Cornwall County Council & Cornwall and Isles of Scilly Economic Forum

CORNWALL AND ISLES OF SCILLY SECTOR PROFILE:

ADVANCED ENGINEERING

December 2008

This research has been undertaken to update the previous sector profiles that had been requested by Cornwall Enterprise to stimulate a better understanding of their 10 priority sectors. This work will provide additional detail to underpin *Strategy and Action* in order to help to inform future decisions on the kind of support that is provided for local businesses and economic development projects.

The Sector

Advanced engineering is an important sector within the manufacturing sector.

> *"Manufacturing companies and in particular SME's have been subject to the threat from the Far East and Eastern block countries in terms of competitive pricing but there is a definite trend in seeing this starting to be reversed based upon quality and lead time demands. Companies that have continued to invest in manufacturing capability have been able to compete due to process improvements and superior quality.*
>
> *Most companies locally and indeed nationally are being constrained by the lack of suitable skills and this is very apparent in the engineering sector. The low throughput from schools into traditional apprenticeships is having a major impact on the ability to sustain growth. Other pressures such as utility prices and ever increasing transport costs are no longer able to be absorbed by companies through process improvements and this results in higher costs to the customer.*
>
> *The are many emerging manufacturing SME's in Cornwall trying to access the lucrative aerospace and defence sectors but these companies need financial assistance to raise their skill base and capability. European funding must be directed to enable this transition."* David Proctor, Chairman of the Cornwall Aerospace Defence Initiative (CADI).

Headline facts

- The advanced engineering sector employs 900 people in Cornwall, equal to 0.5% of total employees in Cornwall.
- There are 100 business units within the sector in Cornwall.
- GVA in 2006 equalled £30 million, equal to 0.4% of the total GVA for Cornwall.
- Although the number of units has increased, there has been a decline in employment since 1999 and the sectors contribution to Cornwall's GVA has also declined.
- Earnings at the sector level are only available at a UK level (median gross weekly for all employees). Earnings in this sector (UK data) are above average.
- The sector is under-represented in employment terms in Cornwall compared to the UK average, at about a third.

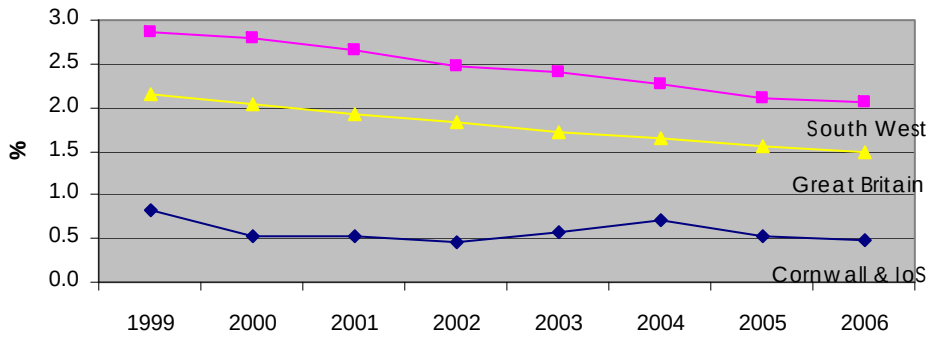
Overview

- *'Engineering is the second largest sector in the South West, in terms of employment, providing 9.9 per cent towards the region's GDP compared with 8.4 per cent nationally. Although the sector has suffered significant decline across the country, the South West has fared relatively well and benefits from links with defence-related and health-related industries - more specifically medical precision engineering and aerospace.'* (SWRDA, 2008).
- Compared to the situation across the SW, the sector in Cornwall is quite small. This reflects the nature of the sector, with substantial businesses in the aerospace category concentrated around *Bristol '(this is the largest sub-sector in employment terms, accounting for almost a third of all jobs in the advanced engineering sector)'*, and *'automotive: with a large concentration of employment in the Swindon area including Honda's only UK manufacturing plant'* (SWRDA, 2008).
- *'Cornwall itself is home to a significant cluster of aerospace businesses, thanks not least to the presence of the Royal Naval Air Station at Culdrose near Helston. Global industry players with local operations that work closely with RNAS Culdrose include: Lockheed Martin, prime contractor and systems integrator for the Navy's state-of-the-art Merlin helicopters. Serco Aerospace, a leading aviation support services provider that also manages and operates Newquay Airport. Serco employs around 250 people in Cornwall, including some 200 highly qualified engineers'.* (Cornwall Pure Business, (2008).
- In 2005 the Cornwall Aerospace and Defence Initiative (CADI) was *as a network for collective action by aerospace and defence companies in Cornwall, to improve market access and competitiveness. (*Cornwall Aerospace Defence Initiative, 2008).

