

# BUSINESS REVIEW

## Summary

The Civil Aerospace business is a major manufacturer of aero engines for the commercial large aircraft and corporate jet markets. We power 35 types of commercial aircraft and have more than 13,000 engines in service around the world.

## Key highlights

- Underlying revenue up 3%; solid growth in aftermarket revenues offset lower new engine sales.
- Underlying profit before financing 14% lower than 2014; largely reflecting lower gross margins, due to adverse mix effects and higher R&D charges, partially offset by the impact of life-cycle cost improvements, retrospective long-term contract accounting benefits, a reversal of impairment of contractual aftermarket rights and lower restructuring costs.
- £3.8bn order book growth; led by Trent 900 and Trent XWB orders – Trent XWB now nearly 50% of order book.
- New Trent engines, 1000 TEN, XWB-97 and 7000, on track for entry into service in 2017 and 2018.
- Good progress modernising supply chain to reduce costs and increase capacity for Trent XWB ramp up over next four years.

## Underlying revenue mix



OE revenue	47%
Services revenue	53%

## Underlying revenue by sector



Large engines	63%
Small & medium	37%



**Trent 1000 in service**  
A Trent 1000 engine seen here on an Air New Zealand Boeing 787-9 aircraft.

## CIVIL AEROSPACE

### OPERATIONAL REVIEW

Overall, underlying revenue for Civil Aerospace grew 3% on a constant currency basis (up 1% at actual rates) with steady growth in services (up 9% at constant rates, including a £189m one-off benefit discussed below) which more than offset the reduction in original equipment (down 3% at constant rates). Second-half growth was particularly strong as the business improved original equipment delivery performance on a number of programmes, notably in corporate jets.

Original equipment revenues from widebody engines: linked and other reduced 11% reflecting a slow-down in linked Trent 700 deliveries for the Airbus A330 ahead of the introduction of the Trent 7000 for the A330neo, together with reduced sales of linked Trent 900 engines for the Airbus A380, partly offset by increased linked Trent 1000 engine sales for the Boeing 787 Dreamliner. In addition, sales of spare engines to joint ventures generated revenue of £189m (2014: £138m).

Original equipment revenues from unlinked widebody engines increased by 29%, largely a result of an increase in unlinked Trent XWB and other Trent engine deliveries.

The 17% increase in widebody services revenue was mainly driven by increased flying hours from our growing fleet of installed Trent 700, Trent 900 and Trent 1000 engines and a £189m one-off benefit resulting from refining the basis for taking account of risk in our forecasts of future revenue on long-term contracts. This was partially offset by lower utilisation of some of our more mature engine types, notably the Trent 500 and Trent 800.

Within our corporate engine business we had good revenue growth from our BR725 engine which powers the Gulfstream G650 and G650ER. This was offset by lower volumes for our other products due to weaker demand from Chinese, Russian and Brazilian customers. As a result, corporate original equipment revenues declined 1%. Despite a reduction in new corporate engine deliveries, our installed base of corporate jet engines continued to grow, contributing to a 13% increase in services revenues from these products.

Services revenues from our regional jet engines declined 14%, reflecting retirements and reduced utilisation of relevant fleets by North American operators.

On the V2500 programme, original equipment revenues declined 9% due to reduced demand from International Aero Engines (IAE) for V2500 modules to power the Airbus A320ceo, reflecting a mix change in engine types powering the aircraft ahead of the introduction of the A320neo. Despite continued growth in the installed base of engines, services revenues on the V2500 were down 1% overall reflecting a combination of fewer overhauls, lower spare parts sales and reduced engine flying hours.

Overall gross margins for Civil Aerospace were 22.0% (2014: 24.5%). The year-on-year reduction in margin of £139m reflected the lower

proportion of linked Trent 700 engine sales, weaker corporate jet engine volumes and a declining regional aftermarket, partially offset by £16m higher gross margin contribution from sales of spare engines to joint ventures (£67m in 2015 compared to £51m in 2014).

In addition, these factors were partially offset by a number of contract accounting adjustments and reversals of impairments and provisions.

The in-year benefit of retrospective long-term contract accounting adjustments as expected was a net positive of £222m (2014: total benefit of £150m). Of this, £189m was a one-off benefit resulting from refining the basis for taking account of risk in our forecasts of future revenue. In 2012, it was agreed with the Group Audit Committee that a comprehensive review would be completed during 2015. The new enhanced methodology should better reflect risk, current experience and expected long-term performance. Other long-term contract accounting adjustments totalled a net benefit of £33m (2014: total benefit of £150m). This comprised a retrospective charge of £107m (2014: benefit of £90m), reflecting reduced customer fleet utilisation, mainly in respect of the Trent 500 and Trent 800, other commercial changes and technical risks, offset by the benefit of £140m (2014: benefit of £60m) from life-cycle cost improvements.

Full-year performance also benefited from the reversal of previously recognised impairments on contractual aftermarket rights (CARs) and release of a related provision with a profit of £65m being recognised (2014: impairment charge of £19m). This reflected a significantly more positive outlook for future maintenance costs for a Trent 1000 launch customer which enabled the reversal of a previous impairment. This also resulted in the capitalisation of £22m of 2015 CARs that would otherwise have been impaired.

Costs below gross margin were £5m lower than the previous year. Within this, R&D charges were £64m higher, reflecting increased spend on key programmes, particularly in respect of the Trent 1000 TEN, the Trent 7000 and the Trent XWB-97. These engines, now in their final stages of preparation before flight testing, are due to enter service in 2017 and 2018. They represent a significant advance on previous Trent designs, providing substantial fuel burn improvements. The Trent 7000 and Trent XWB-97 programmes have yet to reach a point at which their costs can be capitalised. In addition, following its successful entry into service, continuing investment in the Trent XWB-84 engine can no longer be capitalised. Investment also increased to develop future corporate jet engine technology.

## CIVIL AEROSPACE / KEY FINANCIAL DATA

	2014	Underlying change	Acquisitions & disposals	Foreign exchange	2015
<b>Order book</b>	<b>63,229</b>	3,800	–	–	<b>67,029</b>
Engine deliveries	739	(27)	–	–	712
<b>Underlying revenue</b>	<b>6,837</b>	201	–	(105)	<b>6,933</b>
<i>Change</i>		+3%	–	-2%	+1%
Underlying OE revenue*	3,463	(117)	–	(88)	3,258
<i>Change</i>		-3%	–	-3%	-6%
Underlying services revenue*	3,374	318	–	(17)	3,675
<i>Change</i>		+9%	–	+1%	+9%
<b>Underlying gross margin</b>	<b>1,675</b>	(139)	–	(10)	<b>1,526</b>
<i>Gross margin %</i>	24.5%	-270 bps	–	–	22.0%
Commercial and administrative costs	(283)	(14)	–	1	(296)
Restructuring costs	(82)	75	–	–	(7)
Research and development costs	(461)	(65)	–	11	(515)
Joint ventures and associates	93	8	–	3	104
<b>Underlying profit before financing</b>	<b>942</b>	(135)	–	5	<b>812</b>
<i>Change</i>		-14%	–	–	-14%
<b>Underlying operating margin</b>	<b>13.8%</b>	-230 bps	–	–	<b>11.7%</b>

\* The methodology basis for the allocation of Civil Aerospace revenues on linked TotalCare contracts between original equipment and aftermarket has been reviewed and amendments made to reflect better the commercial substance of the combined contracts. Historically, the allocation has resulted in original equipment revenue and aftermarket revenue reflecting the contractual terms rather than the commercial substance of the contracts. The 2014 figures have been restated on the same basis; the impact was an increase in original equipment revenue of £198m and an equal decrease in aftermarket revenue

The R&D charge was reduced by £94m (2014: £71m) by the recognition of entry fees receivable from risk and revenue sharing arrangements (RRSA).

