2021 Hiring Benchmark Report

The State of Hiring in the Engineering Industry

Key insights into how hiring and HR in the engineering sector has adapted in a year of unprecedented change, and strategies for success in the future.

Welcome

Welcome to Occupop's State of Hiring in the Engineering Industry Report, a comprehensive evaluation of the hiring trends, challenges, and nuances of hiring in engineering in 2021.

We conduct research from different industries to learn more about how companies attract, hire, and retain their teams and the current challenges facing each sector.

This year we have focused on understanding how organisations are responding to one of the most tumultuous years in recent memory. COVID-19 and the resulting increase in unemployment have fundamentally shifted the balance in hiring across each and every industry.

In this State of Hiring in the Engineering Industry report, we've researched and collated industry statistics, trends and observations from our own data and also externally available data to help you develop and optimse your hiring strategy in the post-pandemic employment market.

Attracting top talent requires robust and relevant employment branding strategies. Further, it must remain an organisational priority.

We hope you'll find this report insightful and will use it as a benchmark for building a successful hiring strategy in engineering over the coming year, and how to successfully adapt and modify recruitment tactics in what is probably the most challenging employment market for Engineering employers to date.

Any thoughts or questions, please feel free to share them with us via Twitter, LinkedIn, or by direct email.

- Ben Oslizlok

Ben Oslizlok
Sales, Engineering
ben@occupop.com

About this Report

The results and findings in this report was drawn from the hiring activities of over 50 Occupop customers in the engineering sector in the past year.

It covered multiple engineering lines of business including electrical, mechanical, civil, surveying, design, health and safety and operations of multiple different sizes based in the UK and Ireland. Data was collected in September 2021.

We hope you find this report interesting and that it provides you with a benchmark to formultate your engineering recruitment strategy moving into 2022.

Orla Doyle
Head of Research
orla@occupop.com

About Occupop

Occupop is a beautifully simple recruitment software built for small and medium businesses. We help businesses be great at hiring through our simple philosophy – to make recruitment incredibly easy and accessible to everyone at work. So, businesses can hire the best people and build the best teams.

At Occupop, the automation and digitisation of the recruitment process for engineering companies has been our key area of focus for the past 5 years. We have helped Engineering companies across the UK & Ireland turn manual, laborious volume hiring processes into efficient, candidate friendly digital experiences.

In the past 12 months alone, we've helped engineering companies across Ireland and the UK helping them through the challenges of operating during the pandemic, but ensuring they thrive in years to come.

Table of Contents

Engineering Hiring Trends:

Results & Findings

Demand for engineering talent

29%

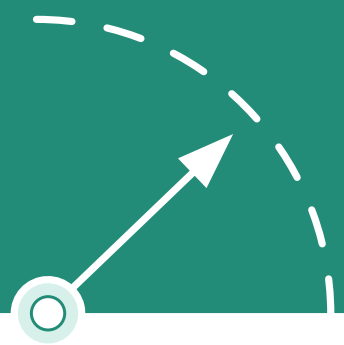
Increase in the total number of people hired in Engineering in 2021

779

Number of Engineering Job listings created

37%

Decrease in the average number of applicants per role in Engineering in 2021
2020 – 47 applicants/role
2021 – 29 applicants/role



29%

rate of jobs listed to filled in Engineering in 2021

Job Searches & Vacancies

Best source of hires by platform for Engineering:

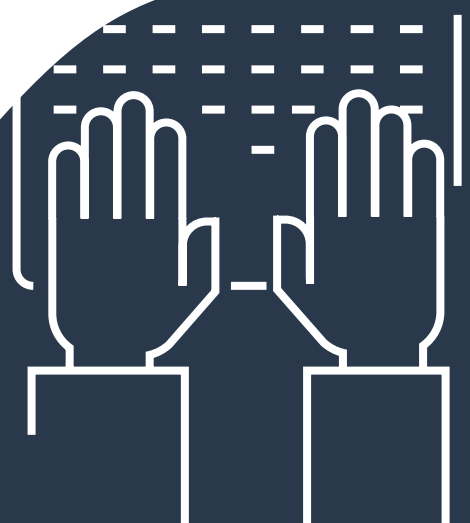
- **29%** Direct sourcing
- **26%** Careers Page
- **20%** Indeed
- **12%** LinkedIn
- **7%** Employee referral
- **4%** Favourite Recruiter