Employment

- 900 jobs in Cornwall are in the advanced engineering sector.
- Employees are predominantly male (69%) full-time (92%).
- The employee profile differs from that across the SW and GB where the figures for full-time and male workers are higher (96%) and (82%) respectively.
- Between 1999 and 2006, employment in the advanced engineering sector in Cornwall fell by 26%, compared to 20% in the South West and 27% across GB.
- Employment in the sector in Cornwall accounts for only 0.5% of the total, down from 0.8% in 1999. This trend is similar to that found across the SW and GB. Trends are shown in Fig. 1.
- The sector is under-represented in employment terms, about a third below the UK average.
- Three-fifths of employment is concentrated within the manufacture of medical and surgical equipment and orthopaedic appliances SIC group.

Fig. 1 Sector employment as % of total employment



Source Annual Business Inquiry, NOMIS

Business units

- There are 100 business units recorded in the advanced engineering sector in Cornwall in 2006.
- Three-quarters of these units employ 10 or fewer employees.
- These units account, however, for only 18% of total employees in the sector in Cornwall.
- There has been an 8% increase in units since 1999, compared to declines of 4% and 5% across the SW and GB.
- The sector constitutes 0.4% of total units across Cornwall. This compares to 0.5% across the South West and Great Britain.

Spatial distribution

- The 4 figures below (2-5) map the employment and business unit (i.e. premises) density for the advanced engineering sector (NB. The scales are different for each map).

