



# WALES

Wales has a proud heritage in advanced manufacturing and engineering (AME), with a number of multi-national employers in the sector choosing to base their operations in the nation.

# WALES



**The Welsh Government enjoys full control of the nation's education and skills system.**

## Introduction

The lifeblood of the sector is a thriving base of micro-sized and SME-sized employers, which comprise over 99% of the total number of employers. The Welsh AME sector is given strong backing by the Welsh Government, which has recently (August 2018) announced plans to inject £3m of funding into new research hub in Cardiff to drive commercialisation.

This focus on research and on innovation is, in the context of a projected shift from lower-skilled occupational roles within AME to higher-skilled ones, sensible. There will be a shrinkage of the lower-skilled occupational areas (especially process, plant and machine operatives) and a relatively large growth in the numbers of professionals employed.

Although Welsh-based employers must pay the pan-UK apprenticeship levy, the Welsh Government has chosen to follow a different path to the UK Government in how it defines an apprenticeship, with competency qualifications and technical knowledge qualifications included within all Welsh apprenticeships.

Qualifications Wales has announced plans to undertake a review of the current state of qualifications in the engineering, advanced manufacturing and energy sectors, a category previously identified by the Welsh Government.

To build on this legacy the review will seek to develop a thorough understanding of the qualifications spectrum and following interviews with key stakeholders (employers, learning providers, learners, industrial bodies) decide whether Qualifications Wales should take any action to further improve the effectiveness of qualifications currently on offer or the system itself.

With a publication of findings set for Autumn 2020 release, the review will include a comparison exercise where similarities and differences between equivalent qualifications offered in other countries will be compared side by side with those currently available in Wales.

## Sector Profile

According to official (IDBR) data from the UK government, Wales accounts for a lower percentage of AME employers than any part of the UK bar Northern Ireland.

Employer size	Micro (0-9 employees)	Small (10-49 employees)	Medium (50-249 employees)	Large (250+ employees)	Total	As percentage of total
East Midlands	9,920	1,315	325	50	11,610	7.4
East of England	13,905	1,610	400	75	15,990	10.2
London	14,705	995	225	50	15,975	10.2
North East	6,180	535	165	35	6,915	4.4
North West	15,120	1,625	375	75	17,195	10.9
Northern Ireland	2,660	370	85	15	3,130	2.0
Scotland	14,080	1,085	250	65	15,480	9.9
South East	21,125	2,125	470	125	23,845	15.2
South West	11,575	1,265	270	65	13,175	8.4
<b>Wales</b>	<b>5,120</b>	<b>545</b>	<b>160</b>	<b>35</b>	<b>5,860</b>	<b>3.7</b>
West Midlands	13,620	2,110	525	110	16,365	10.4
Yorkshire and the Humber	9,655	1,435	375	65	11,530	7.3
<b>Total</b>	<b>137,665</b>	<b>15,015</b>	<b>3,625</b>	<b>765</b>	<b>157,070</b>	<b>100</b>
<b>As % of Total</b>	<b>87.6</b>	<b>9.6</b>	<b>2.3</b>	<b>0.5</b>	<b>100</b>	

	2018 Employment in AME
East Midlands	112,377
East of England	139,623
London	102,730
North East	56,051
North West	161,874
Northern Ireland	38,878
Scotland	107,941
South East	189,627
South West	144,903
<b>Wales</b>	<b>79,798</b>
West Midlands	192,956
Yorkshire and Humber	120,346
<b>Grand Total</b>	<b>1,447,103</b>

