

Advanced Manufacturing and Engineering sector – skills overview

Dorset LSIP overview – March 2023

Introduction:

This short paper is intended to form part of the evidence that informs the development of the Dorset Local Skills Improvement Plan. It is not intended to be a comprehensive analysis of the skills landscape relating to the relevant advanced manufacturing and engineering sector. Rather, it is intended to be an overview of some of the main broad trends that have been highlighted in relevant research. It is intended to sit alongside the other work that has been developed to inform the Dorset LSIP – notably the direct business consultations, and analysis of other secondary data such as skills demand in job postings.

Advanced Manufacturing and Engineering:

Skills gaps and shortages are cited by manufacturers as one of the main barriers to their business development. Recent feedback by regional manufacturers via the SWMAS Barometer highlighted that consistently around three-quarters of manufacturers the availability of suitably skilled staff is having a negative impact on their business.

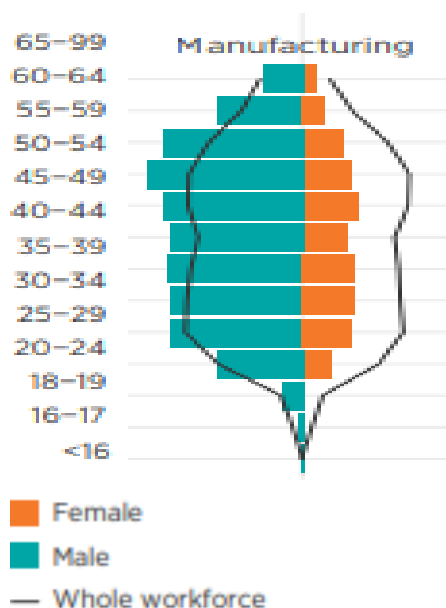


[The latest vacancies data published by the ONS shows that the UK's manufacturing sector has 4 vacancies per 100 employed jobs, with the historical average ratio being 1.9 vacancies per 100 jobs.](#) One of the issues that manufacturers have faced since the pandemic (given the nature of the work and the importance of on-site presence that is often integral to the process) is that there is a view that recruitment difficulties have been accentuated by some candidates opting for jobs where they can work remotely and/or are perceived to offer a more sustainable work-life balance. The pandemic forced manufacturing businesses to rethink their efforts to build workforces, including their previous approaches to training, talent pipelines and job descriptions. [Manufacturers increasingly view that flexible working is a key trend driving changes to jobs and skills between now and 2030.](#) Whilst flexible working is becoming more widespread in the manufacturing sector, there is often a difference between what is available for production and non-production staff.

Source: SWMAS Barometer (Jan 23)

[This issue is overlaid over more longer-term structural issues related to a lack of experience, age of workforce and skill set.](#) In terms of demographics, part of the challenge facing the industry is an increasing number of employees have either retired early or plan to do so in the next 5-to-10 years. [The demographic timebomb facing the industry has been commented on widely.](#) Manufacturing and engineering are amongst the ‘oldest’ sectors within the UK economy. The average age of workers in manufacturing is around 45 years. In terms of gender, it remains a male-dominated industry (as shown below). Only 1-in-5 of workforce is female.

Source: CIPD



The feedback from the sector in terms of causes of skills shortages include insufficient involvement of manufacturing in technical education, insufficient understanding of the opportunities in modern manufacturing and a lack of interest in the sector – linked to the view that the perception among young people is that it offers few opportunities.

Apprenticeship numbers in manufacturing have taken a big hit. While they may look to be picking up year on year due to comparisons of pre and post pandemic, the more interesting figures are pre- and post-Apprenticeship Levy. [For example, in 2016/17 \(pre-Levy\) there were 75,020 manufacturing and engineering starts. In 2018/19 \(post Levy\) this fell to 59,970. In 2020/21 \(post Levy and in pandemic\) this fell to 39,510.](#)

Whilst skills deficits remain important, there is some recent focus on a shift in discussions from having enough people with the right skills to just having enough people to fill roles. Around 1-in-10 of manufacturing businesses take longer than 12 months to fill vacancies. Research indicates that manufacturers are pressing ahead on their digital journey. An increasing number of businesses are now in the process of digital adoption, adopting technologies including robotics, AI, augmented and virtual reality and additive manufacturing. Access to technical skills is the biggest barrier to adopting digital technology. Two-thirds of manufacturers say they had invested in digital skills training within the past 12 months. Proficiency in digital skills is increasingly being demanded by employers. [Make UK's skills survey](#) continue to point towards a rise in demand for such competences – they are becoming a necessity in the manufacturing workplace – yet manufacturers struggle to find them.