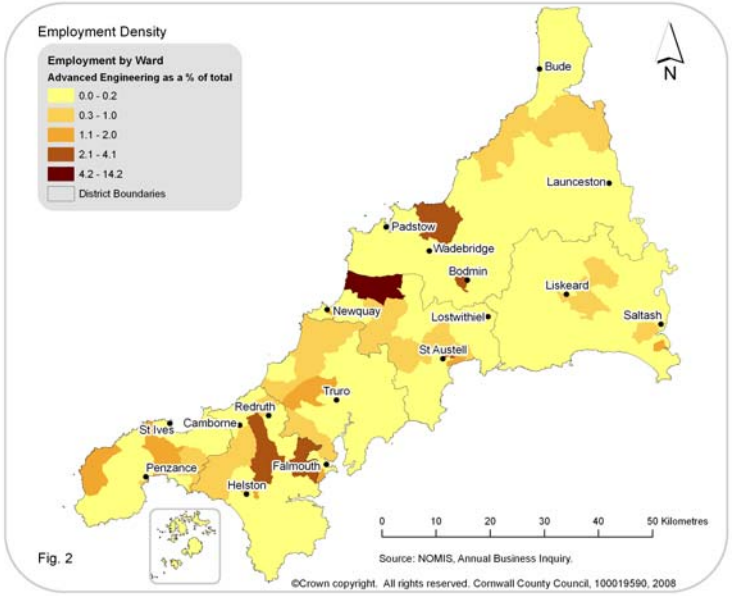


Fig. 2

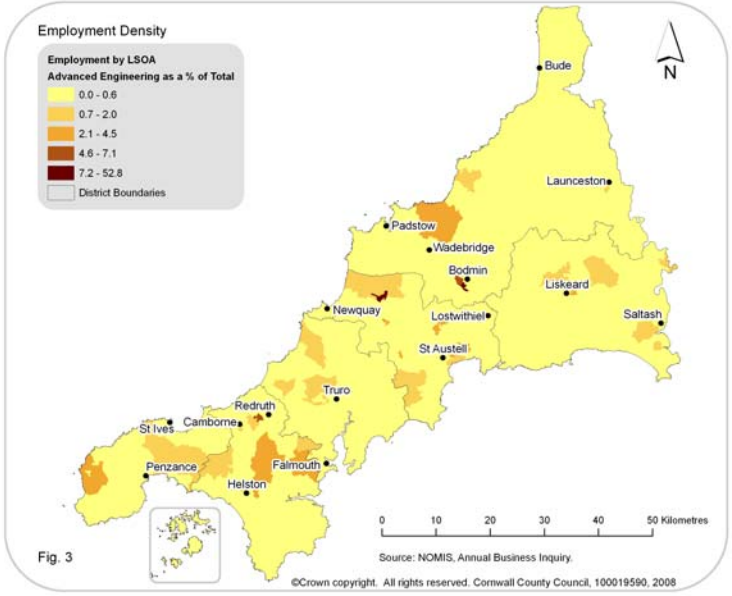


Fig. 3

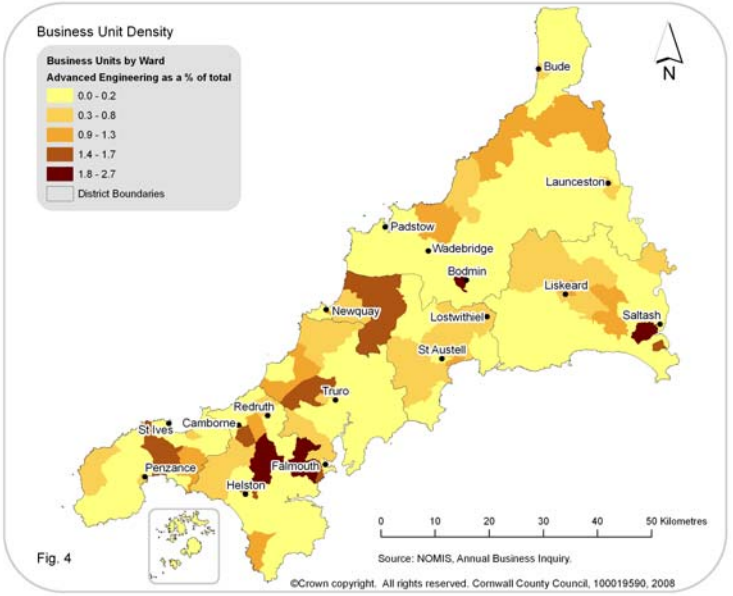


Fig. 4

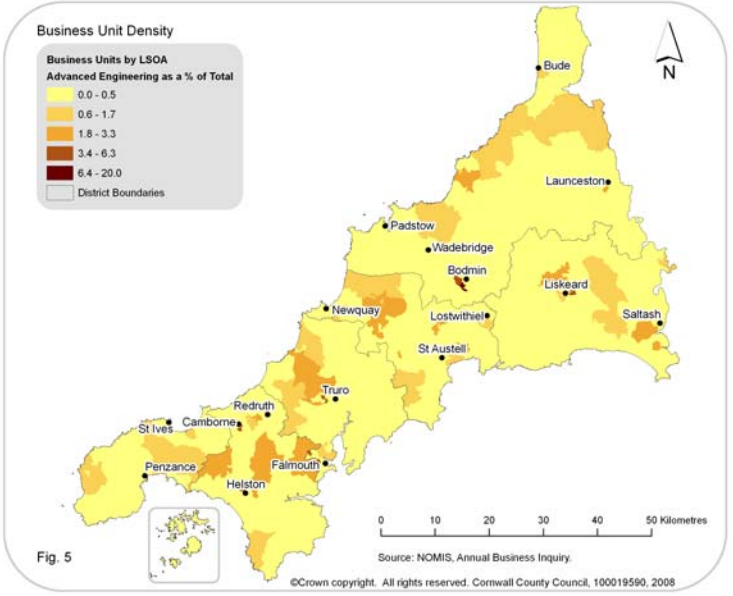


Fig. 5

- In two wards 40% or more employees work in this sector - St Columb Major North and Bodmin St Mary's Ward South.
- Half of all employment is concentrated in four LSOAs - St Columb Major North, Pool East and Carn Brea, St Austell Bethel Ward South East and Pool West and Tregajorran.
- A third of all business units in the sector are found in seven wards.
- LSOAs with more than 5 percent of business units within this sector are Bodmin St Mary's Ward South , Bodmin St Mary's Ward West , Newquay Edgcumbe South Ward East and Helston North Ward South West.

GVA

- The advanced engineering sector accounted for 0.4% of Cornwall's GVA in 2006 or £30.1 million.
- Annual growth in the sector of 0.1% has been well below the Cornish average of 7.9%.
- With below average growth, the sector's contribution has fallen from 0.7% in 1999 to 0.4% in 2006.
- In 2004 (the last date with comparable data) the sector represented 2.1% of UK GVA, whereas in Cornwall the figure was 0.6%.

Productivity

- In 2006, productivity per worker in the sector equalled £30,800, 12% above the average per worker in Cornwall.
- Productivity per Full Time Equivalent equalled £32,500 in 2006.

Earnings

- In 2007 median earnings for employees in this sector in the UK were above the average, particularly for those engaged in the manufacture of motor vehicles (164.7%) and the manufacture of industrial process control equipment (154.5%).

NB Earnings data by employment sector only available at a UK level.

Caveats:

The size of the sector in this profile may differ to other research as each sector is made up by aggregating a number of other "subsectors" (see notes for employment SIC sectors incorporated in this profile. Other studies may use a broader or narrower definition.

Totals from each profile should not be added as data included within one profile may also be included within another profile. For example, 3220 - Manufacture of television and radio transmitters... and 3230 - Manufacture of television and radio receivers ..., are included in both the ICT sector profile and the Creative Industries (Broad) sector profile. Fish processing is included in both food and drink and fishing.

This profile only analyses the *economic* value of a sector. The social, cultural and environmental value of a sector should also be thoroughly considered.