Underlying corporate, administration and other costs were £14m higher. Restructuring costs were £75m lower reflecting the significant charges taken in 2014.

As a result, profit before financing and tax was 14% down, reflecting a combination of lower overall gross margins, increased R&D and reduced restructuring costs. Taking account of foreign exchange effects, underlying profit before financing and tax was £812m (2014: £942m).

Trading cash flow before working capital movements improved year-on-year by £48m, despite the headline drop in underlying profit before financing of £130m and the higher level of CARs additions. This is largely due to a reduced level of property, plant and

equipment additions and a lower spend on certification costs and participation fees. The £286m year-on-year difference in working capital movements was largely due to differences in the timing of payments to suppliers and increased draw down of deposits in 2015.

### Investment and business development

Order intake of £12.8bn in 2015 for Civil Aerospace was £1.1bn up on the previous year. As a result, the order book closed at £67.0bn, up £3.8bn or 6% on the previous year.

Significant orders during the year included our largest ever order by value to provide Trent 900 engines and TotalCare service support for 50 Airbus A380s for Emirates worth \$9.2bn of which \$6.1bn is recognised within the order book. Other major orders included Trent 1000 engines to power 21

Boeing 787 Dreamliner aircraft and long-term TotalCare support for Air China and Ethiopian Airlines, and a \$2.4bn order for engines and services with HNA Group.

### Engineering excellence remains the cornerstone of our value to Civil Aerospace customers

Several important engineering milestones were achieved during 2015. For widebody engines, the focus has been on completing the development and testing of the new Trent 1000 TEN and the Trent XWB-97. The results of initial tests on both engines are broadly in line with expectations. In December 2015, the Trent XWB-97 flew for the first time and has since undergone rigorous testing in a number of conditions. The Trent 1000 TEN has also completed several major milestones. In addition, a hybrid Trent 7000, produced to de-risk the development programme, ran for the first

#### CIVIL AEROSPACE / NEW DISCLOSURE ON REVENUE SEGMENTATION

	2014		Underlying change	Foreign exchange	2015	
	%	£m			%	£m
<b>Underlying revenue</b>	<b>100%</b>	<b>6,837</b>	<b>201</b>	<b>(105)</b>	<b>100%</b>	<b>6,933</b>
<b>Underlying OE revenue</b>	<b>51%</b>	<b>3,463</b>	<b>(117)</b>	<b>(88)</b>	<b>48%</b>	<b>3,258</b>
<i>Widebody engines: linked and other</i>	26%	1,766	(191)	(5)	23%	1,570
<i>Widebody engines: unlinked installed</i>	6%	392	114	(2)	7%	504
<i>Corporate (and other small engines)</i>	14%	974	(9)	(62)	14%	903
<i>V2500</i>	5%	331	(31)	(19)	4%	281
<b>Underlying services revenue</b>	<b>49%</b>	<b>3,374</b>	<b>318</b>	<b>(17)</b>	<b>52%</b>	<b>3,675</b>
<i>Widebody engines</i>	30%	2,029	336	6	34%	2,371
<i>Corporate</i>	6%	383	50	(8)	6%	425
<i>Regional</i>	6%	427	(61)	(6)	5%	360
<i>V2500</i>	7%	535	(7)	(9)	7%	519

#### CIVIL AEROSPACE / NEW DISCLOSURE ON TRADING CASH FLOW

£m	2015	2014	Change
<b>Underlying profit before financing</b>	<b>812</b>	<b>942</b>	<b>(130)</b>
Depreciation and amortisation	410	381	29
<b>Sub-total</b>	<b>1,222</b>	<b>1,323</b>	<b>(101)</b>
CARs additions	(161)	(86)	(75)
Property, plant, equipment and other intangibles	(502)	(748)	246
Other timing differences*	(75)	(53)	(22)
<b>Trading cash flow pre-working capital movements</b>	<b>484</b>	<b>436</b>	<b>48</b>
Net long-term contract debtor movements	(406)	(463)	57
Other working capital movements	(78)	208	(286)
<b>Trading cash flow**</b>	<b>0</b>	<b>181</b>	<b>(181)</b>

\* Includes timing differences between underlying profit before financing and cash associated with: joint venture profits less dividends received; provision charges higher/ (lower) than cash payments; non-underlying cash and profit timing differences (including restructuring); and financial assets and liabilities movements

\*\* Trading cash flow is cash flow before: deficit contributions to the pension fund; taxes; payments to shareholders; foreign exchange on cash balances; and acquisitions and disposals

time and is now being put through its paces with a series of rigorous tests.

For corporate jets, developments in the year were more modest. Strong orders for the BR725 have sustained steady original equipment volumes as the new Gulfstream G650ER entered service, despite a weakening market. Failure in past years to secure new positions on some important new corporate jet platforms contributed to a weak order intake in the year which will impact future volumes and revenues adversely. As part of our technology strategy, investments are being made to secure future opportunities and regain its position as the leading provider to the important market of large-cabin, long-range corporate jets.

### Investing in new aerospace supply chain capabilities to help drive operational excellence

As part of the supply chain transformation underway in the business, several important new facilities were completed during the year. These included the opening of our Advanced Blade Casting Facility in Rotherham, UK, which will halve the time it takes to manufacture turbine blades, and an expansion of our Trent XWB production centre in Derby. We also announced plans to invest in our facility in Inchinnan to create a new Centre of Competence for manufacturing aerofoils and established a joint venture with Liebherr to develop manufacturing capability and capacity for the power gearbox for our UltraFan™ demonstrator programme.

### Strengthening our aerospace aftermarket service offering

During 2015, we broadened our service offering and strengthened our support network to provide customers with greater choice, flexibility and capability at all stages of the engine lifecycle, supporting a growing installed base.

This included making improvements to our Trent service network which will result in increased competition among our Approved Maintenance Centres (AMCs) and the announcement of our first independent AMC, Delta TechOps. We have also set up a global network of Customer Service Centres,

bringing us closer to our customers, working in their time-zones.

We launched a new service, SelectCare™, which fits between our comprehensive TotalCare and general maintenance, repair and overhaul services, where customers contract for individual shop visit support. At the same time, we announced American Airlines as the launch customer. We also announced our first customers for TotalCare Flex®, a new service targeting owners and operators of more mature engines. Cathay Pacific, AerCap, South African Airways and BMI Regional chose the service for Trent 800, Trent 500 and AE 3007 engines.