47%

Increase in the total number of job listings in Engineering in 2021
(319 v's 612 in 2021)

17,714

Number of Engineering Job Applications (Jan-Aug 21)



Maintenance & Engineering Coordinator

Highest number of applicants for a single job posting. (511 applications)

Pulse of the Engineering Market

Hiring in Engineering: The challenges in numbers

The UK has a crippling annual shortage of 59,000 engineering graduates and technicians.

59,000

36%

27%

Just 36% of 11- to 14-year-olds know ‘what to do next to become an engineer’, according to research, and only 27% ‘know what engineers actually do’

5 Years

EngineeringUK believe the skills shortage is the issue that will most impact the sector over the next 5 years.

Each time a new job is created in engineering

1.74 jobs

are created elsewhere.

Ireland currently has a deficit of about

1,000

engineers per annum.

55%

There has been a 55% drop in civil and building engineering graduates over the last five years in Ireland.

46%

of engineering employers are reporting recruitment difficulties.

Source

27%

Engineering is central to the UK economy with 27% of businesses in the UK being engineering-related

59%

In Ireland 59% of employers surveyed are looking to hire civil and building engineers making this the most in demand sector of engineering.

22%

Research suggests that only 22% of workers entering the STEM sector are women.

Economic Overview

Engineering is central to the UK economy with 27% of businesses in the UK being engineering-related, generating nearly a quarter of the UK's total turnover, and employing nearly 6 million people. Off the back of this huge activity base, demand for engineering skills has grown due to the emergence of new industries and new technologies.

Just prior to the pandemic, the UK needed just over **200,000 level 3+ engineers each year** to meet demand, made up of 124,000 engineers and technicians with traditional skills per year, and 79,000 engineering roles related to new technology.

When the current supply of talent is taken into account, it is apparent that the UK has a crippling talent shortage equivalent to an annual shortfall of 59,000 engineering graduates and technicians to fill core engineering roles, according to a report by EngineeringUK, a not-for-profit working in partnership with the engineering community. Unsurprisingly, the research also showed that nearly half of engineering employers surveyed are reporting recruitment difficulties.

Ireland has **specific talent shortages in engineering** too with Engineers Ireland suggesting that the country currently has a deficit of about 1000 engineers per annum, and the supply demand trend is going in the wrong direction for employers. The **EngineersIreland report** published pre-pandemic showed a 55% decrease in civil and building engineering graduates over the previous 3 years which was concerning to them.