Sector definitions used in this profile may vary slightly between GVA and employment as the GVA data does not have such a detailed sector breakdown. This is because calculating GVA on a local level relies upon numerous data sources, some of which are only available at a broad sector level. For this reason, it has not been possible to include GVA data for some of the more specific or cross-cutting sectors without further extensive research. In addition, the national accounting system's classification limits the way in which we can understand the economy, for example, for the marine profile surf shops and wetsuit manufacturing cannot be drawn from the current structure, they are included in retail and rubber manufacturing, respectively. Again, further extensive research would be required to penetrate this detail.

All data in this profile refers to workplace.

Business units

Business units, in this publication, refer to business premises and/or head offices. This is the most comprehensive measure of activity as it incorporates counts of individual branches or sites – this is more useful than mapping the enterprise or business alone as this would only provide a count of the location of each head office.

The source of the business units data is the Inter-Departmental Business Register. This register is produced by the Office for National Statistics using VAT (value added tax) and PAYE (pay as you earn) records, therefore, it captures all businesses that either trade over the VAT threshold – for 2006 a turnover of 61,000, and/or are PAYE registered – employ at least one member of staff who earns more than £94/week, or £408/month.

Annual Business Inquiry (ABI) - Employee Analysis, Workplace Analysis

Data source: NOMIS. Based on a sample.
Discontinuities in 2003 and 2006 make comparisons difficult over a period of time. The 2006 discontinuity means that comparisons of the 2006 ABI employment estimates with earlier years do not provide a reliable comparison.
Elements contributing to the discontinuity include:

1. Change in reference date from December to September.
2. Use of Business Register Survey data within the ABI/1 results.
3. Change to the Minimum Domain Methodology.

NOMIS state that *'It is not possible to measure the impact of the changes made precisely, however the scale of the overall discontinuity between the 2005 and 2006 ABI/1 is estimated to be in the range of 150,000 to 350,000 (0.6 to 1.3 per cent of the total number of employees) in a downward direction.'*

All employment data from the ABI employee analysis has been rounded to the nearest 100 in line with release of data rules.