### Civil Aerospace outlook

As we set out in November 2015, we believe the long-term outlook for Civil Aerospace remains very good, led by a strong widebody order book for fuel efficient engines. Key to the long-term success of the business is converting this exceptional order book into a large installed base of engines that meet customer demands for safe, reliable, efficient operation while driving profitable engine flying hour revenues. The next few years will be very important as we ramp up production of new engines – in new, efficient facilities – and invest in the development of future engine platforms that will benefit the order book from 2020 onwards. As a result, until we gain additional aftermarket scale, or complete our industrial transformation and improve unit costs and cash margins, the business will continue to be a net investor of cash.

Over the next few years the transition from 'linked' to 'unlinked' contracts creates a headwind to reported profit but no change to cash flows.

In the future, an increasing proportion of our new engines will be sold to the airframer on a sole-source basis, in particular the new Trent XWB and Trent 7000 for use on the Airbus A350 and A330neo respectively. As a result, a significantly larger proportion of our sales in the future will be accounted for on an 'unlinked' basis. While this does not change cash flows, it does change the timing of when profit is recognised across the OE and aftermarket contracts. Under 'unlinked' accounting, the engine sale and aftermarket contracts are accounted for separately.

### Engines delivered in 2015

# >700

This typically results in lower upfront profit recognition on engine delivery, with significantly higher proportion of profit in the aftermarket period. This is in comparison to 'linked' accounting, where a blended margin is applied across the engine sale and aftermarket contracts.

Near-term conditions in some segments remain challenging. We continue to expect our Civil Aerospace business to underperform 2015 underlying profit before finance and tax by around £550m. The significant headwinds related to Trent 700 volume reductions and the non-recurrence of a number of one-off benefits seen in 2015 remain broadly unchanged. In addition, we still expect to see weaker demand for new corporate jets and declines in demand within our regional jet aftermarket. The aftermarket benefit of higher levels of engine deliveries and increased installed thrust is expected to be largely offset by the underutilisation of older large engines. However, the business will benefit from reduced costs from the restructuring initiatives started in 2014.

We now expect the TotalCare net asset to grow from £2.2bn and peak at around £2.5bn, allowing for a more positive demand outlook for our 'linked' accounted engines and the benefit of further life-cycle cost improvements now being seen in engine performance.



## MARKET REVIEW

Rolls-Royce is one of the world's leading civil aero-engine manufacturers with particular strengths in engines for civil widebody aircraft and large business jets, underpinned by our strength and continued investment in technology.

We are market leaders in the large business jet fleet market powering aircraft from most of the main airframers. We have a strong market position on widebody aircraft produced by the world's two major airframers: Boeing and Airbus, who are broadly consistent in forecasting traffic growth (Revenue Passenger Kilometres) of approximately 5% CAGR over the next 20 years. In the engine market for narrowbody aircraft, we continue to supply some parts and services for the IAE V2500 engine family.

### Potential for OE and services over the next 20 years

#### Civil Aerospace – all sectors

# \$1,720bn

#### Original equipment

# \$1,110bn

#### Aftermarket

# \$610bn

## Market dynamics

- Overall there has been a slowdown in all major geographical markets for new aircraft orders reflecting a period of higher than normal order placement for new airframe products in recent years (principally Airbus A350 and A330neo, and Boeing 787 and 777X).
- Long-term growth in the number of widebody aircraft in the global fleet has historically been strongly correlated to global GDP growth.
- Asia and the Middle East are strong drivers of growth, correlating to their regional GDP growth.
- Historically, growth has recovered quickly following major economic shocks.
- Our current share in the widebody engine market is at 31% of the installed widebody passenger fleet and is expected to reach 50% early in the next decade.
- Older widebody aircraft are experiencing reduced utilisation by certain airlines, in particular Boeing 777s and Airbus A340s.
- The re-engining of the A330, announced in summer 2014, reduced Trent 700 sales ahead of the new Trent 7000 entering service in 2017 as the sole source engine for A330neo.
- Over 90% of Rolls-Royce large engine fleet is covered by our TotalCare service agreements.
- We are the market leader in large business jet aircraft engines, with 55% market share of the large/very large business jet market in 2015.
- Over 65% of Rolls-Royce business jet engines are covered by our CorporateCare® service agreements.
- Demand for large business jets is related to global economic growth and increases in the number of high net-worth individuals; the sector has historically been fairly resilient to financial shocks.
- The current business jet market is slowly recovering in the US (our largest market), but is currently going through a slowdown elsewhere due to political tensions and customer anticipation of new models about to enter into service. Overall, this sector is expected to grow faster than global GDP in the long term.
- In the regional sector, aftermarket demand for engines on 50-70 seat aircraft is reducing as aircraft approach the end of their lives.

## Business risks

- If we experience a major product failure in service, then this could result in loss of life and critical damage to our reputation.
- If an external event or severe economic downturn significantly reduces air travel, then our financial performance may be impacted.
- If our airframer customers significantly delay their production rates, then our financial performance may be impacted.
- If we fail to achieve cost reductions at the necessary pace, then our ability to invest in future programmes and technology may be reduced.
- If we experience significant pricing pressure from increased competitor challenge in our key markets, then our financial performance may be impacted.
- If we suffer a major disruption in our supply chain, then our delivery schedules may be delayed, damaging our financial performance and reputation.
- If there are significant changes to the regulatory environment for the airline industry, then our market position may be impacted.

## Competition

- GE is the main competitor supplying engines in the widebody sector. In 2015, deliveries of engines for widebody passenger aircraft were split Rolls-Royce 38%, GE 54%, Pratt & Whitney 2%, and Engine Alliance 6%.
- Rolls-Royce is well positioned on all Airbus widebody airliner programmes and competes with GE on the Boeing 787 family.
- Rolls-Royce is the sole engine provider on the Airbus A350 XWB family where 775 aircraft have been ordered so far.
- GE is the sole engine provider on the Boeing 777X aircraft, scheduled to enter into service in 2020 where 306 have been ordered so far.
- In large business jets the main competition is GE, Pratt & Whitney and Safran; in 2015 the GE-Honda joint venture entered the market in very low thrust engines.
- Rolls-Royce has 3,100 powered business jets flying, representing 55% market share of the large/very large business jet fleet.

## Opportunities

- Our position and long-term prospects in the widebody sector are strong across our Trent family.
- The Trent XWB has successfully completed its first year in service and the new Trent XWB-97 engine made its first test flight in November 2015 and is on schedule to enter into service in 2017.
- The new Trent 7000 is scheduled to enter into service in 2017 on the A330neo. We have sole source on this platform which will replace the A330, on which we are one of three engine providers.
- We will be introducing the new Trent 1000 TEN in 2017 for the Boeing 787. On the 787, Rolls-Royce engines have been selected for 42% of the current order book.
- A potential significant new entrant into the civil sector is China's COMAC which is developing a narrowbody aircraft for entry into service towards the end of the decade. COMAC is also planning a joint programme with Russia's UAC to develop a widebody aircraft, targeting entry into service around 2025. We remain in close dialogue with COMAC and UAC to understand their plans and whether their widebody programme presents an opportunity for Rolls-Royce.
- Our business jet market share is likely to fall in the medium term with the success of new entrants into the large/very large sector, but the market remains attractive and we will continue to invest to improve our position and retain leadership.