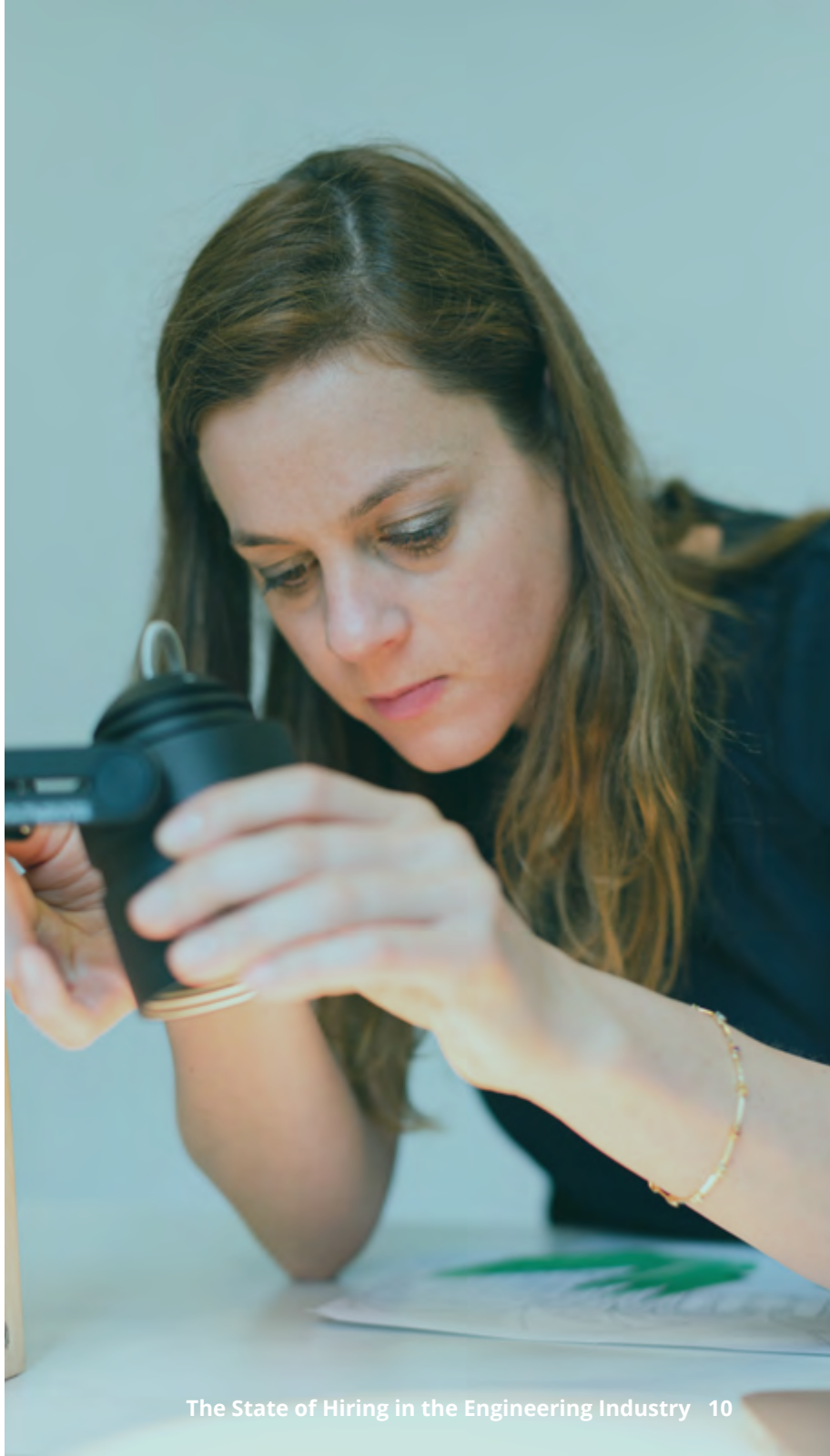
The engineering sector in Ireland was very healthy going into the pandemic with, '77% of employers' financial positions improving in 2018 and 89% expecting their financial position to improve in 2019 despite Brexit uncertainties'. This had led to significant demand for engineers in Ireland, (which has been in no way thwarted by the pandemic), showing at 6,000 job openings a year pre-pandemic with graduate salaries (on average 33,750 euros) which was up 21% since 2014. 59% of employers are looking to hire civil and building engineers making this the most in demand sector of engineering. The industry is

also experiencing a huge gender gap with just around one in 10 existing graduates being female.

These shortages could undermine the delivery of the **National Development Plan 2018-2027** and Project Ireland 2040, which involves a 10-year €115 billion programme to, 'upgrade the State's roads and public transport, and address housing, health and educational needs to keep pace with population growth'

Engineers Ireland is looking at ways to overcome the engineering skill shortage. Stand-out interventions include:

- 'building new initiatives to increase the number of higher-education engineering graduates';
- 'greater promotion of professional engineering apprenticeships';
- 'upskilling/reskilling those qualified/working in other fields';
- 'engaging with Irish engineers working abroad';
- 'attracting international engineers to Ireland';
- 'and better retaining qualified engineers in the profession'.