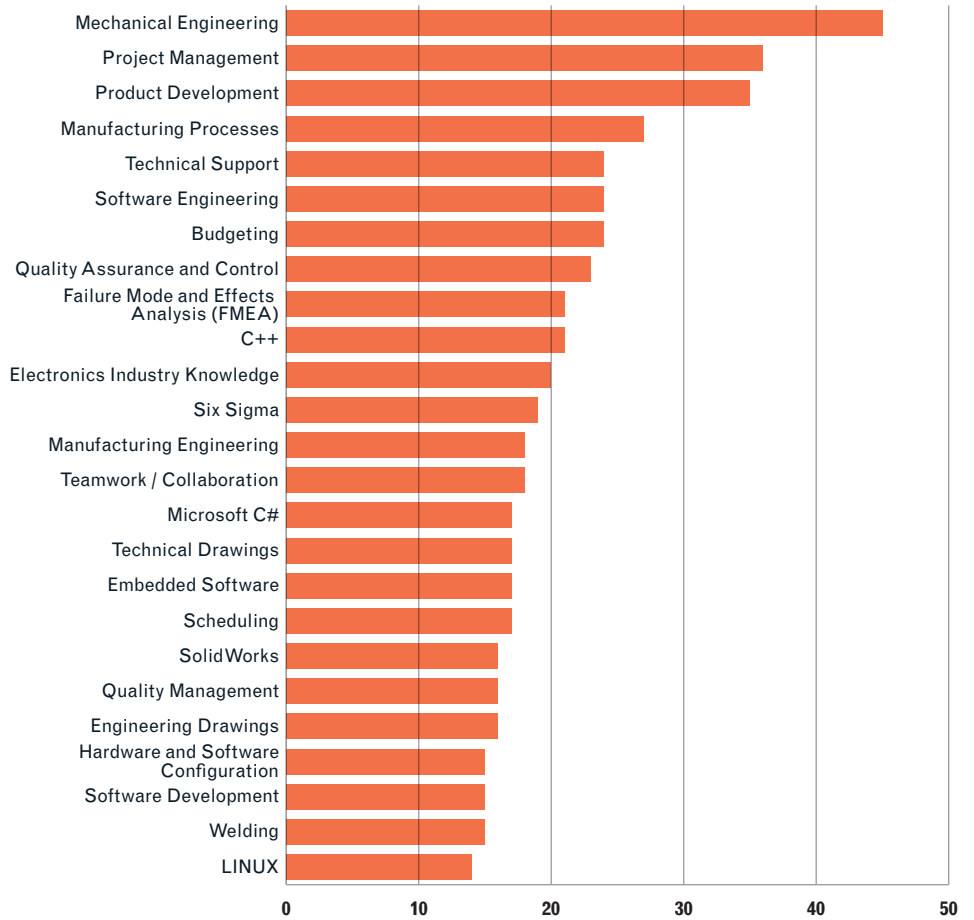


## Demand for Skills

Mechanical Engineering skills are the most in-demand technical skills amongst Welsh AME employers, according to Labour Insight data – in 2017, around 20% of AME job postings included a demand for these skills.

The list of in-demand skills also includes a number of skills related to efficiency and productivity, such as Six Sigma, and a variety of computing skills, including programming and software skills.

The demand for project management and budgeting skills is perhaps reflective of the changing nature of the sector, with engineers expected to be multi-disciplinary and rounded in terms of their skillsets.



Communication and problem solving skills are in demand in the AME sector across the UK, and they are the most in-demand general skills in Wales too.

A strong demand for leadership, organisational and planning skills reflects the changing roles of engineers and the demand for engineers who can work across traditional boundaries.



**The expected growth in professionals could be met from within the sector if some existing lower-skilled workers could be upskilled effectively.**

Semta's own analysis has flagged a need for development of the AME workforce to ensure that Welsh workers in the sector are qualified and skilled to the levels appropriate to their roles.



**1,082 Managers** require development to **Level 3 or higher**



**2,160 Professionals** require development to **Level 4 or higher**



**1,359 Technicians** require development to **Level 4 or higher**



**8,591 of those working in Skilled Trades Occupations** require development to **Level 3 or higher**



**6,749 Operators** require development to **Level 2 or higher**

## Occupations, qualifications and the skills shift

Ensuring that the operators and skilled tradespeople in the Welsh AME sector are able to achieve higher qualification and skills levels is especially important in the context of an expected shrinkage within the sector which will be largely due to these roles disappearing.

The expected growth in professionals could be met from within the sector if some existing lower-skilled workers could be upskilled effectively.

## Qualification Split

Occupational area	Wales 2018	Wales 2023	2018-23 Wales change	2018-23 UK change
Process, plant and machine operatives	23,853	21,497	-9.90%	-12.90%
Skilled trades occupations	21,504	19,294	-10.30%	-11.70%
Professional occupations	9,170	9,253	0.90%	0.20%
Associate professional and technical	7,360	7,218	-1.90%	-1.90%
Managers, directors and senior officials	5,493	5,506	0.20%	-0.70%
Elementary occupations	5,159	4,799	-7.00%	-9.60%
Administrative and secretarial	4,985	4,741	-4.90%	-8.50%
Sales and customer service	1,371	1,337	-2.50%	-4.20%
Caring, leisure and other service	901	945	4.90%	2.30%
<b>Grand Total</b>	<b>79798</b>	<b>74590</b>	<b>-6.50%</b>	<b>-5.50%</b>

The shrinkage of the numbers employed within the Welsh AME sector will not be contained within one or two subsectors – it will be felt across the sector as a whole.

### Occupations: Current Workforce & Projections

There will be a growth in the numbers of workers with all qualification levels at QCF4 equivalent and above, and a decline in the numbers with qualifications at QCF3 and below.

Further and higher education will be especially important, so the aforementioned review of vocational qualifications is especially timely. UK-wide policies such as the National Retraining Scheme could also help workers to access the training they need.