Geographical anomalies

Data from different sources differs in its geographical coverage. The ABI covers Great Britain, ASHE data covers the United Kingdom.

Earnings data

Earnings data by employment sector is only available at a UK level. Earnings levels in Cornwall are substantially lower and although it is expected that the difference applies across all sectors, the exact relationship is unknown, therefore care should be taken in interpreting the data.

Data:

Employment

The employment figures in this profile refer to the number of jobs in the advanced engineering sector. Figure 1 uses the total figure, thus incorporating both part and full time work.

Advanced engineering sector

Cornwall and Isles of Scilly	Full Time Workers	Part Time Workers	Total
1999	1100	100	1200
2000	800	0	800
2001	900	0	900
2002	800	100	800
2003	1000	100	1000
2004	1200	100	1300
2005	900	100	1000
2006	800	100	900

Source: NOMIS, Annual Business Inquiry © Crown Copyright

Advanced engineering employment as a % of total

	Cornwall	South West	Great Britain
1999	0.8	2.9	2.1
2000	0.5	2.8	2.0
2001	0.5	2.7	1.9
2002	0.5	2.5	1.8
2003	0.6	2.4	1.7
2004	0.7	2.3	1.6
2005	0.5	2.1	1.6
2006	0.5	2.1	1.5

Source: NOMIS, Annual Business Inquiry © Crown Copyright

Business Units

Sector business units as a percentage of all units

	Cornwall and Isles of Scilly	South West	Great Britain
1999	0.4	0.6	0.6
2000	0.4	0.6	0.6
2001	0.5	0.6	0.5
2002	0.5	0.6	0.5
2003	0.4	0.6	0.5
2004	0.4	0.6	0.5
2005	0.4	0.5	0.5
2006	0.4	0.5	0.5

Source: NOMIS, Annual Business Inquiry © Crown Copyright

GVA

Advanced engineering GVA data has been sourced from the Local GVA model for Cornwall level data and the Office for National Statistics (ONS) for UK statistics. The following tables provide the raw data from which the graphs on page one were produced.

GVA (£ million)

	Cornwall	UK
1999	29.9	22285
2000	22.0	22723
2001	26.6	22797
2002	24.8	22255
2003	29.7	21701
2004	38.9	22324
2005	31.3	na
2006	30.1	na

Source: Owen Nankivell, (2008) *Local GVA mode*l; ONS, (2006), *UK Input-Output Analyses.*

GVA (% of total)

	Cornwall	UK
1999	0.7	2.8
2000	0.5	2.7
2001	0.6	2.6
2002	0.5	2.4
2003	0.5	2.2
2004	0.6	2.1
2005	0.5	na
2006	0.4	na

Source: Owen Nankivell, (2008) *Local GVA mode*l; ONS, (2006), *UK Input-Output Analyses.*

GVA £million and percentage - Cornwall

	£ million	% of total
1999	29.9	0.7
2000	22.0	0.5
2001	26.6	0.6
2002	24.8	0.5
2003	29.7	0.5
2004	38.9	0.6
2005	31.3	0.5
2006	30.1	0.4
Change	100.7	59.0

Source: Owen Nankivell, (2008) *Local GVA mode*l.

Earnings

Employee weekly pay – advanced engineering sector [NB Earnings data by employment sector only available at a UK level].

Weekly pay - Gross (£) - For all employee jobs: United Kingdom, 2007

Description	Code	Median	As % of median
ALL EMPLOYEES		374.9	100.0
Manufacture of insulated wire and cable	3130	453.1	120.9
Manufacture of electronic valves and tubes and other electronic components	3210	383.8	102.4
Manufacture of medical and surgical equipment and orthopaedic appliances	3310	436.7	116.5
Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	3320	483.1	128.9
Manufacture of industrial process control equipment	3330	579.4	154.5
Manufacture of optical instruments and photographic equipment	3340	380.7	101.5
Manufacture of motor vehicles	3410	617.6	164.7
Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	3420	423.2	112.9
Manufacture of parts and accessories for motor vehicles and their engines	3430	442.6	118.1
Manufacture of aircraft and spacecraft	3530	570.6	152.2

Source: Annual Survey of Hours and Earnings, (2007), Table 16.1a Weekly pay - Gross (£) - For all employee jobs: United Kingdom, 2007

Comparative earnings data

The table below shows earnings levels in Cornwall compared to both the South West and Great Britain. All data for 2007.