Hiring Challenges

Engineering Hiring Challenges

Need to improve awareness of engineering careers, especially amongst women

There is a grass-roots recruitment problem in engineering in the UK and Ireland with lack of awareness of engineering as a viable career in school pupils and also parents, importantly, who are key influencers of their children's future career direction. This is limiting the flow of entry level talent into the engineering sector. For example, research shows that a massive 58% of 11-14 year olds, 'know almost nothing or just a little about what apprentices do and the different type of apprenticeships available'. Also, just 36% of 11- to 14-year-olds know 'what to do next to become an engineer', according to research, and only 27% know what engineers actually do.

Declining interest in engineering at grass-roots level

Over the last decade there has been a 10% decrease in young people taking up STEM subjects, (biology, chemistry, physics) at GCSE level, reducing the pipeline of STEM apprentices and A-level STEM students.

Declining female interest in engineering after leaving school.

While there is an equal representation of men and women at GCSE physics there is a huge drop of at A-Level, with only 22% of females starting Physics A-Levels and just 16% going on to study an engineering and technology undergraduate degree and a paltry 8% going on to study an engineering apprenticeship finds **research from engineeringUK.com**.

There is a challenge and opportunity for engineering employers to better engage with GCSE and A-Level STEM students, (and/or educational establishments) to encourage a more diverse range science and engineering students to progress into STEM employment, further education or apprenticeships.

Competition for talent getting more fierce

This fascinating stat from engineeringuk.com shows how much competition for talent is increasing. It reveals that for every job that is created in engineering there are 1.74 jobs created elsewhere which basically means that employers

will need to invest more resources into finding and retaining talent each year to remain competitive.

Engineers lacking skills in communications and sustainability

Ireland has its specific engineering skill-set shortages around communications and sustainability. Speaking on **RTE**, Marguerite Sayers, (President of Engineer's Ireland) said, "The concern is in the education system where we are making sure that when people consider the technical skills that they do it in a context - that they consider energy efficiency, green design and the impact on the environment. It's very important that communications is included in the curriculum, as well as critical reasoning as problems are getting more complex all of the time," she added. Trainees should also be better aware of the UN's sustainability goals in the future, she said.

Cost of living in Ireland may be deterring engineering job applicants

Drawing on data from the **Central Statistics Office**, The Irish Times found that in recent years Ireland has produced some of the highest numbers of STEM graduates per head in the 28 EU countries. This agrees with findings from Engineers Ireland which observed a 48% increase in entrants to civil and building engineering courses in higher education over the past 5 years.

But this pipeline of graduates is not translating into a flow of job candidates at engineering firms with 94% of them reporting that skills shortages are the main barrier to growth within the sector. This was occurring even though salaries for engineers increased by 21% over the period to 33,750 euros.

So, what's the issue? With consumer prices in Ireland being 27.3% higher than the average and the second highest in the EU in 2018 after Denmark, experts suggest that engineering may no longer be sufficiently financially attractive. They also postulate that science, technology and mathematics professions may be more effective at attracting engineering graduates away from the sector.

Engineering has a problem recruiting and retaining women.

The Royal Academy of Engineering and Wise recently discovered that just, '12 per cent of engineers in the UK are women and they earn around 11 per cent less than their male counterparts, on average.'. This is not down to a lack of equal pay for equal work, but because women are under-represented in senior and higher paid roles, demonstrating a lack of upward career mobility for women. The report also revealed that women are leaving the sector at a much higher rate than men with, '57 per cent of female engineers dropping off the register of professional engineers by the age of 35, compared to just 17 per cent of their male counterparts.'. Family friendly policies were identified as being crucial in attracting and retaining women into the engineering sector.