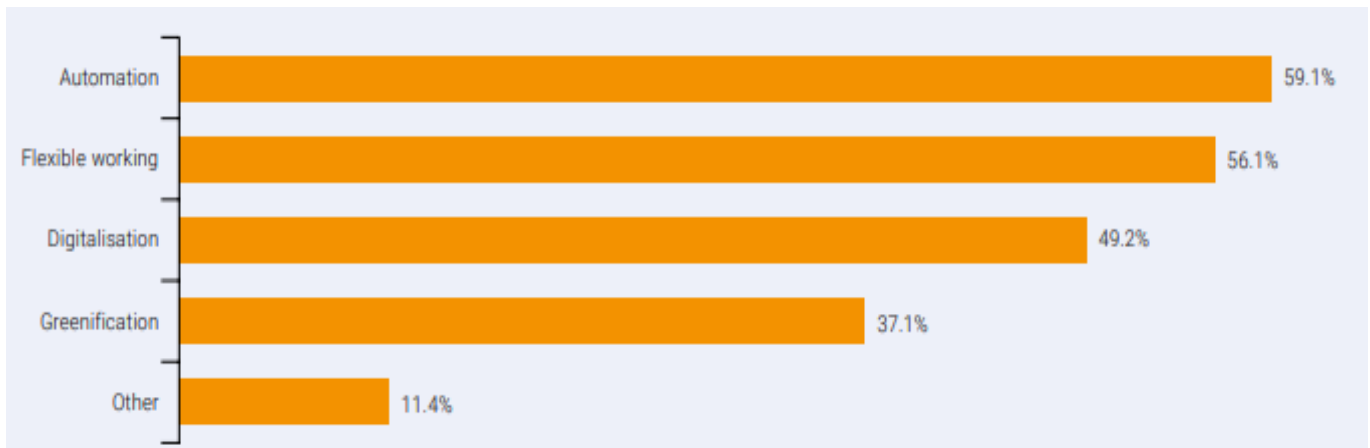
This is having an impact not just on fulfilling their immediate books, but also on future planning for growth. On a macro-scale, it has been estimated that the cost of lost productivity due to vacancies in manufacturing being left unfilled is estimated to be between £7.7bn-£8.3bn to the UK economy.

Job roles and skills that are growing in increasing importance include data analytics and digital skills. While gaps in the areas of data analytics and digital skills already exist in the manufacturing industry, in the future, the need for these skills will only increase.

There is also a focus on the leadership and management skills in manufacturing and engineering. Increasing the leadership skillset is seen as an important determinant for several key issues such as recruitment and retention, adoption of new technologies (including green technologies) and driving change in terms of diversity, inclusion and equality (themselves seen as barriers to increasing engagement in the wider industry). [Developing talent in-house can be challenging, but with almost 7 in 10 manufacturers saying there is a shortage of management skills in the manufacturing sector.](#)

Overall, digitalisation, 'greenification' and flexible working are driving the skills and jobs needs for 2020.

