

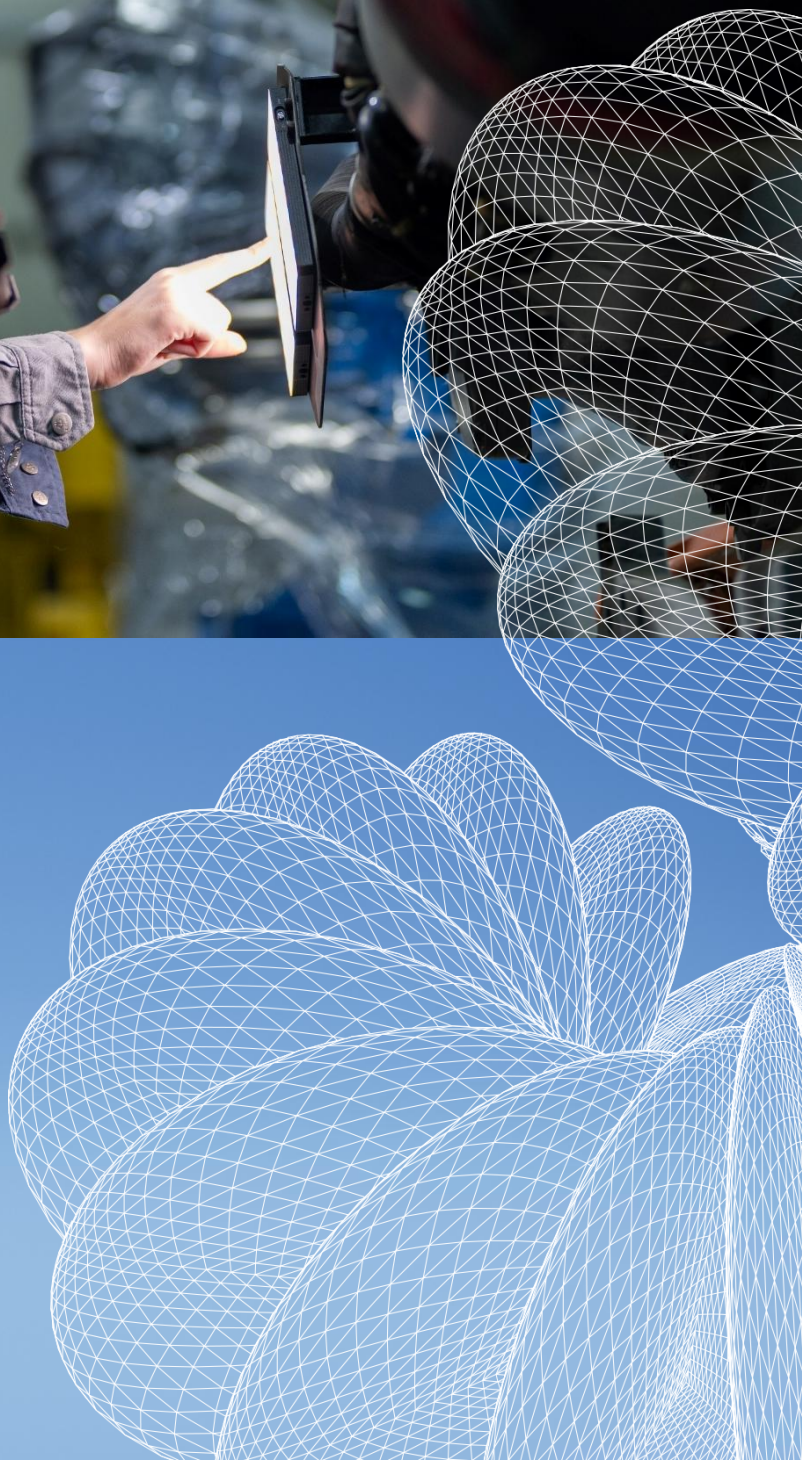


Energy, Engineering and Industrial Sector Landscape

October 2025

Special Edition

A|M|S



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Foreword

The Energy, Engineering and Industrial sectors are entering a period of extraordinary change. Around the world, the move toward clean energy, automation and digital transformation is reshaping the way we design, build and power our economies. These shifts are creating new industries, new opportunities and new demands for talent.

What remains constant is the importance of people. Skills have become the foundation of competitiveness, yet they are also in shortest supply. Across every region, employers are finding it increasingly difficult to secure the technical expertise they need. At the same time, an ageing workforce and outdated perceptions of the sector are making it harder to attract the next generation of engineers and innovators.

This report, developed by the AMS Research Lab, explores these challenges and opportunities in depth. It examines how workforce needs are changing and what actions employers can take to build stronger, more resilient talent pipelines. The findings show that success will depend not only on investment in technology but also on investment in people.

Addressing the skills challenge will require collaboration between businesses and those with a deep understanding of talent. Organizations that work with experienced partners can gain valuable insight into where skills are emerging, how to engage new talent, and how to build lasting capability. At AMS, our role is to help employers make those connections and shape strategies that align people with purpose.

The transformation ahead is not only about engineering systems; it is about shaping the future workforce that will sustain them.



David Ingleson
Managing Director, Energy,
Engineering and Industrials
AMS

Executive Summary

The global industrial landscape is undergoing profound transformation. Manufacturing and engineering services remain central to global economic growth. Clean energy employment has now overtaken fossil fuels, reflecting a decisive shift towards a more sustainable future¹. Defense spending continues to accelerate², while the automotive sector is experiencing its fastest evolution in decades as electric vehicles reshape global markets³.

Despite strong growth, the sector faces an urgent talent challenge. Nearly half of all engineering roles are expected to change within five years, and one in five engineers in advanced economies is approaching retirement⁴. Employers now face two parallel pressures: replacing experienced professionals while preparing new entrants for digitally enabled, sustainable industries.

The data shows that demand for technical talent has softened slightly over the past year, reflecting broader economic uncertainty and volatile energy markets⁵. Yet this decline is temporary. In the long term, demand is shifting toward engineers who can combine traditional technical expertise with new digital, analytical, and sustainability skills. These capabilities will determine which organizations are able to meet global clean energy and industrial transformation goals.

Candidate expectations are also changing. Salary remains a central motivator, but professionals are increasingly seeking career development, flexibility, and a sense of purpose. Apprenticeships and vocational routes are gaining popularity, with applications tripling since 2022. Younger professionals want to work for employers that offer stability, learning opportunities, and a visible commitment to environmental progress.

The evidence throughout this report makes one conclusion clear. The future success of the EEI sector depends on how effectively organizations respond to the changing nature of work. Employers that invest in digital and green skills, modernize their recruitment and retention strategies, and create inclusive, purpose-led workplaces will be best placed to compete. Those that act now will shape the next generation of industrial innovation and secure their position in a rapidly evolving global economy.



Introduction

Industry Overview

The engineering and industrial landscape is expanding, powered by new technologies, major investments, and the global drive toward sustainability. In the US, manufacturing and engineering services contributed \$2.8 trillion to GDP in 2024⁶, while in the UK, the sector adds around £645bn each year⁷. Clean energy is already reshaping the market, with global jobs in renewables reaching 34.8 million in 2023, overtaking fossil fuels for the first time⁸. Defense spending has also surged to \$2.7 trillion⁹, and the auto industry is undergoing its fastest transformation in decades, with EV sales jumping 42% in early 2025 and electric models expected to dominate by 2040¹⁰.

However, despite strong growth, every sector is facing the same challenge: a shortage of skills. Nearly half of engineering roles will change over the next five years as automation, AI, and electrification redefine what work looks like¹¹. Meanwhile, one in five engineers in advanced economies is set to retire in the next decade¹². The result is widening gaps across countries: the US needs to fill around 25,000 industrial engineering roles each year just to keep pace¹³. Germany was already short 320,000 STEM specialists in 2022¹⁴, and Japan expects to face a deficit of over 700,000 engineers by 2030. Immigration can help but cannot fully bridge these deficits, and with limits such as the 85,000 annual H-1B visas in the US, domestic training pipelines will remain critical¹⁵.

Signs of strain are becoming increasingly apparent across subsectors. In aerospace and defense, attrition averages 15%, with 76% of companies reporting a shortage of engineers and 56% struggling to find skilled tradespeople¹⁶. The energy sector, meanwhile, added 2.5 million jobs in 2023 alone, driven by growth in solar PV, which now employs 4.5 million people worldwide, while power grids and storage support over 8 million workers¹⁷.

Looking ahead, global energy employment could reach 83 million by 2030 if net zero policies accelerate, yet the sector is already facing bottlenecks in specialist skills, particularly high-voltage electrical expertise, project management, and digital capabilities, that could slow progress toward net zero¹⁸. Automotive, meanwhile, is reinventing itself around electrification, with EV sales rising 42% globally in early 2025, but the shift risks major disruption across its supply chains as traditional component suppliers face declining demand¹⁹.

How will this impact talent?

What unites all of this is a simple truth: talent is now the decisive factor. Nearly 92% of business leaders worldwide rank attracting and retaining talent among their top three priorities²⁰. In Europe, more than six in ten employers say the shortage of engineers poses a greater barrier to transformation than limited access to capital²¹.

The consequences are already visible: companies are competing fiercely for the same profiles, wage pressures are rising, and recruitment pipelines are under strain. For employees, this creates new opportunities to step into hybrid careers that combine technical expertise with digital fluency and sustainability skills. But for industries, the challenge is much bigger: how to reskill large parts of the existing workforce at speed, how to attract younger and more diverse talent into engineering, and how to retain experienced professionals when competition from other sectors is intensifying. Without decisive action, workforce shortages could slow innovation just as demand accelerates. With the right strategies, however, this moment offers the chance to reshape the labor market, creating resilient, future-ready workforces.

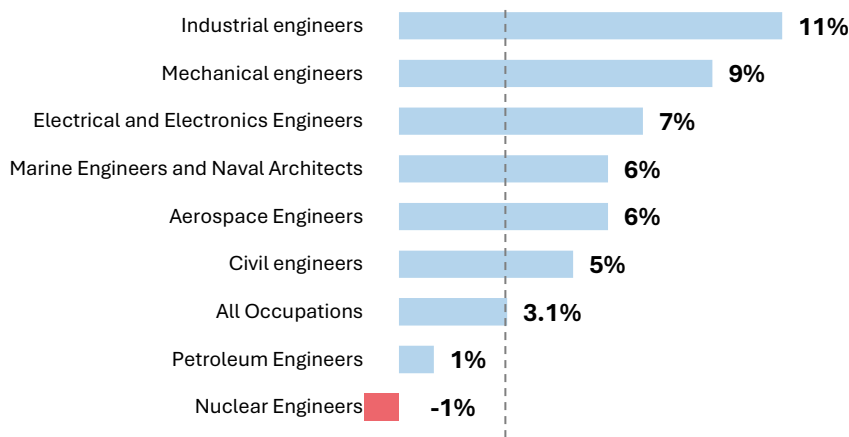
Economic Landscape

EE&I

Industrial engineering lies at the heart of modern economies, shaping how goods are produced, systems are managed, and new technologies are adopted. Its impact extends far beyond factories, reaching energy, transport, defense, and consumer industries. Growth is especially strong in areas such as renewable power, electric grids, and electric vehicles, while engineers are also driving advances in sustainable food, low-carbon transport, and eco-friendly fashion.

At the same time, the skills landscape is changing rapidly. Nearly half of today’s engineering roles are expected to evolve within the next five years as automation, AI, and digital technologies take hold. This shift is increasing the demand for engineers who can combine traditional expertise with advanced digital skills. In the US alone, industrial engineering jobs are projected to grow much faster than the national average between 2024 and 2034, adding about 25,000 openings annually, many of them driven by retirement as the current workforce ages²².

Figure 1
Engineering roles in the US are projected to grow significantly faster than the national average
Projected change in employment, US, 2024-2034 (%)



Source: US Bureau of Labor Statistics

Economic Contribution

The sector makes a major driver of the global economy. In the United States, it contributes over two trillion dollars annually to GDP²³, underpinning national infrastructure, clean energy transition, and manufacturing output. The sector’s reach spans traditional oil and gas to rapidly expanding renewables, advanced materials, and precision engineering, supporting millions of skilled jobs and forming the backbone of industrial supply chains.