Critical Skills List for Ireland

The critical skills occupation reveals quite clearly that Engineering has quite extensive state-recognized skills shortages, covering the following areas:

- Civil Engineers
- Structural Engineers and Site Engineers
- Mechanical Engineers
- Electrical Engineers

Electronics engineers specialising in:

- Chip design, test engineering, or application engineering, or
- Process automation engineering, or
- Power generation, transmission and distribution, or
- Related and relevant specialist skills, qualifications or experience

Production and process engineers specialising in:

- Quality control, or validation and regulation engineering (high tech industry; food and beverages), or
- Chemical process engineering, or
- Process automation engineering, or
- Power generation, transmission and distribution, or
- Related and relevant specialist skills, qualifications or experience
- Material scientists
- Setting Out Engineer
- Façade Designer

Design and development engineers specializing in:

- Quality control, or validation and regulation engineering (high tech industry; food and beverages), or
- Chip design, test engineering, or application engineering, or
- Process automation engineering, or
- Power generation, transmission and distribution, or
- Related and relevant specialist skills, qualifications or experience

Changing Tactics

Engineering Recruitment and Retention – Changing Tactics

Engineering has a significant grass-roots recruitment problem with there being a distinct lack of awareness and interest in engineering in the class-room versus other subject areas, particularly amongst women. As a result the sector is struggling to produce enough graduates to keep with the increasing demand for graduate talent. There is also a retention problem with female engineers as the limited number who do study the subject or become engineers gradually drop out of the sector at higher rates than their male counterparts.

Grass-Roots Development

Dyson has led the way, (via the James Dyson Foundation JDF), in addressing the skills shortages in engineering by working with schools to promote Design and Technology, (with the added benefit of being able to indirectly promote Dyson as a future potential employer in the process). The key elements of this grass-roots investment programme include

- Focused on 5 schools in Bath which also had feeder potential to Dyson's local office
- Roll-out an innovative curriculum based on 'iterative design, project-based and problem-led learning.'
- Inspire pupils to become designers and engineers by 'bringing real-life design engineering into the classroom via problem-focussed, open-ended projects' by access to hi-tech equipment.
- JDF donates £75,000 to each school who matched this amount with £25,000 of funding to create a cutting-edge D&T lab in each school.
- Pupils had access to Dyson's Engineer who built 'worksheets for students, gave advice on presenting ideas and ran prototyping and problem solving work-shops'.

This project led to an 'increased uptake of students choosing to study D&T at both GCSE and A-Level and there was an 'improved perception of engineering and it's relationship to gender'.

In Ireland the industry body Engineering Ireland introduced **Engineers Week**, which includes a schedule of events being held all over the country, promoting the work of the sector to school children.

“There’s a huge effort going in to, not forcing or asking everybody to be an engineer, but to opening children’s eyes to the idea that’s a really important career, it’s one that can have a huge impact on the world,” Marguerite s Sayers, (President of Engineer’s Ireland) said.

Family-friendly policies to attract and retain more women to STEM

The Royal Academy of Engineers has invited engineering companies to submit case studies to showcase their strategies around inclusion and diversity to attract and retain women in STEM. We have outlined some of these studies below. Flexible working and open and transparent career progression were two of the common tools to boost the engineering employer value proposition.

Card Geotechnics Limited CGL (CGL) is a geotechnical and geoenvironmental consultancy firm the UK. Key elements of their family friendly policy include:

- A range of flexible arrangements have been implemented.
- Both male and female senior role models work flexibly.
- Remote desktop system enables home working

Transparent career progression so it is accessible to all. Highlights include:

- Development activities are tailored to individuals' needs and aspirations.
- Employees given support with additional qualifications and Chartership.

Airbus has been open to job sharing for many years. However, in order to support women returning to work after having a child, (who often prefer to ease back in on a part-time basis), Airbus recently experimented successfully with making a more technical job that, (historically would not have been deemed suitable), into a job-share. They actively promoted this success story within the business to show employees that there are, 'are more options for job sharing roles and that

returning to work from parental leave need not be a blocker for career progression.' To build on this, Airbus created and published a set of guidelines designed to support employees and managers who may wish to set-up a job-sharing role, expanding career progression opportunities for all, (including women returning to work after parental leave).

Atkins have been focussing on developing a strengths-based recruitment model to help eliminate gender bias from recruitment and encourage more women into the STEM workplace and into the management and technical hierarchy. 'Strengths-based recruitment provides an innovative attraction and selection methodology that encourages employers to rethink how roles are constructed, how to attract people to them and ultimately how candidates are assessed.'