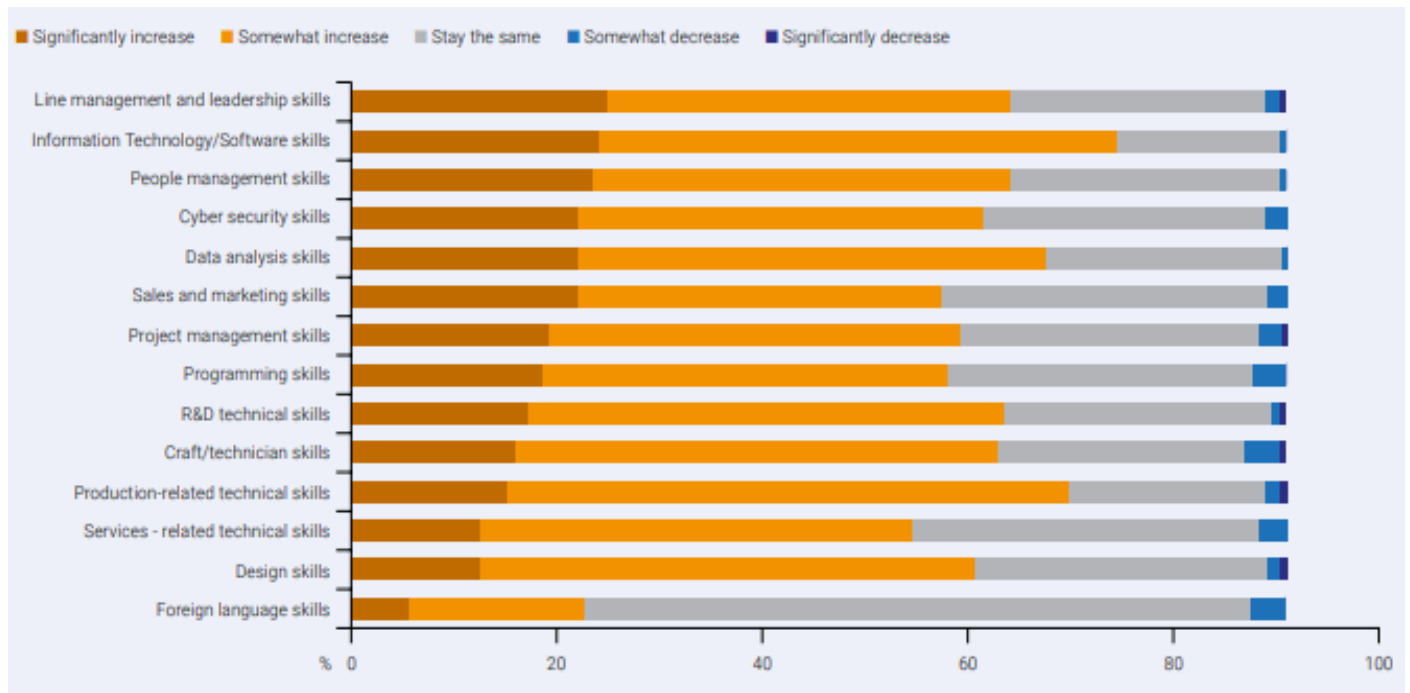
Themes influencing manufacturing skills and jobs – to 2030



Source: Make UK/Sage, Skills Survey 2022

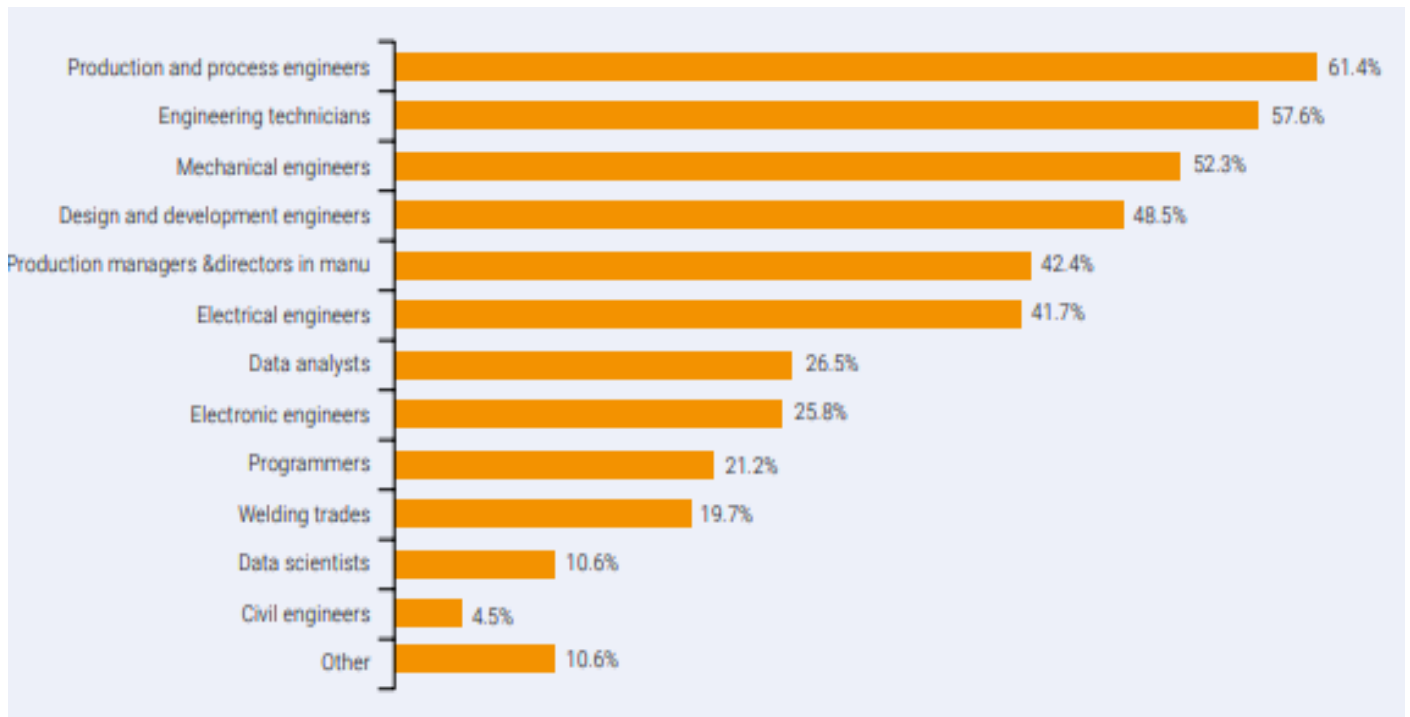
The manufacturing business view of the influences on skills needs are shown below – take from the Make UK Skills Survey.