In Europe, the EE&I sector plays a critical role in economic resilience and energy security. Valued at more than £600 billion in the United Kingdom alone²⁴, it anchors regional economies through high-value manufacturing, sustainable energy technologies, and export-led engineering services. The EU’s Green Deal and reindustrialization agenda have accelerated investment in clean hydrogen, wind energy, and digital industrial solutions, creating new opportunities for cross-border collaboration and technology transfer²⁵.

Across Asia, rapid industrialization and infrastructure development continue to fuel expansion in energy and engineering. China, India, Japan, and South Korea lead in renewable energy capacity, advanced electronics, and industrial automation²⁶. The region’s industrial output accounts for more than half of global manufacturing value added, driven by large-scale investment in smart factories, electric mobility, and grid modernization²⁷.

Together, the EE&I sector acts as a global engine of growth; powering cities, connecting supply chains, and enabling the transition toward sustainable industry. Its economic footprint extends far beyond direct employment or GDP contribution, shaping the competitiveness and innovation capacity of entire nations.

Economic Landscape

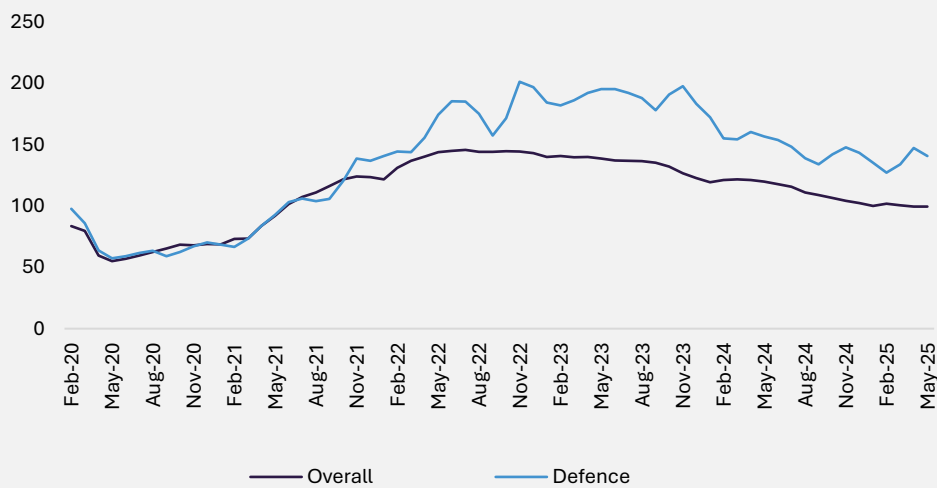
EE&I

Europe Spotlight

Europe’s defense industry is forecast to expand at an average annual rate of 6.8% from 2024 to 2035, fueled by a sharp rise in military spending as governments respond to escalating global security threats. Defense budgets across the continent have surged by over 50% in just three years, with spending climbing from €214bn in 2021 to €326bn in 2024. The increased investment reflects a renewed focus on rearmament and strategic independence, as European nations seek to strengthen their own capabilities for defense²⁸.

Figure 2
Hiring in Europe’s defense sector is outstripping broader job market trends
Indeed job postings of largest European defence companies* vs overall market

100 = average monthly postings in 2021, data through 31 May 2025



The boom has triggered a sharp rise in recruitment. By November 2022, defense-related job postings had more than doubled compared to 2021 and remained 41% higher as of May 2025. Broader labor market hiring, by contrast, has largely levelled off.

France, Germany and the UK are leading the surge, with high demand for skills in engineering, manufacturing, logistics and defense technology²⁹ (Indeed, 2025).

*Data includes Airbus Defence and Space, MBDA, KNDS and others.

Source: Indeed

Economic Landscape

Energy

By the end of 2023, **clean energy jobs** (34.8 million) **outnumbered fossil fuel roles** (32.6 million) **for the first time**³⁰.

In 2023, the global energy sector added nearly 2.5 million jobs, bringing total employment to over 67 million workers worldwide. Clean energy drove much of the sector's growth in 2023, accounting for about 40% of new jobs, led by solar PV, which added more than 500,000 workers and bringing the total to 4.5 million. Other clean power generation technologies created an additional 270,000 jobs, while employment in power grids and storage grew by 230,000, reaching 8 million. In comparison, the oil and gas sector expanded by nearly 590,000 roles³¹.

Global energy investment is set to reach US\$3.3 trillion in 2025, up 2% from 2024, showing resilience despite economic and geopolitical headwinds. The IEA describes this as the start of the "Age of Electricity," with clean energy now drawing most of the funding. Of this total, about US\$2.2 trillion will go to clean technologies and US\$1.1 trillion still directed to oil, gas, and coal. The power sector will attract US\$1.5 trillion, driven by solar PV and rapid growth in batteries and storage while fossil fuel spending, by contrast, is flattening, with oil seeing its first upstream decline since 2020³².

Economic Projections

Looking forward, global energy employment could reach 74 million jobs by 2030 under current policies, or 83 million if governments accelerate net zero efforts. Most of this growth will come from clean energy, particularly in manufacturing and installation roles across solar, wind, batteries and electric vehicles. Solar alone could create millions more by the end of the decade³³.

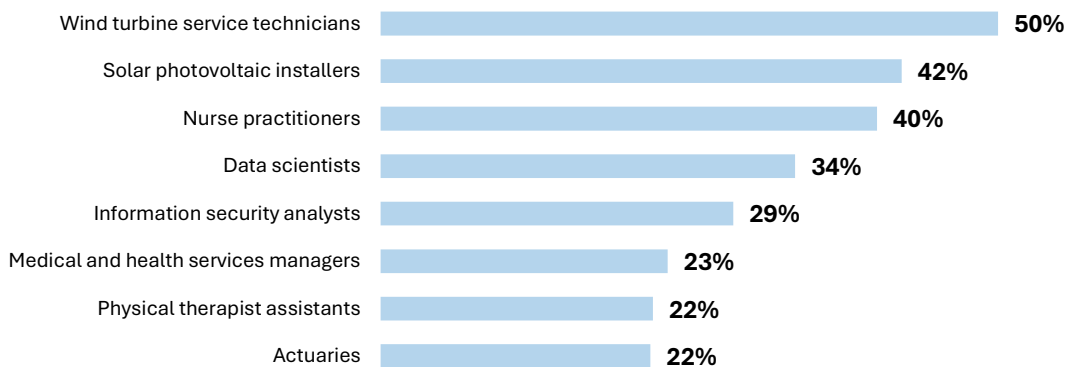
By 2050, the need for skilled labor becomes even sharper. In the UK, net zero targets could generate up to 400,000 additional jobs by mid-century. Globally, demand for high-voltage electrical expertise, project managers, and technical innovators will be intense, as multiple sectors, such as energy, transport, construction, and digital, compete for the same skills. Without coordinated training strategies, shortages could become a major barrier to achieving climate goals³⁴.

Economic Landscape

Energy

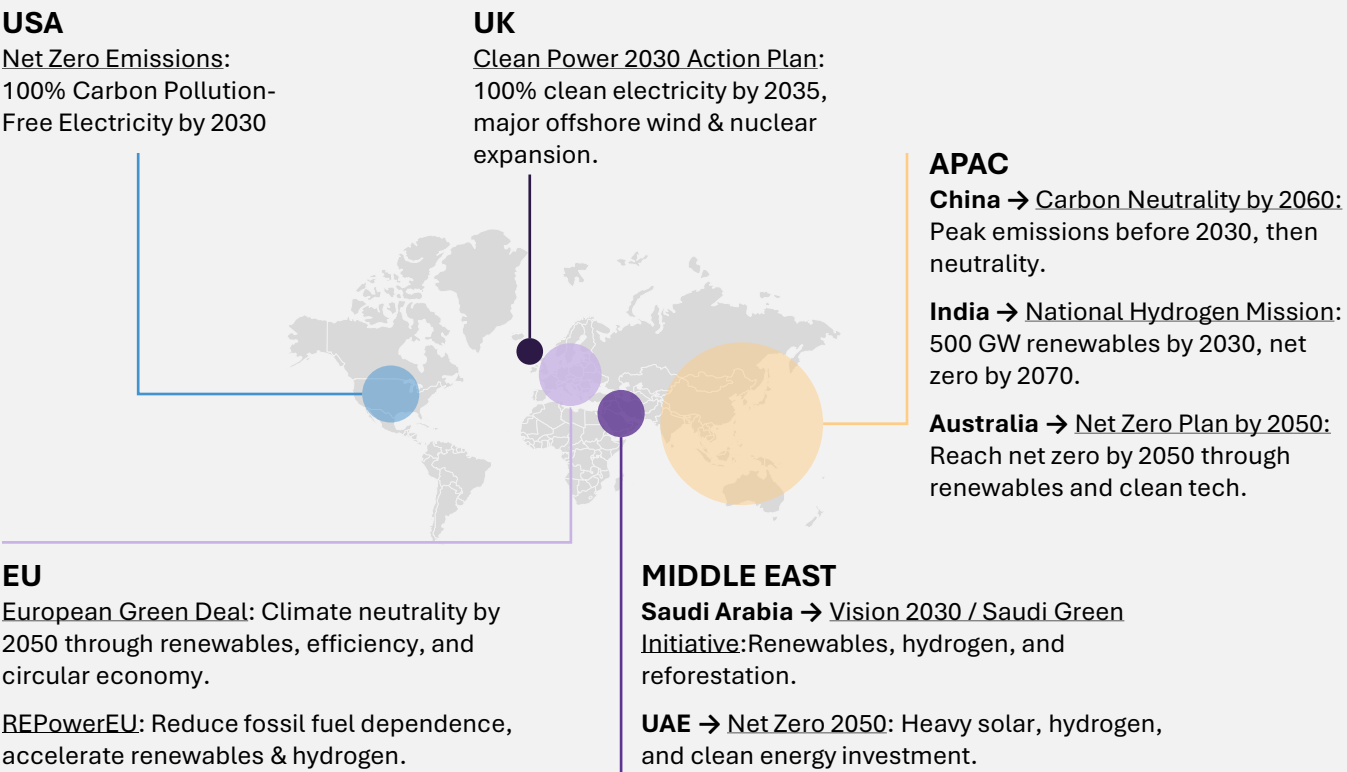
Regional trends show significant contrasts. China remains the largest investor, accounting for over a quarter of global spending, while the EU is set to boost efficiency investment by 30% in 2025. Africa, however, attracts just 2% of clean energy financing despite representing 20% of the world’s population³⁵. In the US, more than 200 new clean energy factories are planned with US\$150bn in planned investment. If all projects become operational by 2030, the industry could support over 570,000 jobs, generate more than US\$40bn in annual earnings and contribute US\$86bn to US GDP³⁶. This surge in clean energy investment is increasingly reflected in labor market trends. Occupations such as wind turbine technicians and solar installers are now among the fastest growing in the US, reflecting how new projects are creating both economic value and employment opportunities.

Figure 3
Green jobs are the fastest growing occupations in the United States
Fastest growing occupations: projected % change of employment, US, 2024-34



Source: US Bureau of Labor Statistics

Future Energy and Transition Plans by Region



Economic Landscape

Automotive

8% of automotive CEOs said they do not believe their businesses will be economically viable in 10 years without reinvention³⁷



This concern reflects the intense pressures the sector faces: technology is evolving rapidly, costs remain high, and the drive to decarbonize is accelerating.

One of the clearest signs of this shift is the changing geography of production. Traditional hubs are losing ground to regions offering lower costs, strong demand, or better export access. China now leads decisively, producing 12.4 million EVs in 2024 (70% of global output and 40% of exports). Yet demand is broadening: global EV sales rose 42% in Q1 2025 to a 16% market share, US sales climbed to 1.6 million in 2024 (up from less than 2% in 2020), and other regions are catching up, with sales in Asia (excluding China), Latin America, and Africa up more than 60% in 2024³⁸.

The economic footprint of the industry is also clear in Europe. In 2023, the auto sector contributed €273bn, or 1.8% of EU GDP, with Germany far ahead at €160bn, followed by Italy, France, Spain, Czech Republic, Sweden, and Poland. Smaller member states such as Cyprus and Luxembourg contribute little, showing how concentrated this highly skilled sector remains³⁹.