The goal of this hiring model is to increase diversity at all levels of the organization which should lead to the organization being more attractive to talent and receiving more applicants.

The initial trial of strength-based recruitment led to a review of the role in question and the advertising process which boosted both the diversity of initial applicants and those reaching interview and offer stage. These new strength-based job descriptions are shorter and focus on the strengths needed for a specific team, (and the language is more descriptive and engaging), to enable the applicants to recognize themselves in the ad.

Due to its success, strengths-based recruitment was rolled out across their energy business. The results of this strengths-based hiring were overwhelmingly positive. The strengths-based recruitment pilot led to a:

- 23% increase in applications in comparison to previous Project Management roles.
- At line manager review, 32% of applications were from women,
- 28% of candidates interviewed were women
- 60% of offers made and accepted for this role were from women.

Atkins also use a gender decoder tool to assess all their vacancies. This tool identifies masculine and feminine words enabling the organization to eliminate gender bias from its adverts. It's free to use and can be found here: https://gender-

Gender Decoding Tools for Job Adverts

Research suggests that only 22% of workers entering the STEM sector are women and reducing gender bias in job adverts has been proven to increase applications from women into STEM.

Recruiters and online jobs boards are encouraging employers to make use of gender decoding tools to gender-neutralize the language in job adverts before posting. The original katmatfield.com gender decoding tool was inspired by the research paper, **Evidence That Gendered Wording in Job Advertisements Exists and Sustains Gender Inequality** (Journal of Personality and Social Psychology, July 2011, Vol 101(1), p109-28).

'In this paper the researchers showed job adverts which included different kinds of gender-coded language to men and women and recorded how appealing the jobs seemed and how much the participants felt that they 'belonged' in that occupation. Their results showed that women felt that job adverts with masculine-coded language were less appealing and that they belonged less in those occupations. For men, feminine-coded adverts were only slightly less appealing and there was no effect on how much the men felt they belonged in those roles.'

Atkins are one of the most high-profile STEM users of these tools. Here is a list of online gender decoders