Median Earnings by workplace 2007

	All		All Full-time		All Part-time	
Area	**£**	**%**	**£**	**%**	**£**	**%**
Cornwall	304.9	81.3	373.3	81.7	140.4	97.6
South West	349.2	93.1	427.8	93.7	144.7	100.6
United Kingdom	374.9	100	456.7	100	143.9	100
	Male		**Male full-time**		**Male part-time**	
Area	**£**	**%**	**£**	**%**	**£**	**%**
Cornwall	358.9	77.3	399	80.1	149.7	108.6
South West	441.4	95	476.5	95.6	147.9	107.3
United Kingdom	464.5	100	498.3	100	137.8	100
	Female		**Female Full-time**		**Female Part-time**	
Area	**£**	**%**	**£**	**%**	**£**	**%**
Cornwall	239	83.1	344.4	87.4	138.7	95.3
South West	267	92.9	363.3	92.2	144	98.9
United Kingdom	287.5	100	394	100	145.6	100

Source: Annual Survey of Hours and Earnings, (2007). Table 7.1a Weekly pay - Gross (£) - For all employee jobs: United Kingdom, 2007.

References:

Cornwall Aerospace Defence Initiative, (2008), Welcome to CADI http://www.cadi.org.uk/

Cornwall Pure Business, (2008), Business Sectors, Advanced engineering & aerospace. Accessed (24/06/08). http://www.cornwallpurebusiness.co.uk/business-sectors/engineering.htm.

Office for National Statistics, (2007), Annual Survey of Hours and Earnings - 2007, Weekly pay - Gross (£) - For all employee jobs.

South West Regional Development Agency, (2008), Advanced Engineering (including Aerospace), http://www.southwestrda.org.uk/sectors/aerospace/index.shtm Accessed 24/06/08).

Notes:

The maps indicating the spatial distribution of employment and business units use both ward and Lower Super Output Areas. The wards are those used for District Council elections. Super output areas are a new geographical hierarchy designed to improve the reporting of small level statistics. They are now used in preference to administrative boundaries such as wards as they are of roughly equal population levels and are based on the area's characteristics, not historical events. The lower super output areas have a mean population size of 1,500.

Gross Value Added (GVA)

What is Gross Value Added?

GVA measures the contribution each sector, industry or producer makes to the economy, and when added, the total value of economic activity in a particular area. It is used as an indicator of the value of economic activity that takes place within a sector, or area.

Advanced Engineering
in this profile refers to the
following SIC(2003) activities:

3130 : Manufacture of insulated wire and cable
3210 : Manufacture of electronic valves and tubes and other electronic components
3310 : Manufacture of medical and surgical equipment and orthopaedic appliances
3320 : Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment
3330 : Manufacture of industrial process control equipment
3340 : Manufacture of optical instruments and photographic equipment
3410 : Manufacture of motor vehicles
3420 : Manufacture of bodies (coachwork) for motor vehicles: manufacture of trailers and semi-trailers
3430 : Manufacture of parts and accessories for motor vehicles and their engines
3530 : Manufacture of aircraft and spacecraft

Sector profiles in this format:

Advanced Engineering
Agriculture & forestry
Agri-food
Creative industries
Environmental Technology
Fishing
Food and Drink
Information & communication technology
Manufacturing
Marine
Medical & health
Tourism
Voluntary

For further information about this or the other profiles in the series please contact Peter Wills, Corporate Economy and Europe Unit, Cornwall County Council: 01872 322520, pwills@cornwall.gov.uk