Scale, however, is key to profitability. Automakers need plants producing hundreds of thousands of vehicles to stay competitive, pushing the “produce where you sell” model. Thailand is a good example: despite a small domestic market, it has used trade ties and location to become a major exporter⁴⁰.

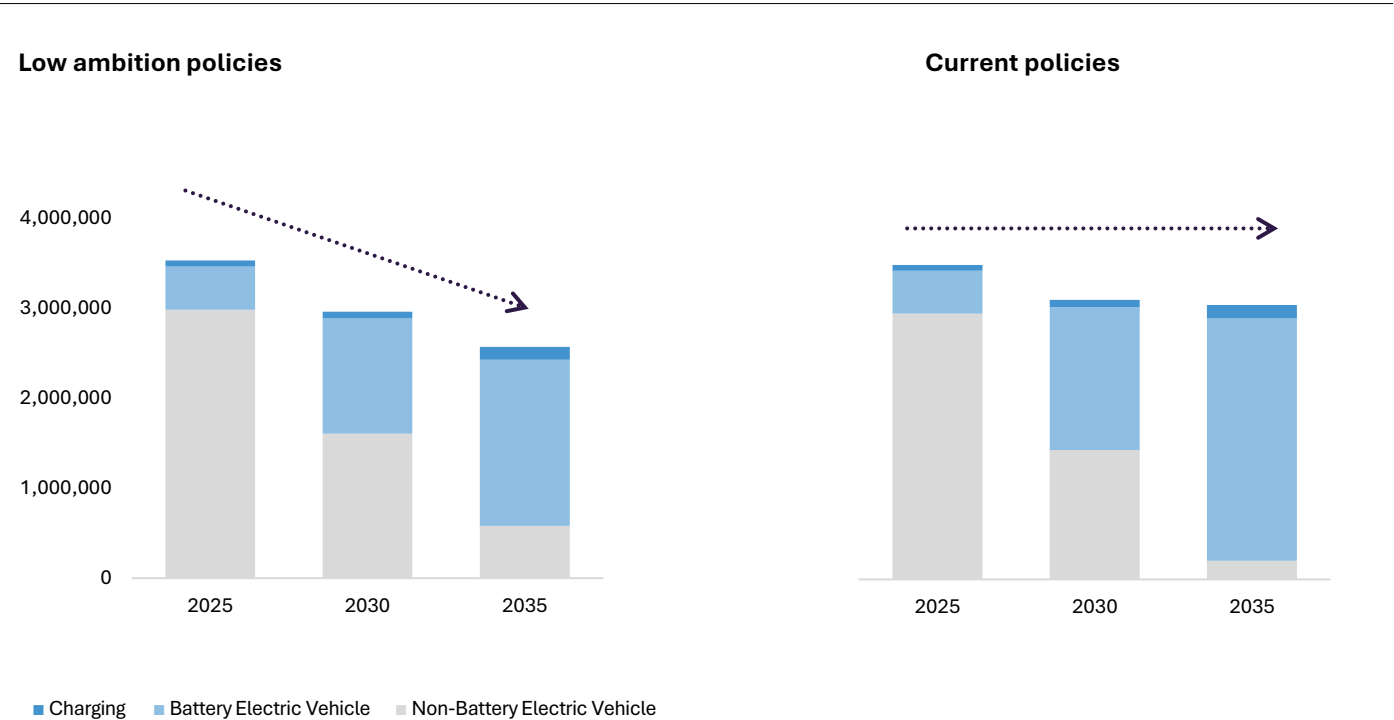
Economic Landscape

Automotive

Looking ahead, electrification and digitalization will define the industry’s future. Battery electric vehicles are expected to make up 71% of global sales by 2040, while connected and automated features will reshape customer demand and supply chains. This transition puts jobs at the center of the debate. Because EVs require fewer parts than petrol and diesel cars, many suppliers face the risk of losing work as production shifts⁴¹.

The bigger threat, however, is not electrification itself but the lack of clear industrial policies to manage the change. In Europe, under today’s low-ambition policies, production could contract, and job losses accelerate. With stronger industrial policies, combining higher ambition, targeted investment, and retraining, much of the workforce could be preserved while keeping Europe competitive in the global EV race⁴².

Figure 4
There is a clear shift towards Electric Vehicle production in Europe
Jobs activated along the car production value chain, Europe



Source: Transport & Environment

Source: Transport & Environment

Global Talent Overview

EE&I

Global engineering talent is shifting in response to industrial transformation. Around the world, traditional centers of expertise are evolving as digitalization, sustainability, and automation redefine where and how engineering work takes place. The result is a more diverse, interconnected landscape, one that blends legacy strengths with new, technology-driven frontiers.

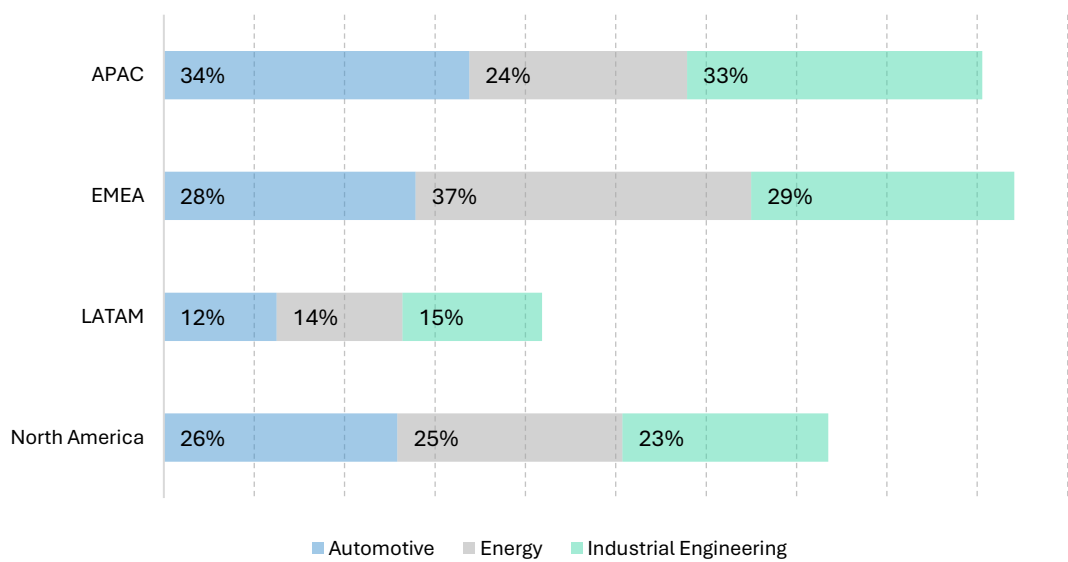
In Asia-Pacific, countries such as India and China are driving the global supply of energy deployment with China alone accounting for almost 30% of the global energy workforce. Deep roots in manufacturing and mechanical engineering continue to anchor the region, yet a decisive shift toward automation, digital tools, and renewable technologies is reshaping its future workforce ⁴³.

EMEA remains the world’s energy powerhouse, combining resource-rich production hubs across the Middle East and Africa with Europe’s accelerating push toward renewables and automation. The region is also seeing sharp growth in data, quality, and compliance capabilities, a reflection of its maturing focus on sustainability and regulatory excellence⁴⁴.

In North America, heritage and innovation coexist. Industrial heartlands like Texas and the Midwest continue to power traditional energy and automotive sectors, while also spearheading growth in clean energy, electric vehicles, and aerospace⁴⁵. This blend of scale, innovation, and infrastructure positions North America as a global leader in applied engineering.

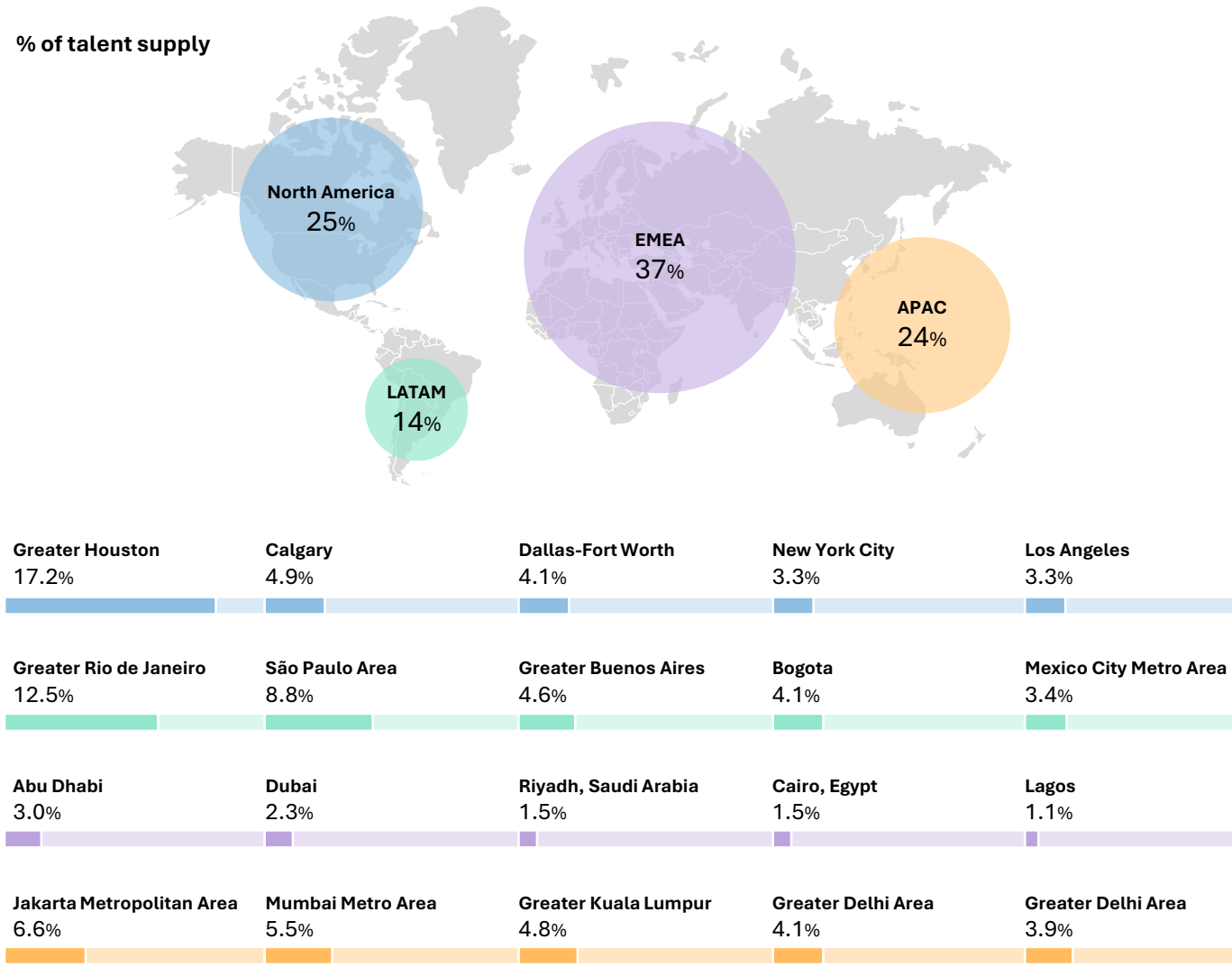
Meanwhile, Latin America’s energy and engineering talent base is under pressure from transition demands. While the region benefits from an abundance of renewable resources and relatively lower dependence on fossil fuels, the lack of a readily-available and skilled talent pool, especially among engineers, planners and skilled technicians. This, compounded by lagging vocational training, is a key bottleneck to scaling energy transformation efforts in the region⁴⁶.

Figure 5
EMEA and APAC make up the global share of EE&I talent
Percentage of global talent



What skills do candidates have? | Talent Hubs

Energy



EMEA accounts for the largest share of the global energy workforce, making up 37% of total talent. The region has a diverse energy mix, with the biggest pockets of energy professionals located in fossil fuel-rich producing countries such as Saudi Arabia, Nigeria and the United Arab Emirates. On the other hand, driven by climate goals and government policy, France and the United Kingdom have a relatively larger supply of talent in the renewable energy space.