## Key Rolls-Royce differentiators

- Barriers to entry are extremely high in the civil sector. We invest heavily to maintain market leading technologies and system level integration capabilities to deliver the best engine performance for our customers. We offer a wide range of aftermarket services which provide flexible and cost-effective options to our customers and build long-term customer relationships.



### Exemplary year for Trent XWB

On 15 January 2016, the world's most efficient aero engine completed its first year in service. The Trent XWB on the A350 XWB airliner achieved the milestone in style having delivered outstanding performance over its first 12 months of operation, with launch customer Qatar Airways.

The engine lived up to its credentials in terms of being the most efficient engine ever and the Trent XWB also managed to claim the crown of being the most reliable engine with a dispatch rate of 99.83%.

Designed as the next generation of medium-/long-haul airliners, the A350 is an all-new family of aircraft from Airbus.

The Trent XWB engine represents the largest single element of our £76.4bn order book by some margin. Over 1,500 of the engines have been ordered by more than 40 airlines, from important existing customers and from new Rolls-Royce customers all over the world.



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### Summary

We are a leading engine maker for the military transport market and the second largest provider of defence aero-engine products and services globally. Defence has 16,000 engines in service with 160 customers in over 100 countries.

### Key highlights

- Underlying revenue 5% lower; revenues impacted by weaker helicopter and trainer volumes, partially offset by higher combat original equipment sales.
- Underlying profit before financing up 4%; steady gross margin and lower restructuring costs offset higher R&D charges.
- Strong positions in transport and patrol, and combat underpin outlook for a steady performance in 2016.
- Major five-year \$600m investment in Indianapolis, US, to improve cost base and benefit long-term growth.

#### F-35B Lightning II

The F-35B aircraft, which employs the Rolls-Royce LiftSystem, was declared operational in 2015.



### Underlying revenue mix



■ OE revenue	39%
■ Services revenue	61%

### Underlying revenue by sector



■ Combat	36%
■ Transport and patrol	43%
■ Other	21%

## DEFENCE AEROSPACE

### OPERATIONAL REVIEW

Underlying revenue at £2,035m was 5% lower on a constant currency basis (down 2% at actual exchange rates). Lower original equipment volumes for helicopters and trainers were partially offset by growth in LiftSystem™ volumes. Aftermarket revenues reflected lower volumes on helicopter spares partially offset by higher revenues related to long-term service agreements for UK combat aircraft.

Despite the reduced revenues, gross margin improved to 28.5%. Lower helicopter volumes and lower margins on some transport contract extensions were offset by higher LiftSystem volumes and increased retrospective margin improvements of £101m (2014: £53m) on existing long-term contracts. These relate to various combat platforms, where overall profitability has been improved by changed flying patterns and lower service costs, including approximately £40m (2014: £nil) due to one-off contract and scope variations.

Overall R&D costs were £20m higher in 2015 reflecting increased investment in new programmes. Restructuring costs were lower due to reduced level of severance costs and lower costs related to changing our operational footprint.

Underlying profit before financing of £393m was 4% up on the prior year on a constant currency basis, reflecting the lower volumes, the one-off margin improvements, increased R&D charges and lower restructuring charges. As a result, operating margin improved by 170 basis points to 19.3%.

## Investments and business development

Overall, the Defence order book declined 5%, in large part reflecting the 2014 benefit of the significant multi-year order for engines to power C-130J aircraft. With a major focus within defence budgets on cost control, 2015 saw significant interest in availability-based service contracts and also on offering efficiency upgrades. New contracts included an extension of the UK's Hercules Integrated Operational Support contract and commitment to the UK's Future Combat Air System (FCAS) programme. After successful first flights on US 'Hurricane Hunter' P-3 aircraft in May, we received strong international interest including an initial USAAF order for the T56 3.5 technology insertion kit upgrade delivering both fuel saving and performance benefits for an engine programme which has been in existence for over 50 years.

Outside the UK and US markets, our particular focus has been on positioning ourselves to be competitive for forthcoming combat programmes. We had success in South Korea in conjunction with Airbus, with the contract being awarded to power the A330 tanker fleet with Trent 700 engines, as well as agreeing an order for our largest ever number of engines – a ten-year order with Robinson to supply at least 1,000 RR300 engines.

Long term, it remains essential that we have a cost-efficient supply chain to support the profitable growth of our business in a competitive market. To support future business competitiveness we initiated a major \$600m investment in the upgrading of our Indianapolis facility, which will bring a combination of cost reductions, operational efficiencies and greater development capabilities for defence technologies. This investment recognises the importance of the US market and our strong position there.

## Defence Aerospace outlook

The long-term outlook for Defence Aerospace remains positive with good opportunities to capitalise on its strong positions in transport and patrol and combat. Investment in developing new advanced technologies will be a feature of R&D for the next few years as the business ensures it can compete for new opportunities.

The outlook for revenues in 2016 remains steady. Operating profit will be adversely impacted by the lower level of expected long-term contract benefits in 2016, together with higher R&D and operational restructuring costs.

Free cash flow from Defence Aerospace is expected to remain strong in the longer term, reflecting the high proportion of aftermarket revenues. However, in the coming year free cash flow is expected to be lower reflecting the increased cost of investment and the run out of costs on key UK programmes where deposits have been received in advance of delivery.

## Investment in US facilities

# \$600m

## DEFENCE AEROSPACE / KEY FINANCIAL DATA

£m	2014	Underlying change	Acquisitions & disposals	Foreign exchange	2015
<b>Order book</b>	<b>4,564</b>	(248)	–	–	<b>4,316</b>
Engine deliveries	744	(95)	–	–	649
<b>Underlying revenue</b>	<b>2,069</b>	(101)	–	67	<b>2,035</b>
<i>Change</i>		-5%	–	+3%	-2%
Underlying OE revenue	816	(45)	–	30	801
<i>Change</i>		-6%	–	+4%	-2%
Underlying services revenue	1,253	(56)	–	37	1,234
<i>Change</i>		-5%	–	+3%	-2%
<b>Underlying gross margin</b>	<b>567</b>	(9)	–	21	<b>579</b>
<i>Gross margin %</i>	27.4%	+90bps	–	–	28.5%
Commercial and administrative costs	(112)	(7)	–	(5)	(124)
Restructuring costs	(55)	48	–	(1)	(8)
Research and development costs	(50)	(20)	–	(3)	(73)
Joint ventures and associates	16	3	–	–	19
<b>Underlying profit before financing</b>	<b>366</b>	15	–	12	<b>393</b>
<i>Change</i>		+4%	–	–	+7%
<b>Underlying operating margin</b>	<b>17.7%</b>	+170bps	–	–	<b>19.3%</b>



## MARKET REVIEW

Rolls-Royce is a market leader in defence aero engines for military transport aircraft and has strong positions in other sectors, including combat, trainer aircraft and helicopters. We are pursuing new opportunities emerging in Asia and the Middle East to mitigate flat defence budgets in the established North American and European markets.

