the radar' from more mainstream direct purchasing, where resistance from divisional and business unit heads can be expected. In indirect services and manufacturing support, this can range from IT, healthcare and travel, through to industrial gases, consumable tooling, freight and logistics.

Companies are finding that where significant numbers of business units are involved and

there is little central purchasing in place, savings from combined spending can be as much as 10%. This sort of result can be achieved with little impact on current structures apart from minor central coordination or investment in resources. And it may break down barriers to more group-wide cooperation. To many, the next step will be exploring where group synergies can be achieved in the more protected areas of direct manufacturing purchasing.

Aerospace companies tend to have complicated – and often unique – direct purchasing processes, developed to deal with the complexities of the supply chain. These include: the location of manufacturing plants and key trusted suppliers, manufacturing lead times and national export restrictions. At first glance, the prizes to be had from harmonising purchasing across business units look compelling. But achieving these in a complex manufacturing environment is far from easy.

Nevertheless, there is massive global spending on materials – metals, optics, composites and rubber – machining or casting and electronic components. Savings can really matter to business results in the short to medium term. Where customers and markets allow, evidence from aerospace, defence and automotive sectors

suggests that rationalisation of nationally-sourced machining or electronic components could bring savings of 5-15% in the shorter term. Also, in the longer period, low-cost sourcing initiatives in eastern Europe and Asia could reap savings as great as 50% on complex castings and machining, taking into account ancillary costs. It is anticipated that manufacturing costs will remain competitive in Asia until at least 2020.

For lower-tier manufacturers striving to keep or boost profitability, these changes are prompting new thinking about business models that have, until now, proved successful. These companies are having to explore with renewed vigour the value that can be extracted from their cost bases. In the long term, this will involve central and functional rationalisation. But to improve business performance in the short term – without major organisational design and change management – it is purchasing, starting with indirect and then migrating to direct spending, that will be the focus in the next few years.

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keep tight control over the maintenance, repair and overhaul of the new 787 – demonstrate the growing importance of aftermarket sales, and perhaps give an indication of the new approach of aircraft manufacturers to the aftermarket sector.

Elsewhere, companies with a strong presence in the electronics sector did well in margin terms, including US-based avionics and communications specialist Rockwell Collins, ranked number six; fourth-placed Amphenol, a US manufacturer of electronic connectors; and UK-based Ultra Electronics, which just missed out on a top 10 ranking, with the 11th-highest operating margin.

US growth sectors

Like Collins, Ultra is benefiting from high growth in the US defence electronics and information-technology sectors, and its operating margin was up from 13.8% last year to 14.9%, although its position in the Top 100 revenue rankings was unchanged at 68. UK-based Cobham also benefited from a US defence footprint: its 15.8% operating margin placing it ninth.

It is not simply the sector in which an aerospace company operates that determines how healthy its margins will be. Much is dependent on its position within the supply chain. US-based Vought Aircraft Industries, which has taken on a key role – and substantial risk as a systems integrator for its major customer Boeing – is placed at number 95 in this year's ranking by margin, compared with its much higher position of 42 when measured on revenue.

Vought announced in April it would cut between 15% and 20% of its non-touch labour force as part of “aggressive steps to

PROFILE UMECO

Composite capacity growth

UK-based components and logistics specialist Umeco has gone through some major changes since chief executive Clive Snowdon joined in 1997, writes Helen Massy-Beresford. Turnover grew from £10 million (\$18.7 million) to £90 million between 1997 and 1999 and, announcing full-year results in June, Snowdon described the 21% increase in revenues to £293 million as “excellent”.

Umeco has built itself up through strategic acquisitions, focusing on the three key areas of its core business: components, composites and repair and overhaul.

Now the company is strengthening its business both at home and abroad. In the UK, it is in the process of expanding the Derby facilities it needs to service major contracts with Goodrich and Rolls-Royce, which “is growing hugely at the moment”, Snowdon says.

The company's ranking by margin has slipped from 64 last year to 71 in the latest scoreboard, but in the main Top 100 ranking by revenue, Umeco has climbed from 79 to 74.