In contrast, Latin America, also home to major oil and gas producers such as Mexico, Venezuela, Brazil, and Argentina, employs the smallest energy workforce of all global regions (14%). However, the region is actively transitioning away from fossil fuels, with approximately 65% of its electricity generated from clean sources by 2024. Countries such as Peru, Chile, and Ecuador are at the head of this shift, investing heavily in hydro, solar, and wind power as demand increases⁴⁷.

Of the top 10 talent hubs in APAC, five are in India - the world's third-largest energy consumer⁴⁸. While coal still represents about 60% of India's power mix, the government has committed to achieving net-zero emissions by 2070⁴⁹.

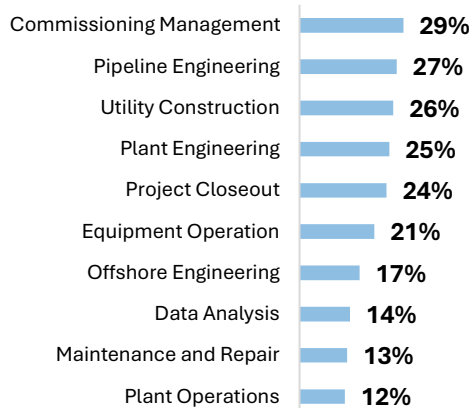
In North America, energy talent is particularly concentrated in Texas and Alberta. Greater Houston alone accounts for 17.2% of the region's energy workforce - underlining its position as the energy capital of the world⁵⁰.

Talent Landscape | Growing skills

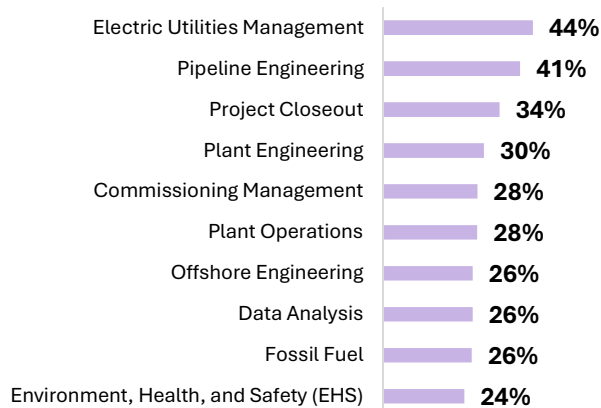
Energy

1 year growth

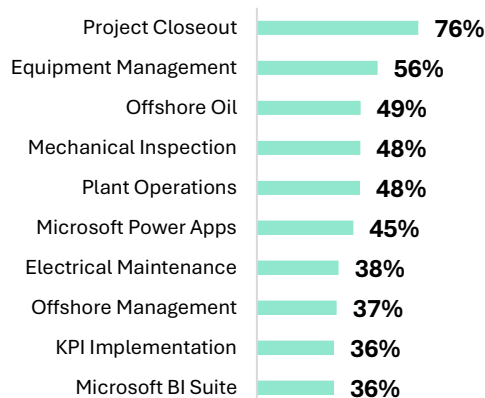
North America



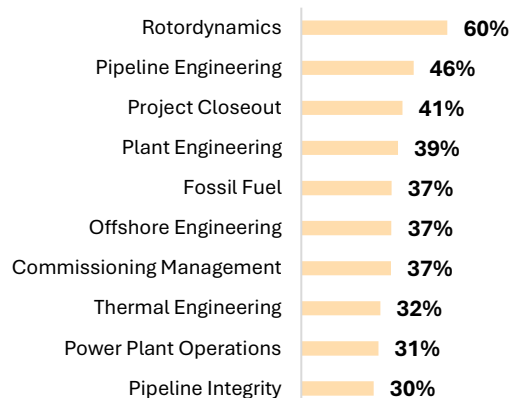
EMEA



LATAM



APAC



Year-on-year growth of skills in professional profiles shows APAC's fastest-growing skills remain rooted in core energy engineering, supporting fossil fuel extraction, with demand continuing in pipeline engineering (+46%), thermal engineering (+32%), and power plant operations (+31%).

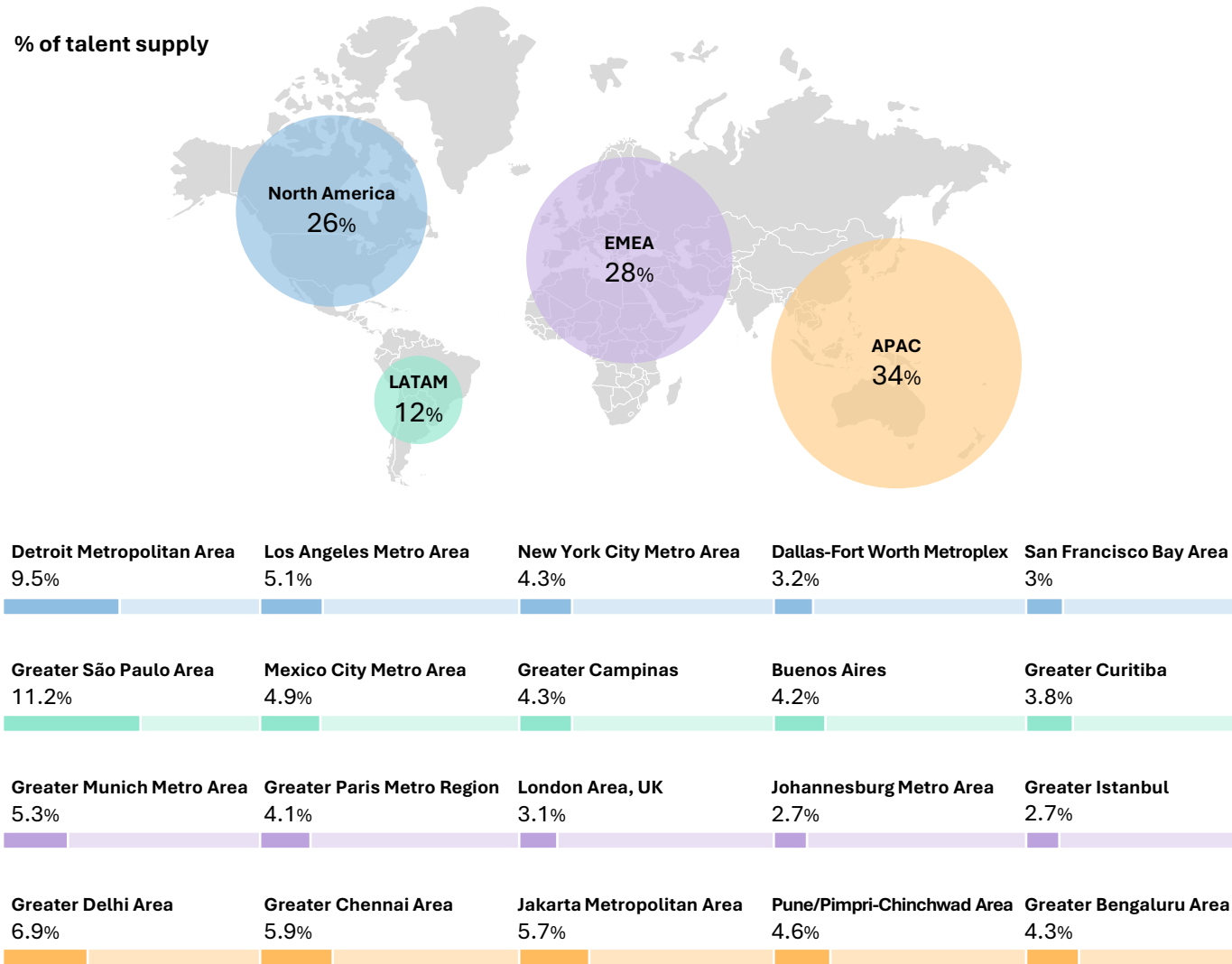
In contrast, reflecting LATAM's energy transition, the region's fastest-growing skills such as Microsoft BI Suite (+36%), Power Apps (+45%), and KPI implementation (+36%) highlight how digital tools are increasingly critical for managing plant operations and driving efficiency. Meanwhile, a rise in data analysis skills in EMEA (+26%) and North America (+14%) aligns with projections that Europe and the latter will continue to dominate the Global Big Data Analytics in Energy Market up to 2032⁵¹.

Both regions also share growth in commissioning management, pipeline engineering, plant engineering, and offshore engineering - capabilities closely tied to the construction and operation of large-scale energy projects. Offshore skills are a common theme across all regions, reflecting their importance in oil and gas as well as emerging opportunities in offshore wind.

Among all skills analyzed in the global energy workforce, project closeout appeared across all regions. This reflects the growing importance of proper handovers, lessons learned for future project executions, and cost transparency⁵². Demand was greatest in LATAM with a 76% year-on-year increase, highlighting the importance of this skill in the region's energy transition.

What skills do candidates have? | Talent Hubs

Automotive



APAC holds the largest share of global automotive talent reinforcing its position as market leader of the industry, with 34% of the total automotive talent⁵³.

India accounts for five of the region’s top talent hubs (Delhi, Chennai, Pune, Bengaluru, and Mumbai) and is expected to ramp up automotive production, with its government forecasting that favorable conditions could create over 2-2.5 million direct jobs by 2030⁵⁴. Key locations in China (Guangdong, Shanghai, Jiangsu) are also among leading talent hubs, which may not be surprising after the country produced a third of all vehicles globally in 2024⁵⁵. Pakistan’s share remains modest at 2.4%, but its presence in the top 10 reflects its emergence as a growth market supported by its government.

EMEA and North America employ similar shares of global automotive talent (28% and 26% respectively).

Six of EMEA’s top hubs are in Europe with historically key hubs Munich and Paris among them. Romania, accounting for 4.6% of the EMEA talent supply, has shown signs of transition, with hybrid and electric car uptake increasing in mid-2025⁵⁶. In North America, Detroit remains the leading talent hub, making up 9.5% of the region’s workforce. While Detroit is transitioning into electric vehicles, it is still rooted in traditional automotive manufacturing and other talent hubs leading in electric vehicles include Los Angeles and San Francisco.

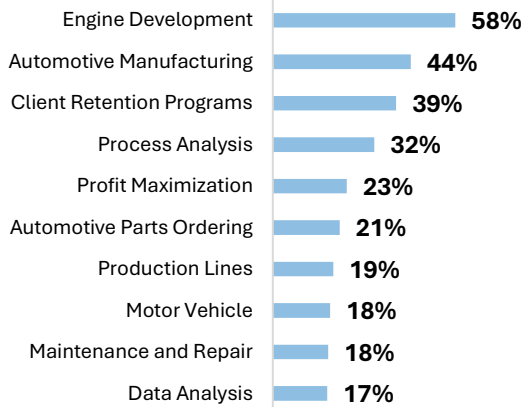
In contrast, LATAM employs the smallest automotive workforce of all global regions (12%). Brazil, one of the largest automobile markets in the world, is home to four of the top 10 talent hubs, with São Paulo alone accounting for 11.2% of the region’s workforce. Mexico also reinforces its position as a major automotive hub in LATAM, with Mexico City and Querétaro both ranking within the top locations.