### Potential for OE and services over the next 20 years

Defence Aerospace – all sectors

**\$400bn**

Original equipment

**\$125bn**

Aftermarket

**\$275bn**

## Market dynamics

- Defence budgets are expected to show modest growth, flat in real terms in the US and UK, partially offset by growth in other emerging markets.
- Western customers are seeking to reduce and minimise costs by delaying or deferring purchases, improving asset availability and extending lifecycles of aircraft/engines.
- Increasing levels of economic affluence and political tension in the Asia Pacific and Middle East regions are leading to increases in both original equipment and services spend.
- Revenue has historically been broadly balanced between original equipment sales and aftermarket services, biased towards the latter.

## Business risks

- If we experience a major product failure in service, then this could result in loss of life and critical damage to our reputation.
- If global defence spending experiences a further downturn, then our financial performance may be impacted.
- If we do not continue to invest to improve the performance and cost of our products, then we may lose market share.
- If we suffer a major disruption in our supply chain, then our delivery schedules may be delayed, damaging our financial performance and reputation.
- If we do not secure new applications, then our capabilities may be eroded in the long term.

## Competition

- GE, Pratt & Whitney, Honeywell and Safran are the main competition in our sectors.
- In Europe, large defence programmes tend to be addressed by consortia of two or more companies due to the political environment. Examples include our collaboration with ITP, MTU and Safran on the TP400 engine for the Airbus A400M and with GE Avio, ITP and MTU on the EJ200 engine for the Eurofighter Typhoon.
- We support/lead sales campaigns globally on behalf of Eurojet for export sales opportunities of Eurofighter Typhoon.
- Barriers to entry are high and we do not envisage the competitive landscape changing significantly in the near future.

## Opportunities

- The UK's FCAS potentially a joint programme with France, presents a longer-term combat opportunity to Rolls-Royce.
- Our LiftFan™ system for the F-35B is only just entering service and we expect to deliver over 400 systems in the next 20 years.
- Emerging markets, such as India, Turkey and South Korea are inviting bids on new combat aircraft. We estimate a potential of over 300 aircraft for these programmes.
- In transport, we believe the Airbus A400M transport aircraft and V-22 Osprey have overseas sales opportunities.
- We see strong growth potential for increased service provision to the military and we are well positioned with programmes such as MissionCare®.

## Key Rolls-Royce differentiators

- We are investing heavily in technology, integration capabilities and facility modernisation to deliver capable, affordable engines for our customers. Additionally, we leverage our large installed base and strong services capabilities to provide superior and affordable service solutions.



### World leader in transport engines

A KC-130J tanker-transport aircraft is seen here (above left) preparing to refuel a V-22 tiltrotor Osprey transporter. Both aircraft are in service with the US Marine Corps and both are powered by Rolls-Royce.

The Lockheed Martin C-130J is one of the most reliable and versatile transport aircraft in the world (the KC-130J being the tanker version).

Powered by the Rolls-Royce AE 2100 engine, the C-130J family of aircraft follows on from the original, venerable, C-130, which is still giving sterling service all over the world with its Rolls-Royce T56 powerplants.

In fact, Rolls-Royce has breathed further life into the T56 by developing a new version of the engine which is delivering significant fuel savings and which the Group believes will see the T56 continue in service for many years to come. In December 2015, we announced that Rolls-Royce was one of three companies to benefit from a £369m contract to support the RAF's C-130 fleet.

The C-130J has also seen developments beyond its transport and refuelling role. One of the lessons learned in Afghanistan was the constant demand for airborne video surveillance and the requirement for a 'quick strike' weapon to help protect troops

on the ground. The US Marine Corps turned to the KC-130J. The aircraft can loiter in the air for over ten hours thanks to the performance of its AE 2100 engines and so they armed it with a quick strike weapon that would not affect the core mission of aerial refuelling.

In its tanker role, the aircraft has the ability to refuel both low-speed helicopters and high-speed jet aircraft by changing the basket on the drogue system. The aerial refuelling pods can deliver more than 12,000 US gallons of fuel and can refuel two aircraft simultaneously.

In addition to the V-22 and C-130J families, Rolls-Royce also powers the Airbus A330 Voyager tanker/transport with Trent 700 engines and we are a major partner in the Europrop International consortium responsible for the design and build of the TP400 engine for the new A400M military transport aircraft. The first A400M began active service with the RAF during 2015.

### Summary

Power Systems is a leading provider of high- and medium-speed reciprocating engines, complete propulsion and drive systems, distributed energy solutions and fuel injection systems. The business serves the marine, naval, land defence, rail, mining, oil & gas, construction & agriculture and power generation markets through its core brands MTU, MTU Onsite Energy, Bergen and L'Orange.

### Key highlights

- Underlying revenue 3% lower; weaker original equipment partially offset by good growth in services.
- Underlying profit before financing 15% lower; led by lower gross margin.
- Positive outlook for 2016; healthy closing order book with good positions in key market segments.
- Long-term R&D investments to increase cost competitiveness in higher volume engine applications.

#### MTU diesel engine

Our MTU brand is a world leader in high-speed diesel engine power.



### Underlying revenue mix



OE revenue	68%
Services revenue	32%

### Underlying revenue by sector



Marine	37%
Industrial	21%
Energy	30%
Defence and other	12%

## POWER SYSTEMS

### OPERATIONAL REVIEW

Underlying revenue of £2,385m was 3% lower on a constant currency basis (12% lower at actual rates). Original equipment revenue was 5% lower, reflecting weaker oil & gas markets and weaker governmental demand which peaked in 2014. This was partially offset by an improved luxury yacht demand and some recovery in our sections of the construction and agriculture market where new emissions regulations increased demand. Underlying service revenues were up 3% despite some weakness in spare parts sales in North America and Europe.

Gross margins were slightly lower at 26.6% (2014: 27.3%) reflecting a change in product mix and lower overall volumes as expected.

Underlying profit declined 15% as a result of the lower gross margins. On a constant currency basis costs below gross margin were unchanged.

## Investment and business development

Our Power Systems business serves a variety of markets ranging from marine, industrial, construction & agriculture to defence and power generation. This diversity enabled the business to mitigate some of the weak environment, particularly that linked to oil and commodities.

2015 order intake was £2.5bn (2014: £2.6bn) with the closing order book broadly unchanged at £1.9bn. Within this, the defence sector demonstrated greater resilience with a combination of a higher proportion of long-term service contracts together with the winning of the first order worth approximately €80m from the British Army for 589 MTU diesel engines for the new Scout Specialist Vehicle.

Within the broad range of industrial applications, while a number of markets deteriorated through the year, there was positive news. This included contract wins from a Chinese company for 232 MTU Series 4000 engines for freight locomotives bound for South Africa, and further orders for luxury yacht engines. An extension to our longstanding co-operation with Daimler was also agreed for the development of a new range of industrial engines, which comply with new EU off-highway regulations for reduced soot emissions.

The energy segment generated an increased order intake in 2015 reflecting good growth in gas gensets, particularly in Asia. In addition, the easing of the trading embargo with Iran is enabling the business to secure a good foothold in the country. As a result, we enjoy a strong market position within back-up power, particularly for larger mission-critical applications, which is a growing market. Recent notable orders came from Kuwait, Turkey and Bangladesh for the provision of back-up power for hospital modernisations and continuous power for a steel mill.