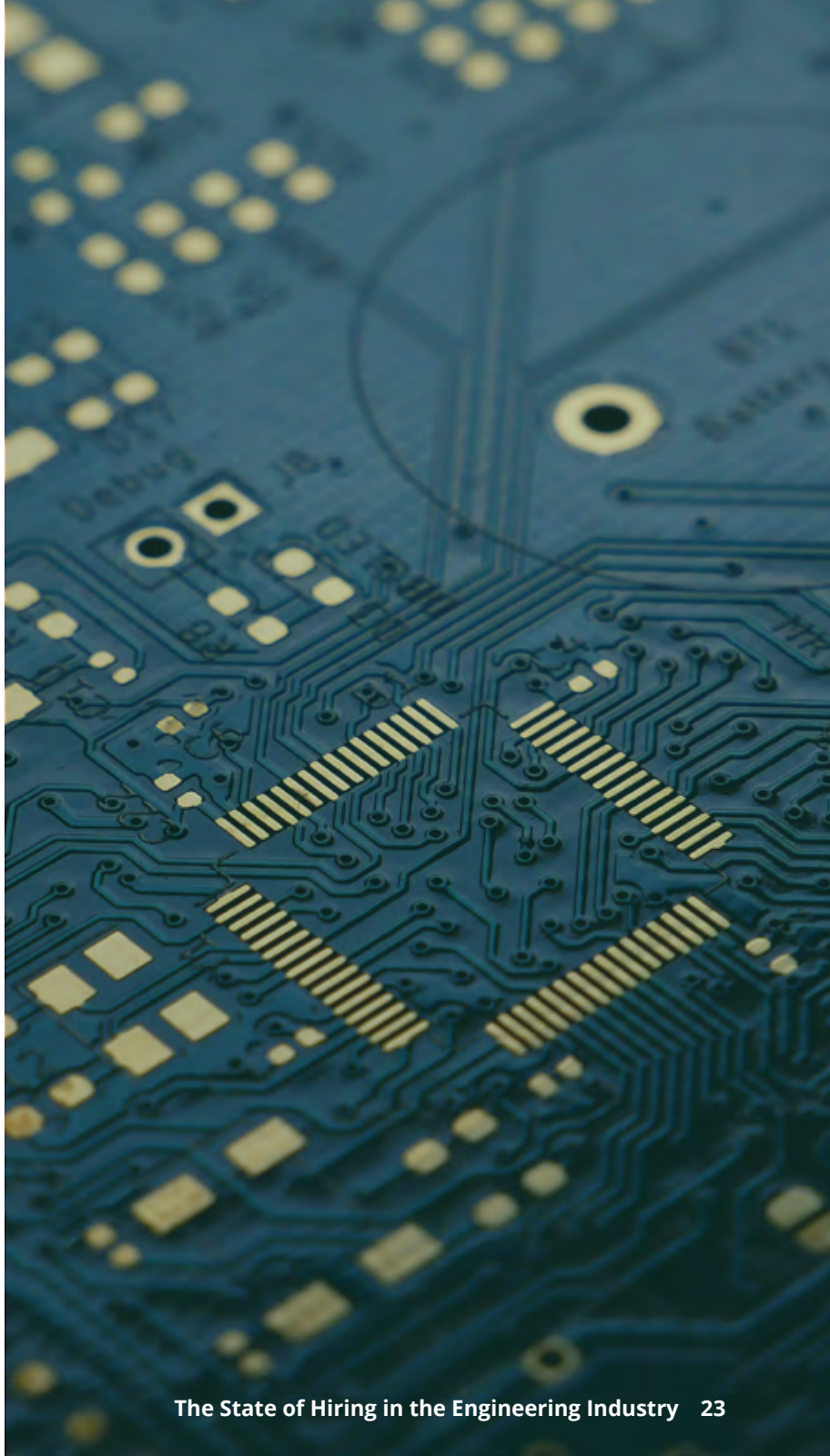
- https://gender-decoder.katmatfield.com/ as described above
- https://www.michaelpage.co.uk/gender-decoder
- https://www.beapplied.com/job-description-analysis-tool
- https://www.totaljobs.com/insidejob/gender-bias-decoder/

Total jobs analysed over 350,000 jobs with their decoder and found which sectors had the highest proportion of gender-biased ads. This was Science where 60% of adverts were male-biased and the male-biased job descriptions increased to 71% for senior roles with the word 'lead' in the job title.

Irish Employers Looking Overseas for Engineering Talent

Engineer's Ireland has discovered that nearly half of Engineering firms in Ireland are searching overseas for talent in an environment where 9 out of 10 leading engineering groups see talent shortages as a barrier to organizational growth. Just prior to the pandemic 4 out of 10 of new joiners to Engineers Ireland came from overseas, with the majority emanating from Brazil, Portugal, Poland, India and South Africa. Employers were quick to take advantage of the move by the Department of Business and Innovation in expanding its critical skills list for non-EEA workers to include civil, mechanical and electrical engineers with building modelling expertise. As a result, nearly 17,000 critical skills working visa were issued to non-EEA workers in the year following. At the start of last year, the work permit list was updated to include mechanical and electrical engineers without specialist skills.

In 2020 Engineers Ireland held an event at their Dublin Headquarters which 130 engineers attended with the purpose of attracting international engineers to work in Ireland as part of Engineers Week. There were follow up events targeting Indian and South African Engineers.



Laing O’Rourke Study

Laing O’Rourke has put inclusive recruitment and retention at the heart of its employee engagement strategy to support it’s ‘2025 mission which will see the business secure its position as the recognised leader for innovation and excellence in the construction industry’. Some of its key initiatives are:

- A summer and industrial placement programme, which is sponsored by Sarah Williamson FREng, the Construction Engineering Leader at Hinkley Point C. The programme attracted 67 people from a range of universities and over a quarter were women.

- It has adopted six Design Engineer Construct! (DEC!) schools. The Class of Your Own DEC! programme engages secondary school students in a project-based accredited learning programme related to the built environment. One of the schools supported by Laing O’Rourke specialises in education for boys with learning and language difficulties. Two are all girls’ grammar schools, which increases early engagement and interest by giving people practical experiences of the breadth of career opportunities available in the sector and the exciting projects being delivered.