The company has begun to focus on just-in-time parts distribution, and it is through this branch of its business that Umeco is aiming its services at a rapidly growing aerospace market in China.

Snowdon:
planning
further
growth
through
acquisitions

The company hopes to win business from Chinese and Western customers located in the same business park as its base in Xian, which covers the chemicals and components sides of the business. “We're pretty close to our first sizeable contract,” says Snowdon, who hopes the Chinese facility will provide between £500,000 and £1 million in sales in the first year of operation, growing to a £5-10 million over five years. Umeco should be able to fulfil the role of “corner shop” for the other businesses that will occupy the site, Snowdon says.

The Middle East is also firmly in the company's sights. “In a 10- to 20-year view there will be more aircraft made and sold into Middle East and Far East than anywhere else,” Snowdon says, adding: “The Indian market is opening up very quickly now.”

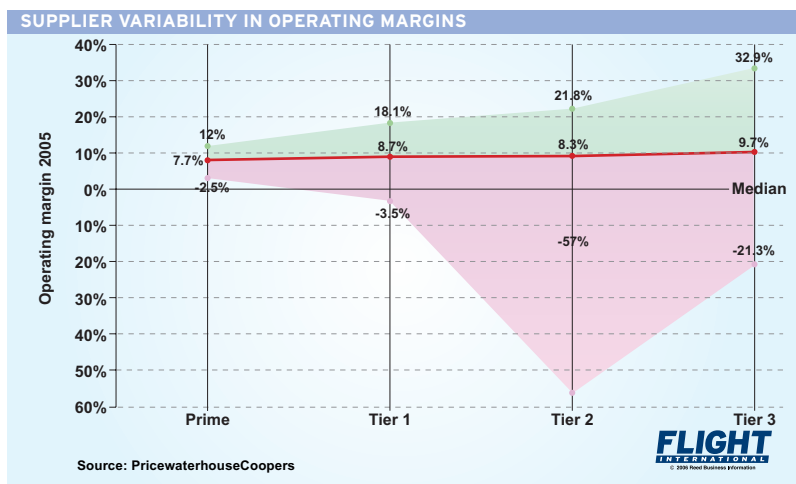
In the lucrative and growing composites sector, the opening of a new facility in September will increase the company's capacity by half. “We're working close to capacity now. Given that composites will continue to develop we need that capacity now,” Snowdon says.

Following recent purchases in the composites and chemicals sectors, Snowdon confirms Umeco is planning further growth through acquisition. “We have a good acquisition pipeline,” he says. Next on the horizon is a small company based in the USA and operating in the composites field.

The recent signing of a three-year contract with Virgin Atlantic Airways for the supply of chemicals should lead to further business in the future with the airline and with other customers, says Snowdon. “As Virgin expands its fleet we hope they will expand their purchases,” he says, adding: “a prestige customer like Virgin always has a halo effect.”

Around two-thirds of the proceeds of the company's recent rights issue are to be used to fund the purchase, and Snowdon is keen to complete the deal by the end of the year to reassure investors growing impatient at the slow speed of the acquisition process. Once complete, the purchase should give Umeco access to a range of composite materials it currently lacks, says Snowdon.





improve our operating results" by reducing costs and improving cashflow. The company's results for the first quarter of 2006 showed an almost 10% increase in sales to \$323 million, but a slightly greater net loss of \$52 million, in part because of its heavy investment in the 787 programme.

There are other factors at play to explain the wide variations in margins. Smaller companies that still make the Top 100 (which ranges from Martin-Baker with \$209 million in sales to Boeing with \$55 billion) simply have less purchasing power than their larger counterparts, leaving them unable to take advantage of savings and efficiencies the larger players enjoy. "Lower tiers are just not as sophisticated in procurement," says Hampson.

When it comes to ramping up production to meet demands for increased production rates as the upswing in the industry continues, many smaller suppliers are reluctant to commit to the investment required. And as lower-tier suppliers struggle for visibility in a highly cyclical industry, this causes problems for the primes as they try to convince their suppliers to make the necessary investments to boost production and ensure they can meet their own customers' demands.