## Power Systems outlook

The outlook for Power Systems remains steady. The business finished the year with a healthy order book for many of its key markets. As a result, while some markets remain difficult, we continue to expect the business to deliver modest growth in revenue and profit in 2016.

## Closing order book

# £1.9bn

## POWER SYSTEMS / KEY FINANCIAL DATA

£m	2014	Underlying change	Acquisitions & disposals	Foreign exchange	2015
<b>Order book</b>	<b>1,971</b>	(43)	–	–	<b>1,928</b>
<b>Underlying revenue</b>	<b>2,720</b>	(72)	–	(263)	<b>2,385</b>
<i>Change</i>		-3%	–	-10%	-12%
Underlying OE revenue	1,893	(97)	–	(178)	1,618
<i>Change</i>		-5%	–	-9%	-15%
Underlying services revenue	827	25	–	(85)	767
<i>Change</i>		+3%	–	-10%	-7%
<b>Underlying gross margin</b>	<b>742</b>	(37)	–	(70)	<b>635</b>
<i>Gross margin %</i>	27.3%	-70bps	–	–	26.6%
Commercial and administrative costs	(296)	(9)	–	30	(275)
Restructuring costs	(7)	3	–	–	(4)
Research and development costs	(183)	3	–	18	(162)
Joint ventures and associates	(3)	3	–	–	–
<b>Underlying profit before financing</b>	<b>253</b>	(37)	–	(22)	<b>194</b>
<i>Change</i>		-15%	–	–	-23%
<b>Underlying operating margin</b>	<b>9.3%</b>	-110bps	–	–	<b>8.1%</b>



## MARKET REVIEW

The markets served by Power Systems are driven by global megatrends such as increasing population growth, rising energy, resource and food demand, increasing and stricter emissions legislation and government defence budgets. Despite the current market downturn in some of our markets, most noticeably in oil & gas and offshore, we expect long-term recovery in these and continuous growth in all of our markets. We estimate that Power Systems 'off-highway' reciprocating engine markets offer an opportunity of £650bn.

Potential for OE and services over the next 20 years

Power Systems – all sectors

**£650bn**

## Market dynamics

- Population growth and increasing urbanisation are driving rising demands for energy, resources and food and continuous infrastructure developments.
- Global GDP development with particular growth in Asia.
- Increasing global and regional trade and transport of goods.
- Geopolitics and an increasing multipolar world are driving modest defence budget growth (1-2%) in NATO countries with more growth in emerging markets.
- Increasing focus on renewable energy sources requires decentralised and clean energy solutions (eg. continuous gas and back-up power generation solutions).
- Increasing environmental legislation and efficiency requirements drive emission and efficiency technologies.
- Current weak environment in certain markets (eg. oil & gas and mining), due to current low oil and commodity price levels.

## Business risks

- Economic: some markets are currently affected by low oil and commodity prices (oil & gas, mining) while some regional markets show challenges due to the current economic situation.
- Political: increasing political tensions and sanctions might limit levels of global trade and customer access.
- Competitive: upcoming competitors from Asia and new entrants into our existing markets can potentially put pressure on volumes and margins.
- Technological: complementary technologies might replace existing solutions eg. energy storage for back-up power.

## Competition

- Fragmented competitor landscape in 'off-highway' engine markets which varies depending on specific market segments – many players although a few dominate.
- Continuing industry consolidation results in strong, large scale and integrated players.
- Expansion of western competitors in our specific core engine markets.
- Competition from Asia increasingly focusing on higher power ranges where MTU operates.
- While traditional competition has been limited to engine suppliers, solution providers are becoming more relevant.

## Opportunities

- Regional growth, eg. Asia, through leveraging partner companies.
- Continuous development into clean propulsion and energy solutions which are compliant with new emissions regulations.
- Development of efficiency solutions, eg. e-drive/hybrid drives and fuel diversification towards gas/dual-fuel.
- Enhancement of system competence and solutions to create customer value through optimised total system functionality and performance.
- Expansion of service portfolio, customised offerings and intelligent applications and services.

## Key Rolls-Royce differentiators

- Technology leadership and reputation with market-leading performance and system approach especially in mission-critical applications; new product innovation (eg. hybrid/e-drive); and high level of customisation.

## High-efficiency power for trains

Hybrid rail technology is the energy-saving combination of a conventional diesel engine and an electric drive system.

During 2015, Rolls-Royce completed further trials on its hybrid drive power system, the result of five years of pioneering work.

A conventional MTU railway PowerPack combines all the individual elements needed for power and efficiency into a single functional unit mounted on a supporting frame. MTU has delivered more than 6,000 of these PowerPacks to the rail industry.

The MTU hybrid PowerPack combines the benefits of a conventional diesel system with an electric propulsion module, energy storage and propulsion control system.

The basic idea of hybrid rail technology is that the kinetic energy initially generated by the diesel engine is recovered via an electric motor operating as an electric brake. This energy is stored chemically in a powerful battery for later use.

The recovery of the kinetic energy in braking mode is extremely energy- and cost-efficient, particularly in stop-and-go situations on local public transport lines where there are a large number of stops and on inclined rail sections on hilly terrains.

In 2015, for the first time, MTU performed its own tests on a hybrid train. During the tests, fuel consumption was shown to be reduced by more than 23% compared to straightforward diesel mode. Under optimum conditions, MTU believes fuel savings of 25% or more are possible.



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## Summary

Marine is a leading provider of complex and integrated propulsion and handling systems to the maritime offshore, merchant and naval markets. The product offering ranges from individual items of equipment to integrated systems and flexible mission-critical solutions, including complete vessel designs. The business has more than 4,000 customers. Seventy naval forces and over 30,000 commercial vessels use our equipment.

### Key highlights

- Underlying revenue down 16%; weak offshore markets impacting both OE and aftermarket revenues.
- Underlying profit before financing down 94%; significant reduction in gross margin, led by lower volumes, and higher restructuring costs only partially offset by reduced commercial and administration costs.
- Challenging outlook for 2016; led by reduced demand in offshore oil & gas markets.
- Launched two restructuring programmes in 2015 focused on manufacturing footprint and back-office functions; expected benefits to start to accrue from 2016 onwards.

#### Latest bridge designs

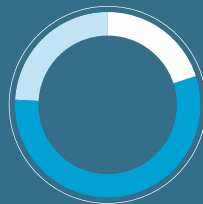
Our Unified Bridge is ergonomically designed to be intuitive for crews.

### Underlying revenue mix



OE revenue	58%
Services revenue	42%

### Underlying revenue by sector



Merchant	24%
Offshore	56%
Naval	20%

## MARINE

### OPERATIONAL REVIEW

Underlying revenue of £1,324m was 16% lower on a constant currency basis (down 23% at actual rates). Within this, original equipment revenues were 19% down at £773m. Service revenues were more robust, although still declined 10%. This reflected weaknesses in offshore and merchant, as ship owners deferred overhaul and maintenance on the back of reduced utilisation of their vessels.