The Welsh Government has also produced its own STEM delivery plan, which sets out these key priorities for learners:-

- improving the analysis and reporting of progress against key indicators
- evolving the learning and teaching undertaken in schools, colleges and universities
- developing STEM-related qualifications to be of a standard comparable with the rest of the UK and the best in the world
- promoting the long-term, self-sustaining, system-wide development of an education workforce capable of delivering a new and challenging STEM curriculum
- increasing interest and participation in STEM learning, particularly with girls
- equipping young people with career management skills and knowledge of the options available to them in the STEM sector.

At degree level, Cardiff and Swansea are both ranked by the Complete University Guide in the top 15 universities in the UK for General Engineering (and ranked 4th and 6th respectively by quality of research), while Swansea is ranked in the top 20 (and 6th for research quality) for Aeronautical Engineering.

Qualification level	Wales 2018	Wales 2023	2018-23 Wales Change	2018-23 UK Change
No qualification	3401	1,538	-54.8%	-45.8%
QCF1 GCSE (below grade C) & equivalent	11,181	8,941	-20.0%	-21.8%
QCF2 GCSE (A-C) & equivalent	18,861	17,258	-8.5%	-10.3%
QCF3 A Level & equivalent	19,677	17,352	-11.8%	-14.9%
QCF4 HE below Degree Level	7,442	8,018	7.7%	3.2%
QCF5 Foundation Degree	2,531	2,809	11.0%	6.4%
QCF6 First Degree	12,044	13,803	14.6%	10.2%
QCF7 Other Higher Degree	3,892	4,083	4.9%	4.0%
QCF8 Doctorate	771	789	2.3%	2.2%
<b>Grand Total</b>	<b>79,798</b>	<b>74,590</b>	<b>-6.5%</b>	<b>-5.5%</b>

The shrinkage of the numbers employed within the Welsh AME sector will not be contained within one or two subsectors – it will be felt across the sector as a whole. (The caveat is that these projections were based on data

which did not take into account the effects of Brexit, changes of government policy or other such variables – the Welsh aerospace sector, for example, would be particularly vulnerable to the negative effects of a no-deal Brexit.)



## Wales employment by sector (SIC groups)

Sector	Wales 2018	Wales 2023	2018-23 Wales change	2018-23 UK change
Fabricated Metal Products	14,644	14,231	-2.80%	-6.10%
Automotive	9,483	8,759	-7.60%	-10.60%
Basic Metals	8,272	7,756	-6.20%	-10.10%
Aerospace	8,263	7,789	-5.70%	-3.50%
Electrical Equipment	5,966	5,313	-10.90%	-7.40%
Engineering design activities for industrial process and production	5,158	5,113	-0.90%	-1.30%
Mechanical Equipment	4,877	3,948	-19.00%	-18.80%
Repair of machinery Installation of industrial machinery and equipment	4,621	4,184	-9.50%	0.20%
Marine	3,341	3,153	-5.60%	-3.50%
Research and experimental development on natural sciences and engineer	3,147	3,572	13.50%	7.20%
Manufacture of computer, electronic and optical products	2,590	1,934	-25.30%	-21.50%
Technical testing and analysis	1,874	1,861	-0.70%	-1.10%
Repair and maintenance of aircraft and spacecraft	1,673	1,511	-9.70%	-0.10%
Other Transport Equipment	1,040	983	-5.50%	-3.30%
Wholesale of metals and metal ores	1,009	1,026	1.70%	0.40%
Repair and maintenance of other transport equipment	1,007	908	-9.80%	-0.30%
Repair of electrical equipment	728	660	-9.30%	0.40%
Repair of fabricated metal products, machinery and equipment	703	634	-9.80%	-0.20%
Repair and maintenance of ships and boats	643	581	-9.60%	0.00%
Repair of electronic and optical equipment	389	353	-9.30%	0.30%
Rubber Tyres	370	320	-13.50%	-12.80%
<b>Grand Total</b>	<b>79,798</b>	<b>74,590</b>	<b>-6.50%</b>	<b>-5.50%</b>



## Gender

The AME workforce in Wales is projected to become relatively more female in the next five years, in common with the workforce across the UK.

This could be a reflection of a relatively more gender balanced intake of new workers coming into the sector, with older workers, who are predominantly male, reaching retirement age. The Welsh Government is focusing on getting girls interested in STEM learning as a policy priority.

Gender	Wales 2018	Wales 2023	2018-23 Wales change	2018-23 UK change
Females	13,376	13,159	-1.6%	-0.6%
Males	66,422	61,431	-7.5%	-6.7%
<b>Grand Total</b>	<b>79,798</b>	<b>74,590</b>	<b>-6.5%</b>	<b>-5.5%</b>