The School and College Leaver Programme is a five-year sponsored degree programme where students combine academic learning with employment.

To support careers advice in schools and colleges Laing O'Rourke has, since 2015, published the early talent brochure and parent and teacher guidance booklet annually, which introduce all its programmes. Each year it distributes them electronically to over 3,000 schools.

A specific strategy employed to attract women into engineering is the support Laing O'Rourke gives at the two annual Future Female Engineer events, which are attended by over 150 female undergraduates along with nine other engineering organisations.'

AINSCOUGH CRANE HIRE LTD | occupop

How Ainscough Crane Hire hired for niche roles

Ainscough scales to new heights by streamlining hiring & sourcing top talent for niche roles. Occupop guides the crane company to hiring success by improving efficiency and attracting quality applicants and hiring great people, fast.

Read case study →

Future Outlook

Future Outlook

While not facing an imminent supply and demand crisis like we are seeing in some sectors like haulage and hospitality (earlier in the year), the engineering sector has been and continues to face long term structural shortages in the supply of talent which will soon start to delay UK and Ireland infrastructure development at a national level if not resolved.

In the last year or two we have had the perfect storm of Brexit, the pandemic and the continuing digital revolution, which have affected the engineering sector in it's own unique way. These events have not led to out and out talent panics as we have seen in haulage and hospitality at times. However, pandemic induced disruptions in manufacturing and Engineerings have led to a global microchip shortage exacerbated by pandemic-induced increased demand for tech. These shortages have begun threatening mechanical and electrical engineering product roadmaps. Like many other sectors, engineering has ramped up its digital transformation, which has inconveniently brought the sector into direct competition with big tech for tech talent too.

So, talent shortages in engineering are less of a threat to the present but may seriously threaten long term national infrastructure projects, (civil, mechanical and electrical). For now, it seems that delays to multinational consumer facing product releases in consoles, phones, cars are being driven more by micro-chip shortages than intrinsic engineering talent shortages.

Still, the sector needs to make significant improvements to its recruitment and retention practices. Grass-roots engagement in the class-room with the engineering sector is poor, relative to other sectors, and is especially weak in girls and young women. While girls do show good initial interest in engineering this engagement declines from then on as women drop out of the education system and the engineering career ladder at chronically high rates, much higher than their male counterparts.

Companies like Dyson and Laing O'Rourke are leading the way in funding and supporting incubation projects and initiatives within schools, which are designed to arouse interest and excitement amongst male and female pupils in the engineering sector. Both companies have reported favourable results.

With female participation rates being so low in engineering versus their male counterparts, the engineering sector is presented with a huge opportunity to make a massive dent in the engineering talent deficit by focusing on diversity recruitment, retention and career progression practices in order to boost female participation.

We have highlighted some of the case studies, (developed by EngineeringUK) in this whitepaper which showcase some of the most effective and innovative diversity hiring projects within the engineering sector which have the power to inspire and shape your own diversity initiatives.

While Irish engineering employers also stand to benefit from a greater emphasis on diversity hiring, due to the industry's intrinsic gender imbalance, the Irish government has extended its critical skills shortage list, creating an opportunity for Irish employers to source from the global talent market too.

With the numbers showing significant talent deficits UK and Irish engineer employers must focus on greater engagement with grass-roots talent and women throughout the education, employment career progression ecosystem. We could go as far to say that engineering employers are presented with an open goal with regards to the opportunity to address talent shortages with greater female participation, and now is the time to seize the opportunity with a two-footed commitment to diversity-based hiring talent management.

occupop

Occupop is a beautifully simple recruitment software built for small and medium businesses. We help businesses be great at hiring through our simple philosophy – to make recruitment incredibly easy and accessible to everyone at work. So, businesses can hire the best people and build the best teams.

Ready to automate and digitise your recruitment process?

See how Occupop can help you automate your hiring process, improve your speed to hire and reduce recruitment costs.

Request a demo →