As a result of the revenue weaknesses, price pressure and cost under-recovery, gross margins declined 500 basis points to 19.6% and overall gross margin was £260m, £139m lower than in 2014. As a result, with only modest reductions to date being achieved in corporate, administration and other costs, underlying profit was £15m, 94% down on a constant currency basis.

Around £15m of restructuring charges were incurred in 2015 and excluding these, underlying profit declined 83%. In the first half we took a non-underlying charge of £69m for the impairment of goodwill on two of our businesses owing to a less favourable business outlook, partly driven by the impact of market deteriorations on our offshore businesses.



## Investment and business development

The focus in 2015 has been on repositioning the Marine business to reflect the very challenging market environment and outlook. During the year, we also announced a number of restructuring programmes that will in total lead to the loss of around 1,000 employees in operations and back-office functions as we shrink our Northern European footprint, reduce indirect headcount, and consolidate manufacturing activity. This will deliver projected cost savings of £65m per annum from 2017 onwards and create a business better able to compete in an increasingly cost-conscious market place which is geographically shifting towards Asia.

Overall, the Marine order book declined 26% during the year, mainly reflecting a very weak offshore market, particularly in Northern Europe. Orders for new vessels, projects and services were all sharply lower than 2014 and as a result order intake was only £997m, 45% down on the previous year.

The offshore market was extremely weak reflecting a low oil price and reduced capital expenditure within the upstream oil exploration and related services sectors. Targeted investment in R&D and improving our Asian position saw progress later in the year with two major orders from China. These comprised an equipment contract for nine tug supply vessels and a package of advanced

ship equipment for a dive support vessel. We also saw demand from non-oil related sectors such as wind farm support and fishing trawlers.

Activity within our target merchant sectors was subdued, but we made progress in our strategy of developing markets for offshore derived technologies within specialist areas such as azimuth propulsion systems for double-ended ferries. We also delivered Asia's first LNG-powered tug and the first of two all-gas powered cargo vessels for a Norwegian transport company.

The naval business was focused on further development work and deliveries against contracts in both the UK and US. These included the first DDG 1000 multi-mission destroyer class for the US Navy and the world's largest, gas turbine engines, the MT30 for the UK's two new aircraft carriers. We also signed a contract to supply MT30s for operation on the first three of the Royal Navy's new Type 26 Global Combat Ship.

Product development work within the business included expanding the range of permanent magnet-based propulsion systems, as well as spearheading research into our pioneering ship intelligence technology focused on data-driven value-added services.

## Closing order book

# ▼26%

## Marine outlook

Overall the outlook for Marine remains cautious. We expect that the market will continue to be hit by low oil prices which will impact on demand for our products and services. As a result we will sustain our cost reduction programmes, focusing on manufacturing facilities, supply chain and overhead costs, in order to drive a more competitive business while also adapting to volume risks.

As set out in November 2015, we expect the net impact of weak trading conditions and cost saving initiatives to result in 2016 profits being between £75m and £100m lower than those achieved in 2015. As a result, the business is expected to be significantly loss making in 2016.

## MARINE / KEY FINANCIAL DATA

£m	2014	Underlying change	Acquisitions & disposals	Foreign exchange	2015
<b>Order book</b>	<b>1,567</b>	(403)	–	–	<b>1,164</b>
<b>Underlying revenue</b>	<b>1,709</b>	(269)	–	(116)	<b>1,324</b>
<i>Change</i>		-16%	–	-7%	-23%
Underlying OE revenue	1,070	(204)	–	(93)	773
<i>Change</i>		-19%	–	-9%	-28%
Underlying services revenue	639	(65)	–	(23)	551
<i>Change</i>		-10%	–	-4%	-14%
<b>Underlying gross margin</b>	<b>425</b>	(139)	–	(26)	<b>260</b>
<i>Gross margin %</i>	24.9%	-500bps	–	–	19.6%
Commercial and administrative costs	(254)	27	–	26	(201)
Restructuring costs	(4)	(16)	–	4	(16)
Research and development costs	(29)	(2)	–	3	(28)
<b>Underlying profit before financing</b>	<b>138</b>	(130)	–	7	<b>15</b>
<i>Change</i>		-94%	–	–	-89%
<b>Underlying operating margin</b>	<b>8.1%</b>	-750bps	–	–	<b>1.1%</b>



## MARKET REVIEW

In Marine, where we offer integrated ship solutions (including design, propulsion, deck machinery, automation and control, and power electrics), we forecast the market opportunity across the offshore, merchant and naval market segments to be £250bn.

Potential for OE and services over the next 20 years

Marine – all sectors

# £250bn

### Market dynamics

- Increasing environmental legislation and system efficiency requirements.
- Population growth is leading to an increasing energy and resources demand for cargo and passenger transportation in the long term.
- Increasing global and regional trade and transport of goods with effects on short-sea shipping.
- Strong shift from traditional markets towards Asia, both in shipbuilding and operation.
- Geopolitics and an increasing multipolar world results in increasing defence expenditures especially in emerging markets which stimulates demand for naval vessels.
- Increased technology requirements for harsher environments, eg. deepwater.
- Currently significant challenges in offshore markets due to low oil prices and weak investment signals.

### Business risks

- Markets: significant reduction in oil price creates pressure in the offshore market with all customer groups seeking to reduce costs and capital commitments.
- Order delays and cancellations impact our revenue, cash and profit but also put our supply chain under financial stress.
- Competition: competitors react to a depressed market by cutting costs, pricing aggressively and partnering with other players.
- Business continuity: the main risk is our key suppliers remaining solvent. We monitor and manage this to ensure no supplier has critical mass and maintain business continuity plans for these risks and other operational risks such as IT.
- Technology: failure to invest in the right technologies to meet customer demand in the future.
- Risk of product failure in the field resulting in the need for intervention to rectify the issue with financial consequences.

### Competition

- Major competitors fall into two groups – focus on strengthening systems capability or focus on product and technology.
- Industry consolidation within recent years has resulted in the establishment of large market players.
- Increasing competition from Asia, especially China.
- Increasing competition from industrial and electric companies driven by more focus on efficiency and electrification.

### Opportunities

- Capture value on more advanced vessels in offshore.
- Grow in tugs, ferries and workboats and short-sea shipping in merchant segments.
- Continue to leverage the joint value proposition in naval markets together with MTU.
- Continue to develop clean propulsion solutions which are emission compliant to new regulations, including alternative fuels (eg. gas/dual-fuel).
- Grow in integrated propulsion and electric systems.
- Establish a leading position in ship intelligence.
- Leverage local partnerships to generate regional growth in Asia, especially China.

### Key Rolls-Royce differentiators

- Unique domain knowledge; unique system portfolio including vessel design; joint value proposition within naval together with MTU; continuous innovation and technology leadership; and leadership in ship intelligence.

### Waterjets for fast cats

These Watercat M18 multi-purpose vessels use Rolls-Royce Steel Series Kamewa waterjets to propel them at speeds of over 40 knots. These lightweight, agile boats from Marine Alutech of Finland are ideal for fast patrol and troop transportation roles.