% businesses reporting how they expect skills needs to change between now and 2030



Source: Make UK/Sage, Skills Survey 2022

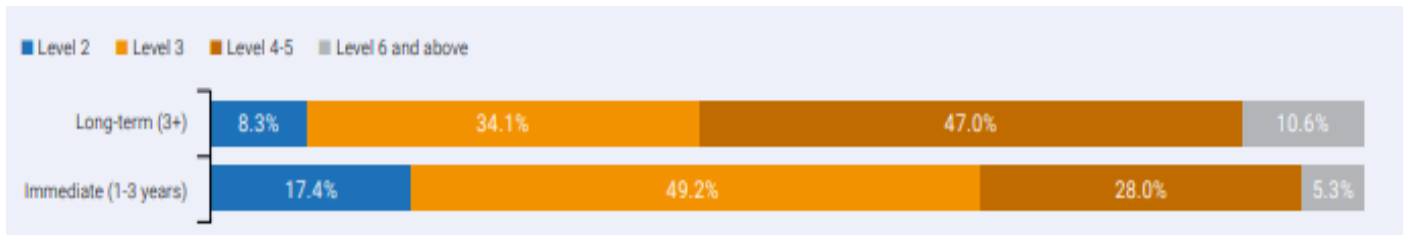
% businesses citing the job roles they need to recruit from in the next 12 months



Source: Make UK/Sage, Skills Survey 2022

In the immediate term (defined as between 1-3 years) manufacturers plan to prioritise investment in either middle or higher-level skills. Almost half (49%) said they will prioritise investment in Level 3 skills and over a quarter (28%) on Level 4 and 5. A very small number (5%) cited Level 6 and above, which is likely due to the gaps in ‘technical’ level roles that tend to be serviced by the vocational training market. Perhaps most notable is that almost one in five (17%) cited demand for skills at Level 2. Increasingly we have heard from manufacturers that there is a gap in labour for Level 2 roles and this is borne out in this research. Looking ahead to the longer-term (over 3 years), the trend pivots more towards the mid to higher level skills, reflecting manufacturers’ plans to invest in digitalisation and greenification which, as demonstrated above, will lead to an increase in demand for higher level technical skills.

% manufacturing businesses citing immediate and long-term priority investment for skills by level



Labour demand – Dorset LSIP:

There were c29,000 jobs (2021) across the Dorset LSIP area in occupations associated with engineering and manufacturing courses (SSA2) – which engineering and manufacturing technologies.

There c16,500 job postings in 2021 relating to the associated occupations. Typically jobs are posted twice before being filled (posting intensity of 2:1)

Associated Occupations
 We have associated the following occupations with the chosen course areas.