Talent Landscape | Growing skills

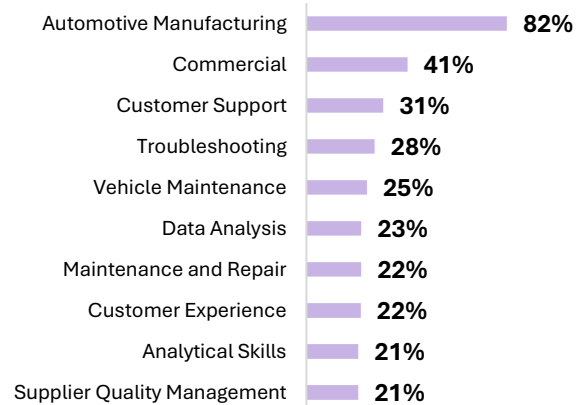
Automotive

1 year growth

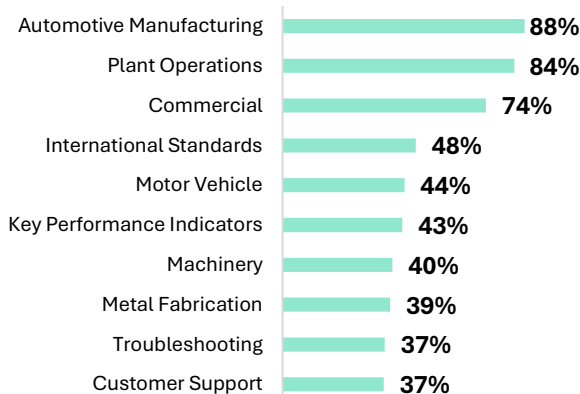
North America



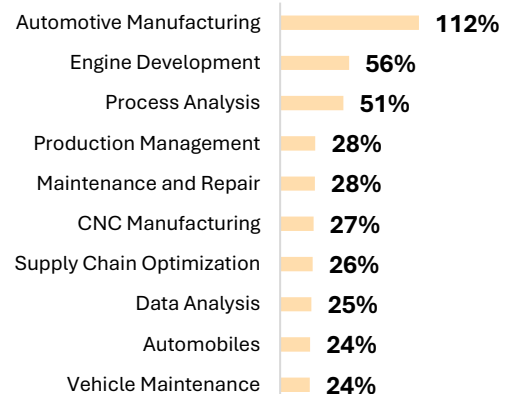
EMEA



LATAM



APAC



Year-on-year growth of skills in professional profiles show APAC's fastest-growing skills remain rooted in production and engineering, including automotive manufacturing (+112%), engine development (+56%), process analysis (+51%), CNC manufacturing (+27%), and supply chain optimization (+26%), reflecting the region's role as the global manufacturing hub of the industry.

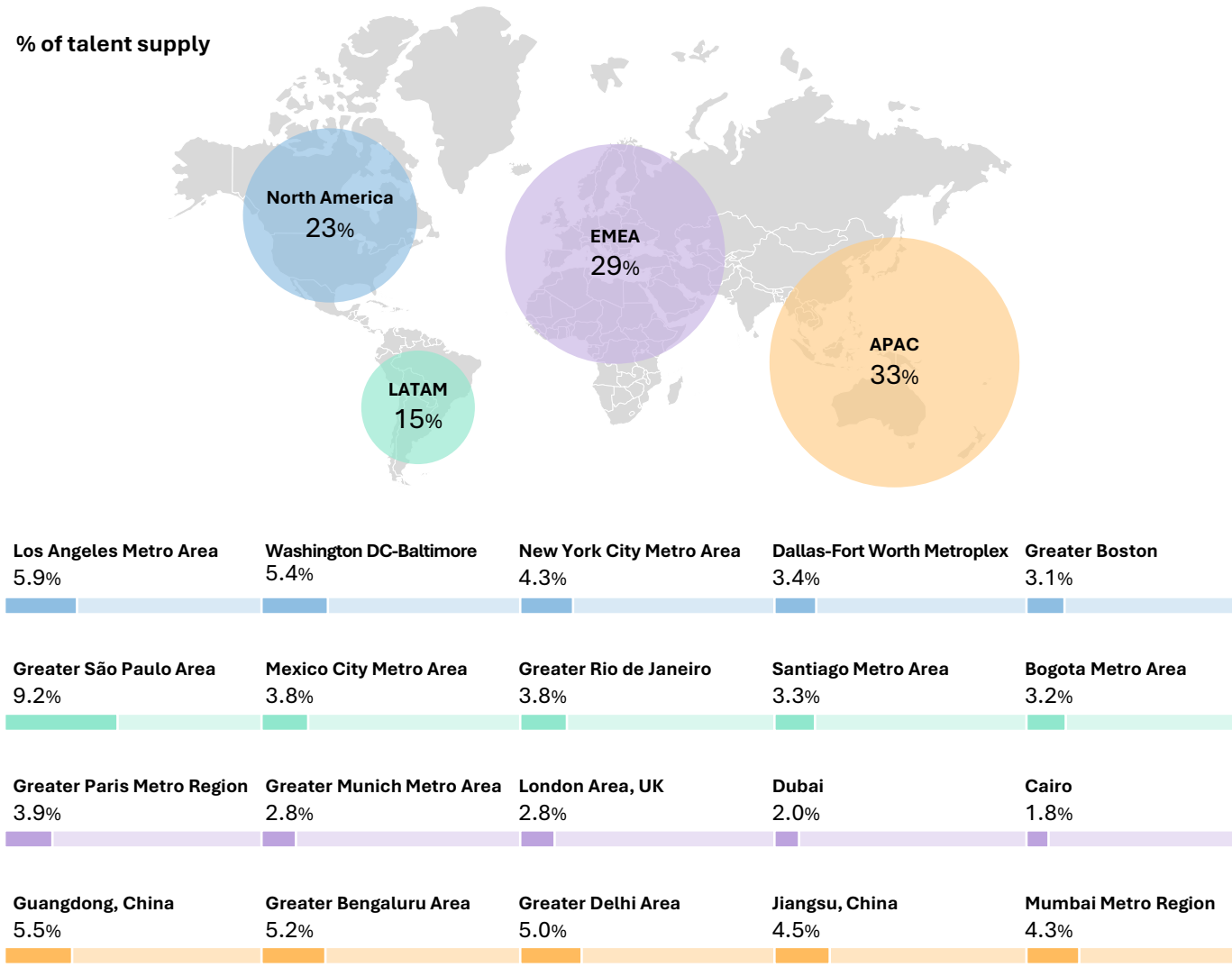
In EMEA, the focus shifts towards customer support, quality assurance, and compliance. A growing demand for skills such as customer support (+32%), customer experience (+22%), supplier quality management (+21%), maintenance and repair (+22%), and data analysis (+23%), highlights the region's emphasis on regulatory compliance⁵⁷, and service excellence.

North America blends engineering and commercial expertise, with rising demand in client retention programs (+39%), process analysis (+32%), profit maximization (+23%), and data analysis (+17%). This demonstrates a focus on both technical innovation and business performance.

In contrast, LATAM, with skills such as plant operations (+84%), key performance indicators (+43%), and troubleshooting (+37%) growing fastest, signals a push to modernize manufacturing processes and align with global best practices⁵⁸. Across all regions, automotive manufacturing, maintenance and repair, and data analysis emerge as common themes, highlighting the importance of production efficiency, lifecycle management, and the growing role of digital technologies in the automotive industry.

What skills do candidates have? | Talent Hubs

Industrial Engineering



Based on external big data tools, APAC holds the largest share of the global industrial engineering workforce, making up 33% of total talent. Top talent hubs are mainly in China and India, with five located in India and three in China, alongside emerging hubs in Pakistan and Jakarta.

EMEA has the second largest talent hub, accounting for 29% of global talent. While UAE and Saudi Arabia host the largest individual pools, the region’s leading hubs are mainly European (Paris, Russia, Munich, London, Istanbul and Madrid). With a 20% increase in robotics-related jobs between 2020 and 2023, advanced automation is a key growth area in Europe, with roles in industrial engineering and robotics programming particularly sought after⁵⁹.

North America accounts for 23% of global industrial engineering talent with key hubs in Los Angeles (5.9%) and Washington DC-Baltimore (5.4%), followed by other major metropolitan areas across the United States.

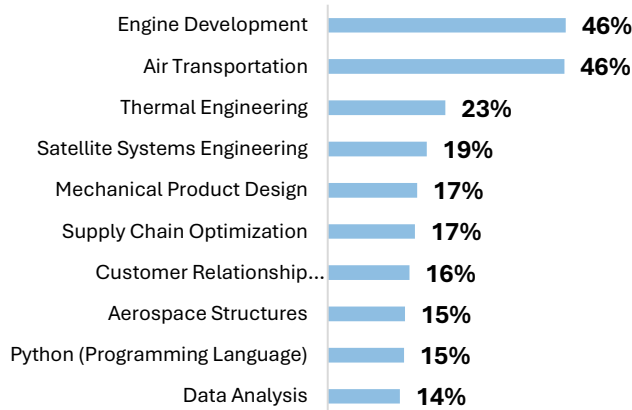
LATAM represents the smallest share (15%) and its engineering clusters are concentrated in Brazil and Mexico – with Greater São Paulo Area alone accounting for 11.1% of LATAM total supply. The city is widely considered as the region's most technologically advanced, due to its robust tech infrastructure and thriving innovation ecosystem⁶⁰.

Talent Landscape | Growing skills

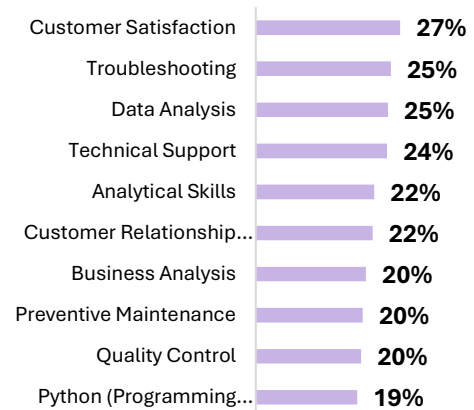
Industrial Engineering

1 year growth

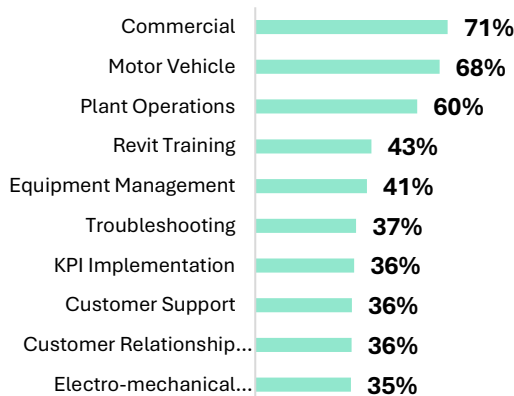
North America



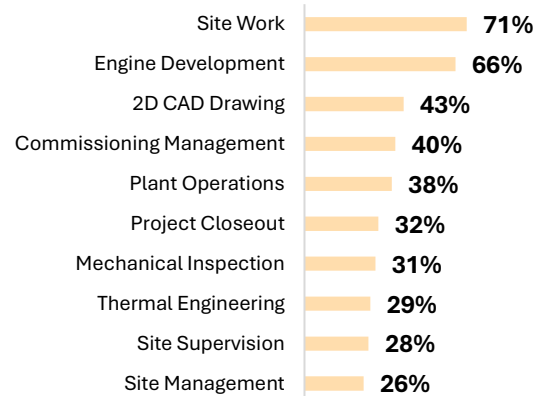
EMEA



LATAM



APAC



Year-on-year growth of skills in professional profiles show APAC's fastest-growing skills include commissioning management (+40%), mechanical inspection (+31%), thermal engineering (+29%), and site management (+26%) - highlighting its dominance in large-scale infrastructure and manufacturing⁶¹.

In LATAM, the growth of skills including equipment management (+41%), electro-mechanical troubleshooting (+35%), and KPI implementation (+36%) as well as customer support and customer relationship management (both +36%) reflect a push towards operational efficiency and a growing importance of service excellence⁶².

EMEA is embracing digital transformation and enhancing the customer experience with an increase in profiles mentioning skills such as data analysis (+25%)

and Python (+19%); as well as customer satisfaction (+27%) and customer relationship management (+22%).

North America is seeing growing demand for engine development (+46%), satellite systems engineering (+19%) and aerospace structures (+15%). The region is also seeing growth in supply chain optimization (+17%), Python (+15%) and data analysis (+14%). This is in response to rapid growth in the small satellite market⁶³ and projections that demand will increase for aerospace and spacecraft parts by 2030⁶⁴.

Across all regions, plant operations, troubleshooting, customer relationship management, and data analysis appear as recurring skill priorities, reflecting the ongoing global shift towards efficient, digitally-enabled, and client-focused industrial engineering.

What skills are employers looking for?

EE&I



The global demand for talent across the Energy, Engineering and Industrial landscape has dropped by a fifth since 2024. This drop in demand reflects the global economic uncertainty and energy price volatility impacting all sectors⁶⁵.