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### Summary

Nuclear is a leader in propulsion system design and development for the Royal Navy's nuclear submarine fleet and is the sole provider and technical authority, managing all aspects of plant design, safety, manufacture, performance and through-life support.

In civil nuclear we provide nuclear reactor vendors and utility operators with integrated, long-term support services and solutions spanning the whole reactor lifecycle, from concept design through to obsolescence management and plant-life extension. Safety-critical systems have been supplied to around 50% of the global nuclear power plants in service. We have been a key player in the nuclear industry for more than 50 years.

### Key highlights

- Underlying revenue 9% higher; strong service revenues led by increased submarine work.
- Underlying profit before financing unchanged, excluding the benefit from a £19m R&D credit; volume benefit offset by lower margins.
- 2016 outlook steady; focus on improving delivery performance and developing civil nuclear opportunities.
- Investing in the business to extend systems offering and increase service scope.

Potential for OE and services in civil nuclear over the next 20 years

**£360bn**

#### Submarine nuclear power

The Royal Navy Astute class is the latest to enter service with a Rolls-Royce designed nuclear propulsion plant.

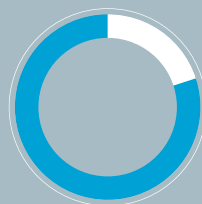


### Underlying revenue mix



OE revenue	37%
Services revenue	63%

### Underlying revenue by sector



Submarines	80%
Civil	20%

## NUCLEAR

### OPERATIONAL REVIEW

Underlying revenue increased 9% on a constant currency basis, led by growth in both original equipment and services. In particular, growth in submarine activities was strong. Revenue growth for our instrumentation and controls businesses was also good, particularly in Europe.

Despite the growth in revenue, gross margin declined by 240 basis points to 16.2% or £111m. This was largely due to increased costs on a number of projects with lower margin. Gross margin was also impacted by a reclassification of site costs from commercial, administration and other of around £7m. This favourably benefited costs below gross margin which also benefited from lower R&D charges as a result of an R&D credit of £19m which covered the current and the two previous years. Excluding this, underlying profit before tax was £50m, in line with the prior year. After the release, underlying profit of £70m is 40% up on the prior year.

### Investment and business developments

The order book fell around 13%, reflecting delivery of our long-term contracts across both submarines and civil nuclear businesses. New orders were biased to the second half of the year, benefiting from the expansion of our business reach and capabilities.

Our civil nuclear business focuses on multi-year projects and specialist services for what is a growing global industry. We were selected as preferred bidder by EDF to work on heat exchangers and waste treatment for the Hinkley Point C project in the UK and we were selected by Hitachi to be part of the Wylfa power station delivery team, the second nuclear power station scheduled in the UK's new-build programme. We also won a contract to supply safety measurement systems for the entire French fleet of 900MW reactors. These mandates help to further consolidate our significant position in the European marketplace and position us well to seek further opportunities for partnerships in growing nuclear markets.

In the US our acquisition of R.O.V. Technologies Inc. in March 2015 expanded our nuclear services portfolio, bringing complementary Boiling Water Reactor expertise and broadening our existing Pressurised Water Reactor remote inspection capability.

Our submarine activities have concentrated on delivering against long-term contracts for the Royal Navy's nuclear submarine fleet, including delivery of the nuclear propulsion system to power HMS Artful, the third Astute-class submarine, which was launched in August 2015. Our work on the Vanguard class included work on a refuelling programme and also the first successful upgrade to the reactor control and instrumentation update for HMS Vengeance. At the Naval Reactor Test Establishment, HMS Vulcan, the PWR2 test facility reactor was safely shut down having completed its prototyping role. Development work on the new PWR3 power plant for the Successor submarine fleet continues with contract extensions agreed in preparation ahead of the government final investment decision.

## Nuclear outlook

The outlook for Nuclear remains steady. Both submarines and civil nuclear enjoy long-term secure aftermarket revenues. While business development opportunities remain modest in the near-term, new power plants for the Successor together with long-term opportunities to develop relevant products for civil nuclear applications should provide incremental growth.

## MARKET REVIEW

**All respected global energy forecasts predict that nuclear power will continue to play a significant role in providing low-carbon, continuous and secure power. The demand for mission-critical equipment, systems and engineering services and the associated reactor support services for the civil nuclear market is forecast to be £360bn over the next 20 years.**

### Market dynamics

- Population growth and improved living standards in emerging markets are driving a rise in demand for electricity.
- Within the future energy mix, low-carbon energy is expected to increase, with nuclear energy accounting for a significant share.
- Growth in nuclear power generation is predominantly driven by non-OECD countries; strong growth is expected especially in China.
- Solid growth in mature markets based on current operations and plant life extensions.

### Competition

- In civil nuclear the competitor landscape is fragmented and comprises reactor vendors, original equipment manufacturers, multi-skilled companies and nuclear operators in service.
- Plant operators increasingly outsource service activities.

### Business risks

- Delivery: failure to meet customer expectations or regulatory requirements.
- Markets: if nuclear markets do not grow as anticipated due to external or other political events then business will be diminished.
- Customer strategy: if programmes are cancelled as a result of strategic decisions, such as abandonment of the UK nuclear deterrent, or vertical integration by reactor vendors, then future revenues will be diminished.
- If we experience a major product failure in service, then this could result in loss of life and critical damage to our reputation.
- If we suffer a major disruption in our supply chain, then our delivery schedules may be delayed, damaging our financial performance and reputation.

### Opportunities

- Increasing the pace of growth of the civil nuclear business.
- Focusing on growth regions beyond current core markets.
- Strengthening our position with the rapidly growing importance of China in the civil nuclear market.
- Capturing a higher share of the nuclear service market through extension of our geographic reach.

### Key Rolls-Royce differentiators

- Unique key technology capability in defence and civil nuclear with substantial credibility (more than 50 years' experience); broad mix of offerings over the whole lifecycle; reactor independent portfolio, capable of global reach.

## NUCLEAR / KEY FINANCIAL DATA

£m	2014	Underlying change	Acquisitions & disposals	Foreign exchange	2015
<b>Order book</b>	<b>2,499</b>	(331)	–	–	<b>2,168</b>
<b>Underlying revenue</b>	<b>638</b>	56	–	(7)	<b>687</b>
<i>Change</i>		+9%	–	-1%	+8%
Underlying OE revenue	230	27	–	(6)	251
<i>Change</i>		+12%	–	-3%	+9%
Underlying services revenue	408	29	–	(1)	436
<i>Change</i>		+7%	–	–	+7%
<b>Underlying gross margin</b>	<b>119</b>	(6)	–	(2)	<b>111</b>
<i>Gross margin %</i>	18.7%	-240bps	–	–	16.2%
Commercial and administrative costs	(61)	6	–	2	(53)
Restructuring costs	(1)	(1)	–	–	(2)
Research and development costs	(7)	21	–	–	14
<b>Underlying profit before financing</b>	<b>50</b>	20	–	–	<b>70</b>
<i>Change</i>		+40%	–	–	+40%
<b>Underlying operating margin</b>	<b>7.8%</b>	+230bps	–	–	<b>10.2%</b>