<p>28,883 Jobs (2021) 0% below National average</p>	<p>+0.7% % Change (2021-2022) Nation: +0.6%</p>	<p>£14.51/hr £29.7k/yr Median Wages Nation: £14.83/hr; £30.2k/yr</p>
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Occupation	2021 Jobs	Annual Openings	Median Wages	Growth (2021 - 2022)	Location Quotient (2021)
Metal Working Production and Maintenance Fitters	2,317	73	£13.92/hr	+0.91%	1.13
Vehicle Technicians, Mechanics and Electricians	2,123	47	£12.50/hr	+1.37%	1.11
Carpenters and Joiners	1,446	38	£13.50/hr	+1.04%	1.22
Packers, Bottlers, Canners and Fillers	1,432	36	£9.69/hr	+0.28%	0.71
Construction and Building Trades n.e.c.	1,422	58	£13.41/hr	+1.62%	1.38
Food, Drink and Tobacco Process Operatives	1,371	30	£10.08/hr	-1.68%	0.75
Construction Operatives n.e.c.	1,156	36	£12.00/hr	+1.47%	1.31
Engineering Professionals n.e.c.	1,049	28	£19.86/hr	+0.19%	0.96
IT Business Analysts, Architects and Systems Designers	1,030	30	£24.08/hr	+1.26%	0.79
Design and Development Engineers	882	25	£19.84/hr	+0.68%	1.24
Engineering Technicians	869	22	£15.78/hr	+0.46%	1.09
Mechanical Engineers	859	24	£19.33/hr	+0.93%	1.32
Electrical and Electronic Trades n.e.c.	681	18	£15.94/hr	+0.73%	0.85
Metal Machining Setters and Setter-operators	676	18	£13.89/hr	+1.18%	1.28
Laboratory Technicians	645	17	£11.19/hr	0.00%	0.87
IT Engineers	619	22	£17.52/hr	+1.78%	1.21
Metal Working Machine Operatives	562	12	£11.69/hr	+0.36%	0.93
Civil Engineers	555	13	£19.38/hr	+0.36%	0.76
Assemblers and Routine Operatives n.e.c.	491	11	£10.18/hr	+0.61%	0.95
Bricklayers and Masons	466	12	£11.67/hr	+0.86%	1.22

Job Postings Overview

16,554
Unique Postings
39,416 Total Postings

2 : 1
Posting Intensity
Regional Average: 3 : 1



34 days
Median Posting Duration
Regional Average: 34 days

Top Posted Job Titles

Job Title	Total/Unique (Jan 2021 - Dec 2022)	Posting Intensity	Median Posting Duration
Production Operatives	999 / 418	2 : 1	35 days
Vehicle Technicians	1,238 / 409	3 : 1	37 days
Carpenters	1,316 / 403	3 : 1	37 days
Groundworkers	671 / 227	3 : 1	33 days
Maintenance Engineers	476 / 201	2 : 1	32 days
Machine Operators	571 / 199	3 : 1	33 days
Laminators	422 / 164	3 : 1	32 days
Quality Engineers	278 / 147	2 : 1	32 days
Mechanical Design Engineers	354 / 143	2 : 1	31 days
CNC Mill Operators	286 / 141	2 : 1	36 days
Field Service Engineers	325 / 141	2 : 1	27 days
Systems Engineers	258 / 128	2 : 1	31 days
Production Engineers	275 / 125	2 : 1	37 days
Pickers/Packers	284 / 123	2 : 1	34 days
Welders/Fabricators	232 / 120	2 : 1	36 days
HGV Technicians	267 / 119	2 : 1	32 days
Bricklayers	316 / 116	3 : 1	33 days
Pharmacy Technicians	573 / 115	5 : 1	31 days
Multi-Skilled Maintenance Engineers	400 / 113	4 : 1	37 days
Mechanical Fitters	261 / 110	2 : 1	33 days

Top Specialized Skills

Skill	Postings with Skill
Machinery	1,081
Carpentry	887
Mechanical Engineering	838
Marketing	676
Machining	613
Engineering Drawings	559
Technical Drawing	543
Systems Engineering	516
New Product Development	498
Maintenance Engineering	495
Construction	469
Electrical Engineering	467
Plumbing	459
Tooling	442
Electrical Wiring	437
Auditing	434
Automation	434
Hand Tools	372
Lean Manufacturing	370
Vehicle Maintenance	347

Source: Lightcast, 2023)