However, not all industries have been impacted equally. The Energy and Engineering industries have seen a significant drop (25% and 20%, respectively), while the automotive sector has been hit hardest with a 30% decline in demand for candidates in the last year. Organizations have cited various reasons for this, such as supply chain issues⁶⁶, corporate restructuring^{67,68} and the transition to electric vehicles⁶⁹.

What we are seeing is a pause before the pivot. Demand may be declining amid global economic uncertainty, but major structural shifts in development, such as automation, electrification and digital manufacturing, continue to reshape the industry. While soft skills such as communication, collaboration and problem solving continue to feature at the top of employer wish lists for candidates, the demand for soft skills is slowing, highlighting the increasing need for technical expertise as the transition to a more sustainable model gathers pace.

What skills are employers looking for?

Energy

The energy sector is experiencing one of the fastest evolutions in skill demand anywhere in the global economy. While the industry remains rooted in engineering and systems design, the data shows an acceleration in demand for digital, analytical, and instrumentation-related expertise.

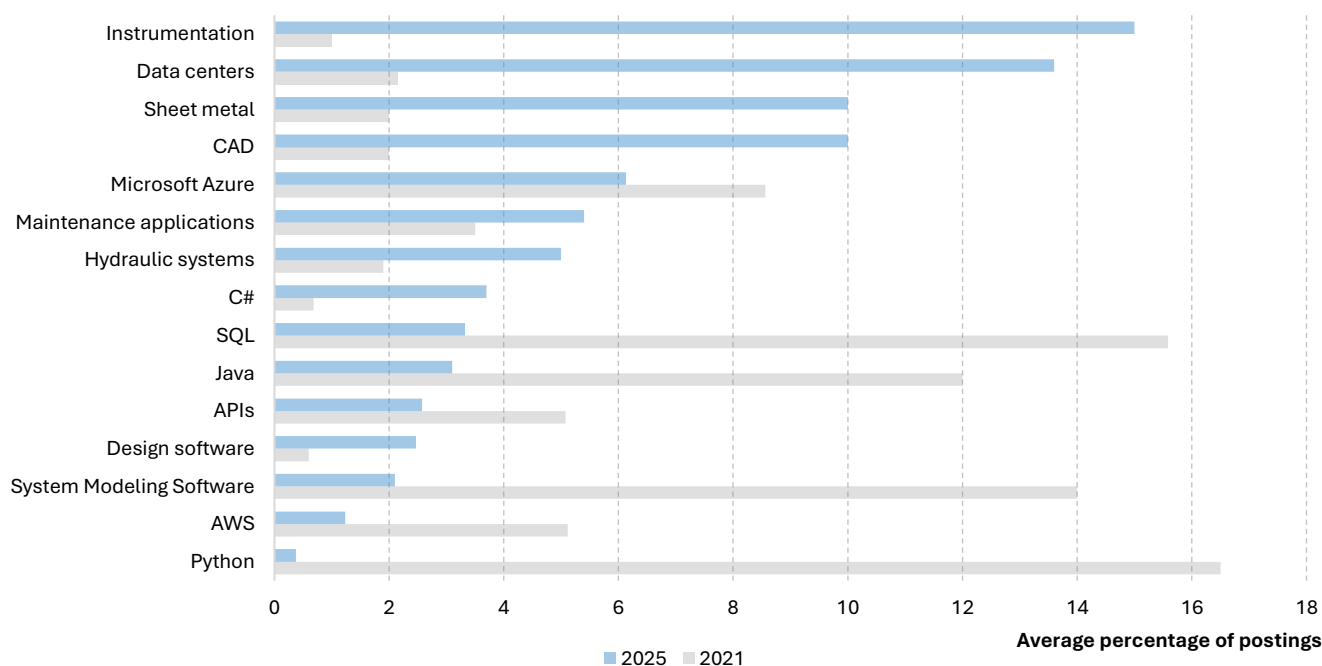
Demand has risen sharply for roles that bridge traditional energy disciplines with emerging technologies, highlighting the shift from an engineering-focused industry to an intelligence-focused industry. Energy and Utilities employers are increasingly seeking candidates with experience technologies such as TensorFlow and data centers, which have seen an exponential increase in demand for these skillsets over the last four years, highlighting the growing demand for AI and the scramble for energy companies to keep up with demand⁷⁰.

Design and manufacturing proficiencies are also surging. Roles requiring CAD, sheet metal, and design software skills have all increased by around 300–400%, highlighting the push toward precision engineering and digitally modeled infrastructure across renewable, transmission, and storage projects. Meanwhile, programming and automation skills such as C# continue to grow, supporting the integration of intelligent systems and predictive maintenance tools.

By contrast, demand for legacy digital skills is waning. Listings referencing Python (–98%), SQL (–79%), and AWS (–76%) have all declined steeply, suggesting that energy employers are moving away from general-purpose coding and cloud infrastructure toward more specialized, operationally embedded systems. Even widely used languages such as Java and platforms like Microsoft Azure show contraction, reinforcing the shift from IT-centric to engineering-centric digital skills.

In essence, the energy workforce is evolving from one rooted in mechanical power to one defined by digital precision. The next phase of energy innovation will depend on professionals who can bridge these two worlds by applying digital intelligence to physical infrastructure to accelerate the transition to cleaner, smarter energy systems.

Figure 6
Programming capabilities are becoming integral to the energy sector.
The top growing and declining skills in demand across the Energy sector, 2021 - 2025



Source: TalentNeuron

What skills are employers looking for?

Automotive

Digitalization and electrification are redefining the automotive workforce. Employers are increasingly focused on capabilities that enable intelligent manufacturing, automation, and advanced product development.

The demand for knowledge and experience working with electric vehicles has surged by almost 200% and now features in almost half of all global job postings in the industry, compared to less than 1% for combustion engines. Supporting this shift, demand for hardware and vision systems skills has more than doubled, reflecting the growing complexity of autonomous and sensor-driven technologies. This highlights that the investment in EVs is here to stay.

The demand for automation and data skills are also steadily rising. Programmable logic controllers (+41%), Python (+29%), and C# (+23%) continue to gain prominence as manufacturers modernize assembly lines and integrate predictive systems into production⁷¹.

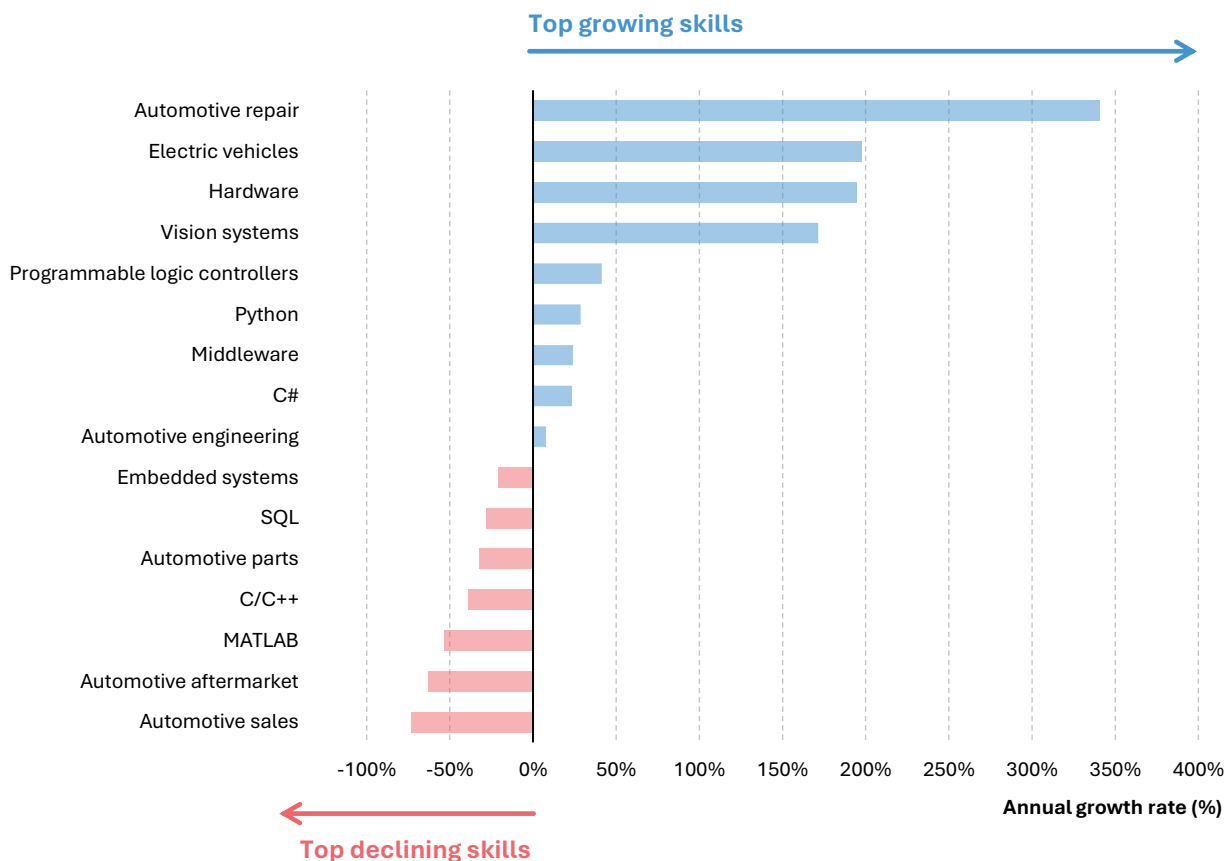
However, demand for legacy programming languages and infrastructure tools, including C/C++ (-39%), SQL (-28%), and MATLAB (-53%), is falling, indicating a clear migration toward newer, cloud-based and modular platforms.

Elsewhere in the automotive space, it is clear that the demand for technical roles are surging, while commercial roles are contracting in demand. There has been a 340% increase in automotive repair and 8% increase in automotive engineering demand, while Automotive Sales (-73%) and Aftermarket (-63%) demand has seen a steep decline, pointing to a major change in how vehicles are sold and serviced⁷².

Figure 7

Employers are increasingly focused on capabilities that enable intelligent manufacturing, automation, and advanced product development.

The top growing and declining skills in demand across the Automotive sector, 2021 - 2025



Source: TalentNeuron

What skills are employers looking for?

Industrial Engineering

As with other sectors, industrial engineering is undergoing a major transition toward automated, data-driven manufacturing. The growing integration of digital design, simulation, and analytics tools is redefining the skills employers seek, and transforming how industrial systems are designed, built, and maintained.

The data shows that demand for software and analytical skills is accelerating across the sector. Python now features in nearly one in five industrial engineering job postings, almost double its share from four years ago, while R programming has grown by 345 percent. These skills are increasingly applied to automation, simulation, and process optimization, signaling that engineers are expected to interpret and act on data rather than simply generate it⁷³.

Design and modeling capabilities are also surging. Demand for Autodesk and AutoCAD experience has more than tripled, appearing in 17 percent and 13 percent of all postings respectively.

This reflects the mainstream adoption of model-based and simulation-led approaches, where engineers use digital twins and virtual environments to test systems before production. Growth in instrumentation and programmable logic controllers further underscores the move toward smart, sensor-driven manufacturing.