"Taking a bet on someone who's two stages removed from you in the supply chain necessarily makes you nervous," says Hampson, explaining the lower-tier suppliers' reluctance to invest. While it is easier to convince companies to invest in areas where there is not enough capacity, such as electronics, other manufacturers had their fingers burned when production was scaled back during the last downturn. "The headache for the primes is getting people to scale the business up," he says, adding: "Four to five years ago they were getting them to scale down."

The primes in general are well hedged and secure in the knowledge they can pass risk down the supply chain. Large prime contractors have learned the hard way they must balance their portfolios, spreading their order backlogs across the civil and military sectors to ensure that they take advantage of the peaks and cushion the troughs in each segment of the business.

But the primes cannot afford to rest on their laurels when it comes to their suppliers: the precarious nature of the business for lower-tier suppliers also has an impact on them – they cannot just sit back and revel in their own stability. It is crucial for the primes and first-tier suppliers that smaller players make the necessary investments in infrastructure and materials for production rates to continue to grow.

R&D burdens

The research and development burden shouldered by players lower down the supply chain is likely to have increased in recent years, according to Hampson, although this is difficult to measure since the contributions made by governments and businesses themselves cannot easily be separated, and many companies do not publish their R&D expenditure.

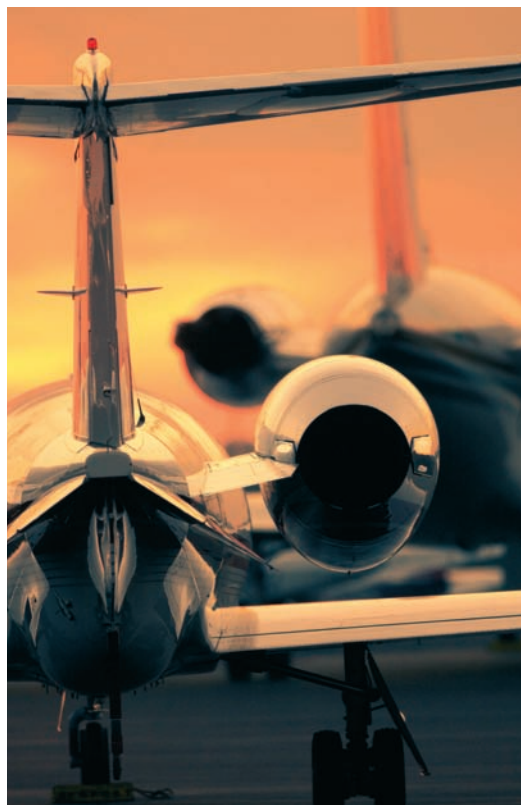
There are other factors at play, too, among the lower-tier suppliers, Hampson says. "The ones that are losing money are the ones that haven't gone through restructuring." The necessary restructuring may only be carried out by the "really innovative and ambitious" smaller companies, he says.

Much has been made in recent years of the need for lower-tier suppliers to consolidate to remain competitive. There has been less of this activity than many expected over the last year, and this is perhaps the cause of some of the instability

among these players. Companies that club together to address a greater portion of the market, or more programmes, could have greater clout than they would as individual, smaller players.

If actual consolidation has been put on the back burner, there is certainly a growing need for partnerships and collaboration. It is good news for primes when small and medium enterprises (SME) team up and approach programmes through partnerships, and across the industry there are measures in place to help smaller companies with less purchasing power and clout in the industry take advantage of the upswing. Regional associations are playing a valuable role, allowing SMEs to partner up to share risk on major programmes or collaborate on research and technology initiatives.

The results of the lean manufacturing and cost-saving initiatives the large players have made in recent years are likely to start filtering through to the lower-tier suppliers before long, says Hampson. There are signs that the benefits of these cost-cutting drives are starting to take effect at the top of the pile. "Lower down it is more difficult to assess, but some of the innovative companies are investing in that area. Those ones will start to pull away from the rest," he predicts. ■



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