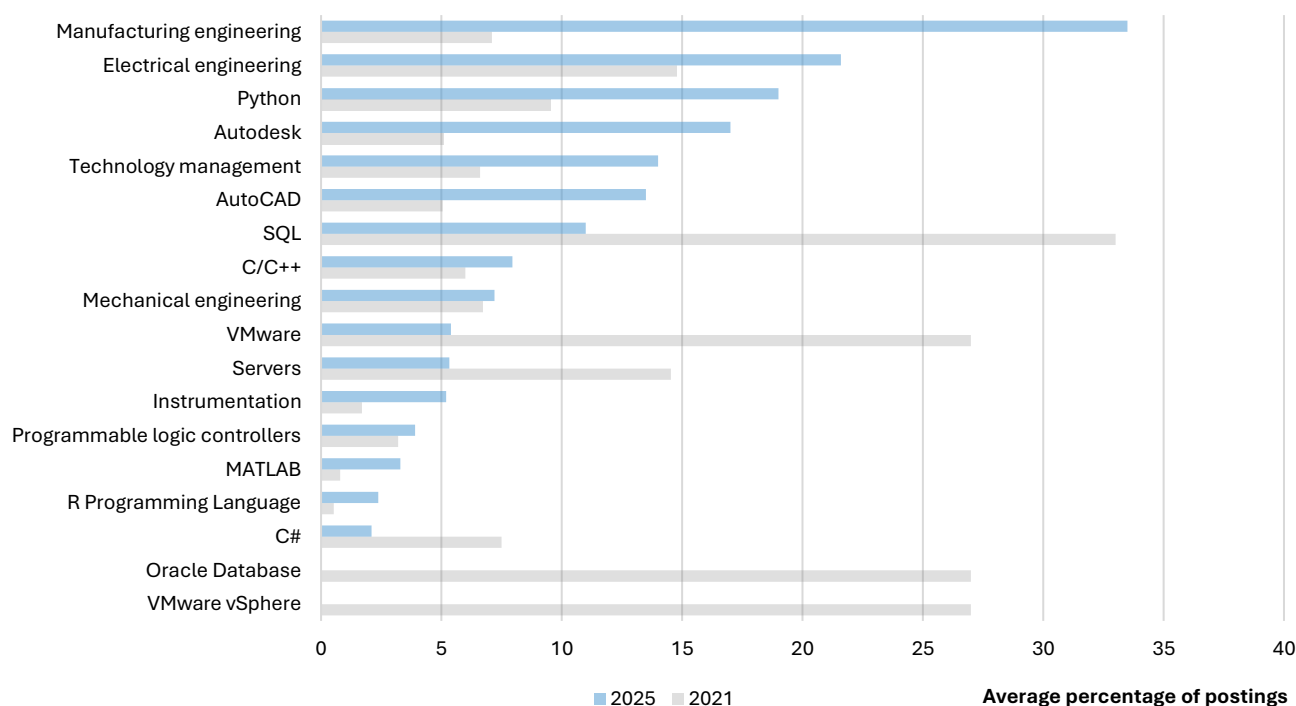
At the same time, older IT infrastructure skills are falling away. Demand for SQL, VMware, and Oracle Database has dropped sharply, as manufacturers transition from on-premise systems to cloud and containerized technologies⁷⁴.

The overall trend is clear: legacy systems and processes are becoming defunct; employer demand is now anchored in technical fluency, automation literacy, and digital engineering capability. These are the foundations on which the next generation of industrial transformation will be built⁷⁵.

Figure 8

There is a clear shift from legacy to cloud-based requirements in the sector

The top growing and declining skills in demand across the Industrial Manufacturing sector, 2021 - 2025



Source: TalentNeuron

Industry Trends

Time to Hire

Global hiring timelines have lengthened notably in recent years, with 2024 and 2025 both showing increased durations from vacancy to offer acceptance. Between 2019 and 2022, up to 39% of roles were filled in under 30 days. In 2025, this has shifted forward by about four working weeks, with 36% of roles now taking 30 - 49 days to fill - highlighting a clear slowdown in hiring times across the sector.

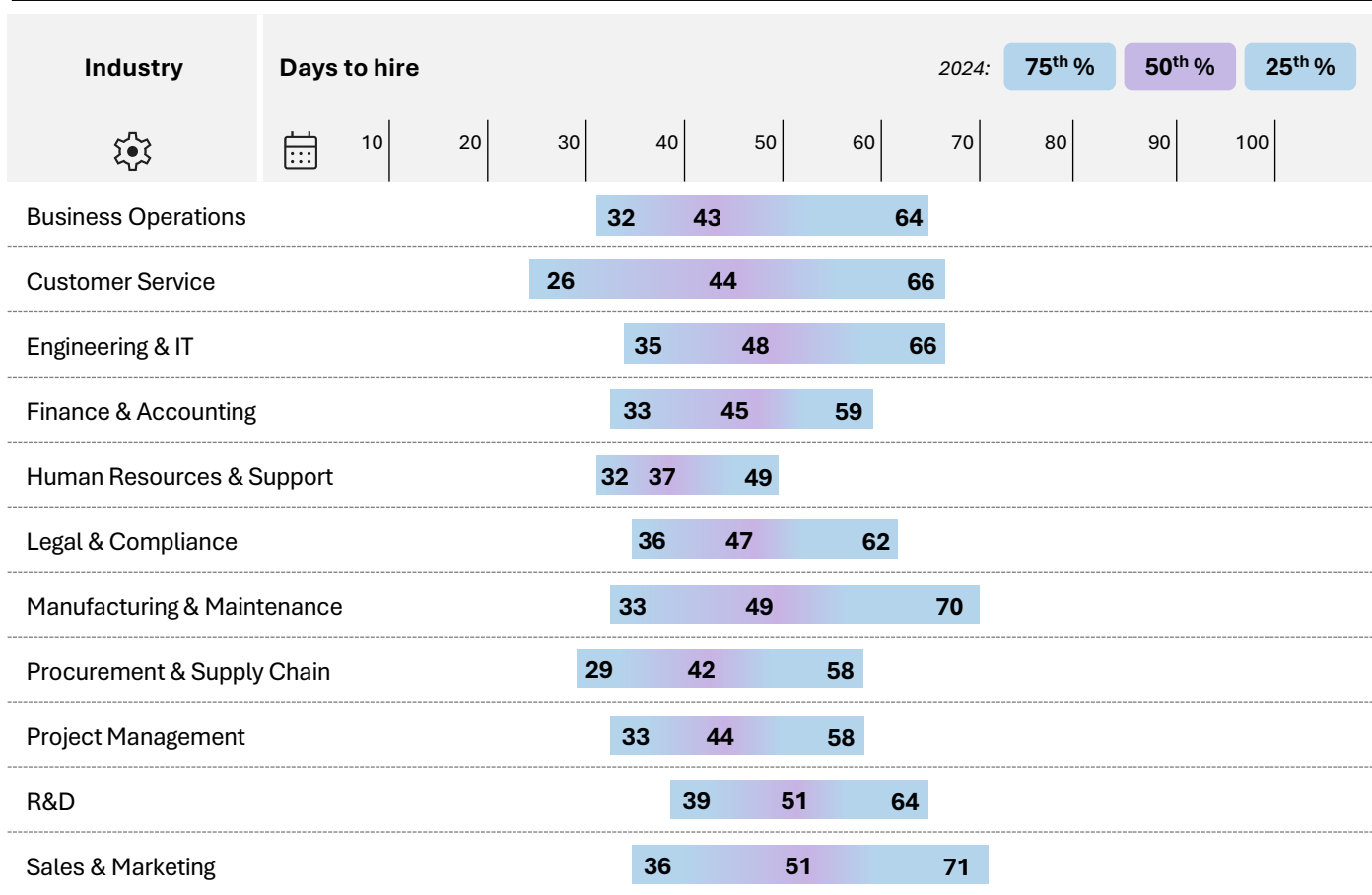
In 2024, roles in the Energy, Engineering and Industrials sector were fill, on average, in 50 days and are set to remain at this level into 2026. However, there was significant variation between job families within the sector, Sales and R&D roles are set to take the longest average time to fill at 51 days.

This is mirrored in manufacturing roles where the average time-to-hire is 49 days with some roles taking up to 70 days to fill. This reflects the continuing demand for this skillset amid increasing labor shortages⁷⁶ in the sector.

Corporate functions such as Human Resources and Finance roles within the sector take less time to fill and are filled on average of 37 and 45 days respectively, suggesting there is an availability of talent where skillsets can transfer across multiple industries.

From a regional perspective, Latin America is a key outlier in time-to-hire in the sector. On average, it takes almost twice as long to hire someone in Latin America than it does in North America or Asia Pacific. According to the International Labour Organization⁷⁷, the delay in hiring often comes from informal hiring practices and the need to verify documentation. Latin American also tend to rank moderate or low proficiency in the English Proficiency Index⁷⁸, creating a barrier for hiring and impacting hiring timelines where English language skills are a requirement. Overall, we can see that, while demand for talent is decreasing, the market remains tight. Economic uncertainty is compounding this effect, with a melting pot of global market volatility, tight labor markets, and a decrease in overall labor market participation across the globe creating the perfect environment for longer hiring timelines.

Figure 9



Graduate Landscape

Applications on the Rise

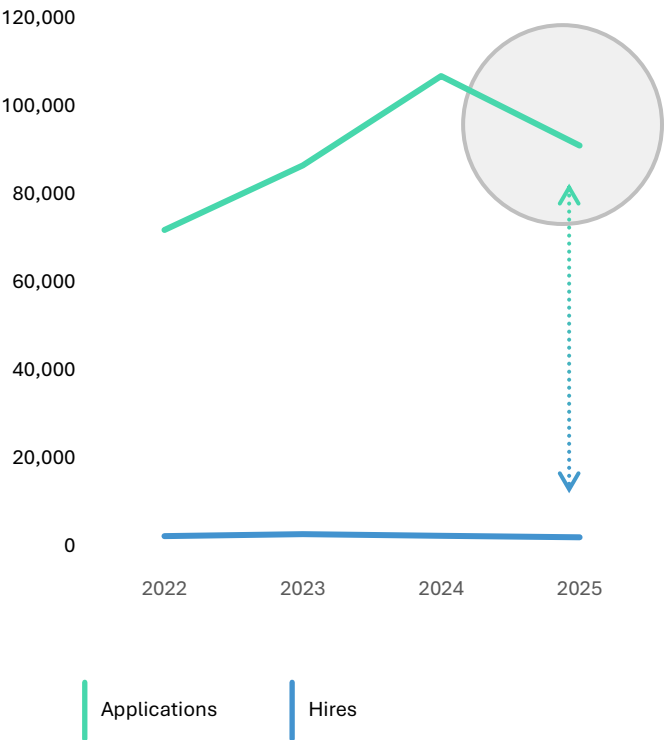
The graduate landscape for the Energy, Engineering and Industrials sector is changing. Since 2022, companies across the sector have replaced their traditional graduate programs and, instead, increased their investment in early careers talent through apprenticeship programs. This marks a shift in hiring strategy, highlighting changing workforce needs amid a sector transformation.

Apprenticeship applications have experienced sustained year-on-year growth - up 46% (2022-23), 11% (2023-24), and a further 58% (2024-25). Over the three-year period, total application volumes have tripled, demonstrating a growing candidate preference for apprenticeships as a primary entry route into defense and engineering careers.

Between 2024 and 2025, apprenticeship programs by applications surpassed full-time graduate programs for the first time, with the latter seeing its sharpest year-on-year decline of applications in the same period, representing a move towards more skills-based learning routes within the sector, prioritizing hands-on experience over traditional classroom-based learning.

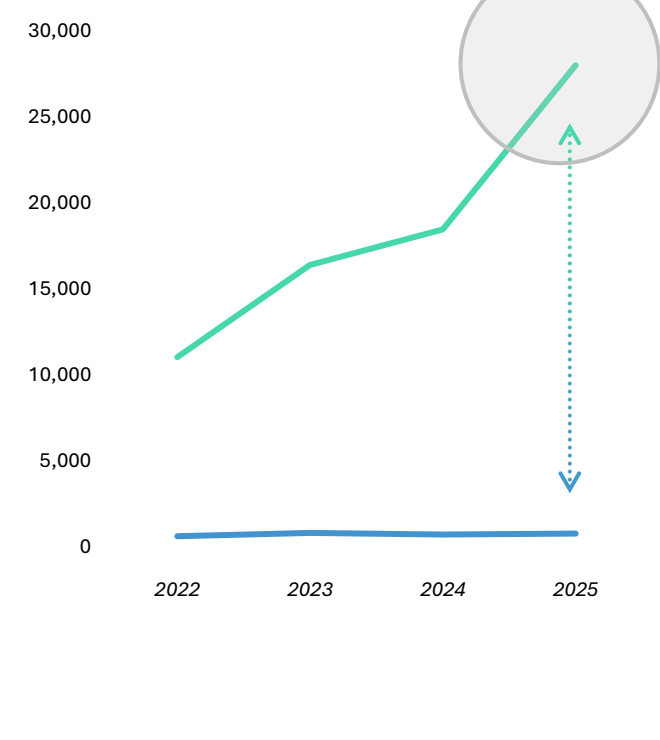
Compared with 2022, apprenticeship hires have risen by 13% and, in 2025, apprenticeships now account for over 40% of all early careers hires. This represents a move towards more skills-based learning routes within the sector, prioritizing hands-on experience over traditional classroom-based learning.

Figure 10
Applications for Engineering graduate programs have dipped in 2025 while hires continue to decline.
Applications and hires for early careers programs, 2022-2025

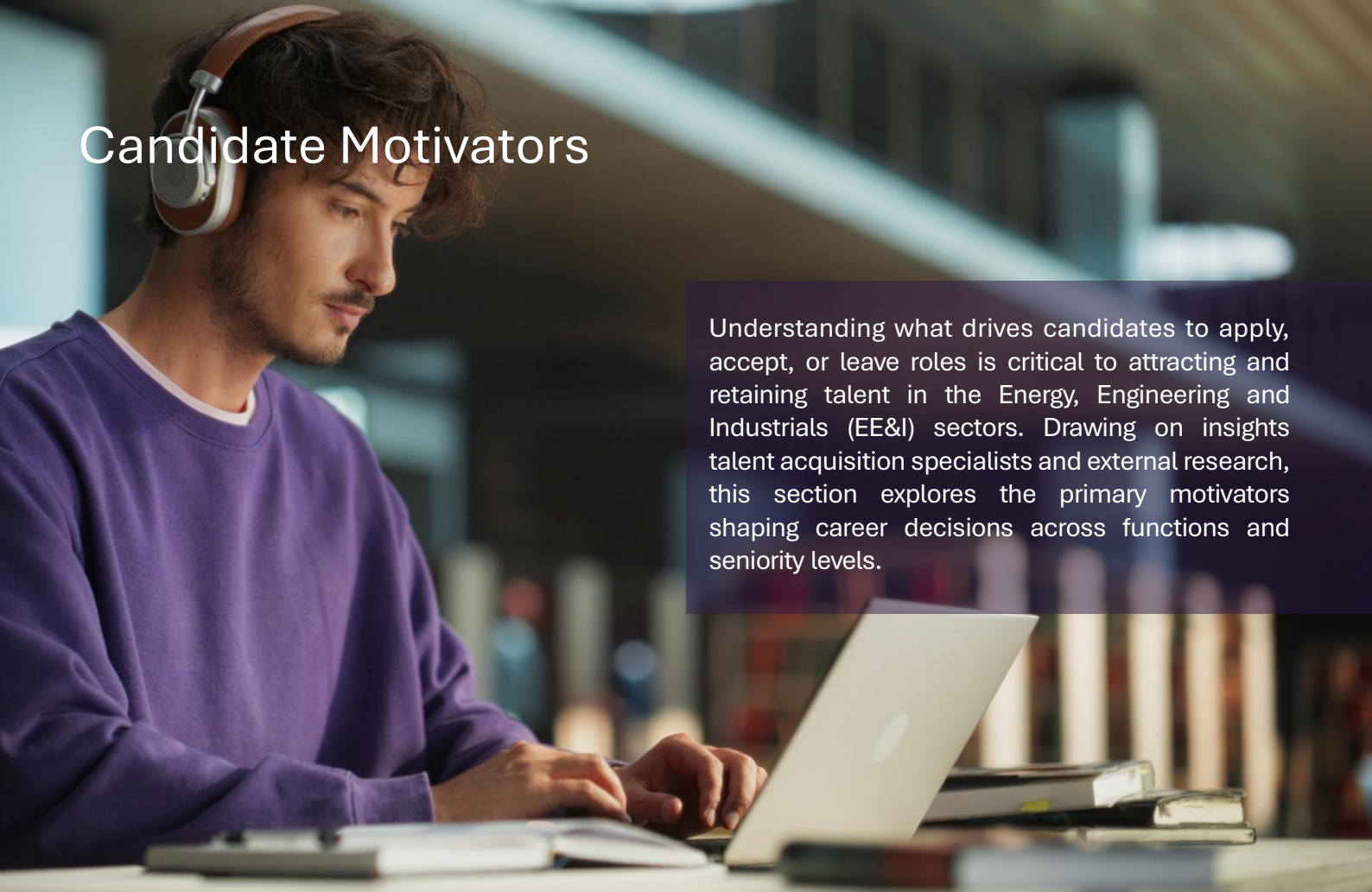


Source: AMS Internal Data

Figure 11
Applications for Engineering apprenticeships rise exponentially while hires remain steady.
Applications and hires for apprenticeship programs, 2022-2025



Source: AMS Internal Data



Candidate Motivators

Understanding what drives candidates to apply, accept, or leave roles is critical to attracting and retaining talent in the Energy, Engineering and Industrials (EE&I) sectors. Drawing on insights talent acquisition specialists and external research, this section explores the primary motivators shaping career decisions across functions and seniority levels.

Salary and Benefits

Our findings show that salary continues to dominate as the leading motivator across most candidate segments. Competitive compensation remains the first filter, yet total rewards such as comprehensive benefits, flexibility, and family support now determine whether candidates engage. Many professionals recognize that higher pay may be available elsewhere but are drawn to organizations offering stronger benefits and better work-life balance.

External data supports this view. 74% of civil engineers who changed jobs did so for better pay, receiving a median 18 percent salary increase⁷⁹. However, engineers increasingly value recognition, professional development, and meaningful work alongside financial rewards⁸⁰.

Career Growth and Progression

Career advancement remains one of the strongest motivators, with candidates seeking clear pathways to progression and opportunities to broaden their experience. Our findings highlight a growing trend of professionals moving from contractor to client-side roles, motivated by greater project ownership and more attractive compensation. Some are also willing to accept technically lower-level positions if these roles offer significantly higher pay or exposure to strategic projects.

Across global markets, 53 percent of engineers say they would leave their employer for better advancement prospects⁸¹. Structured learning, mentoring, and transparent mobility pathways are becoming key differentiators in attracting and retaining this talent.

Stability and Brand Reputation

Career stability acts as a conditional motivator that gains importance during periods of market uncertainty. Workforce reductions or volatility in oil and gas markets often prompt proactive job searches. Well-known and reputable employers remain particularly attractive, as they are associated with security, professional recognition, and long-term opportunity.

For trade and operator roles, local employment ties, family heritage, and the perceived stability of long-term projects continue to influence application decisions.

Candidate Motivators

Work-Life Balance and Organizational Culture

Post-pandemic expectations have permanently shifted candidate priorities. Our findings reveal a strong preference for cultures that value balance, flexibility, and inclusion. Flexible scheduling, trust-based management, and community-focused workplaces are increasingly seen as key attractions, particularly in Northern European markets where work-life integration is culturally embedded.

This trend is also visible in global research. Sixty-three percent of manufacturing workers now list flexibility as a top factor in job choice⁸², while 58 percent of engineers report that stress affects their health⁸³. Employers that define flexibility beyond remote work, for example through adaptive shifts or results-based performance, gain an advantage even in site-based environments.

Sustainability

Interest in sustainability and renewable energy remains complex and cyclical. Our analysis shows that enthusiasm for green technologies often rises during periods of strong investment and recedes when organizations pivot back to traditional energy operations. This pattern suggests that candidate interest in renewables is primarily shaped by opportunity and financial confidence rather than ideology.

However, younger professionals increasingly view sustainability as a baseline expectation rather than a niche interest. Candidates entering the workforce today are more likely to seek employers that embed environmental responsibility across all roles, not only in dedicated “green” positions. Over time, this generational shift is expected to elevate sustainability from a secondary factor to a core employer value.

Artificial Intelligence

Artificial intelligence is emerging as a distinct motivator, particularly among technology-oriented candidates and graduates. Many professionals are drawn to organizations investing in AI applications for engineering design, predictive maintenance, and operational optimization. Candidates increasingly view AI adoption as a signal of innovation maturity and long-term competitiveness.

While interest in AI is growing rapidly, our findings indicate that many EE&I organizations have yet to prioritize large-scale implementation. This creates a potential disadvantage in attracting digitally minded talent who might otherwise choose technology or manufacturing firms further along the AI transformation curve. Demonstrating practical use cases for AI within engineering and industrial contexts can therefore serve as a key differentiator in future recruitment strategies.

Generational Workforce Changes

Generational preferences are beginning to reshape the EE&I workforce. Younger professionals show stronger interest in technology-driven industries and are less likely to pursue traditional industrial pathways. Early signs of progress in gender diversity are also emerging. Recent apprentice-to-employee conversion campaigns achieved close to a 50/50 gender balance in offshore technical roles, suggesting a gradual broadening of the sector’s appeal to a more diverse range of candidates.

Overall, while financial incentives remain essential, they are no longer sufficient on their own. Candidates increasingly expect flexibility, purposeful work, transparent career paths, and a supportive culture. Sustainability and technology are becoming strategic motivators, reflecting deeper shifts in how professionals define value and purpose at work. As these expectations evolve, organizations that modernize their people strategies and communicate a clear, values-driven employee proposition will be best positioned to attract and retain the next generation of industrial talent.

Expert Insights: Engineering the Energy Transition



David Ingleson

Managing Director of Energy,
Engineering and Industrials, AMS

As the pace of industrial transformation accelerates, insights from industry leaders help to illuminate where the future of engineering talent is headed. Drawing on his extensive experience in leading global in-house and RPO teams in the energy and engineering space, David Ingleson shares his perspective on how skills shortages, changing demographics and the perception of the EEI sector are reshaping the demand for skills. His reflections highlight the challenges employers face, the opportunities emerging and the actions needed to ensure the sector meets the challenges of the future.

Challenges

Skills Shortages

The shift toward clean energy and digital transformation has created acute shortages in emerging specialisms such as hydrogen, carbon capture, AI, and cybersecurity. These roles are increasingly critical not only within energy but across every industrial domain. “The skills we need for the transition (digital, data-driven, and green) are in short supply everywhere,” says Ingleson.

Ageing Workforce

Many EE&I organizations face a looming “retirement cliff,” with up to half of employees approaching retirement within the next decade. The loss of experienced technical talent threatens operational continuity and knowledge transfer at a time when demand for skilled labor is intensifying.

Attractiveness of the sector

Despite their central role in global sustainability goals, EE&I industries are often perceived as less dynamic than technology or consumer sectors. Ingleson observes that outdated perceptions, particularly the energy sector’s association with fossil fuels, make it harder to attract young professionals. “We need to tell our story better,” he says. “This is where the biggest transformation on the planet is happening.”

Cultural and Organizational Complexity

Legacy structures and slow innovation within corporate functions continue to hinder agility and talent attraction. While operational teams often lead on technological change, organizational processes lag behind. Ingleson emphasizes that “real transformation must extend beyond the shop floor into how we design, recruit, and manage people.”

Electrification and Grid Expansion

The global push to electrify transport, heating, and industry is driving unprecedented demand for infrastructure. The International Energy Agency estimates that more than 80 million kilometers of power grids must be built or upgraded by 2040. “This isn’t just an engineering challenge,” Jensen explains. “It’s a workforce challenge; we need people who can process materials, construct plants, and plan, design, and implement complex systems at scale.”

Remote Work Limitations

While many industries have adapted to hybrid or remote work, much of the EE&I workforce remains site-based. This creates a growing disconnect between evolving employee expectations and operational realities. To attract and retain talent, Ingleson believes companies must rethink their employee value propositions (EVPs) for on-site roles. “Flexibility doesn’t always mean working from home, it can mean reimagining schedules, benefits, and development opportunities.”

Expert Insights: Engineering the Energy Transition



David Ingleson

Managing Director of Energy,
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Strategic Opportunities and Recommendations

Adopt Skills-Based Hiring and Workforce Planning

Compared with industries such as pharmaceuticals or finance, EE&I firms have been slower to embed skills-based approaches. Ingleson argues that applicant tracking systems, job families, and workforce planning models must evolve to focus on competencies rather than credentials. “Skills are the new currency of competitiveness,” he notes.

Drive Business Buy-In

Talent transformation cannot succeed as an HR initiative alone. Greater involvement from business leaders is essential to align workforce strategy with innovation goals and operational realities.

David’s perspective underscores a critical truth: the energy transition is as much a human challenge as a technological one. The companies that thrive will be those that align innovation, culture, and capability to build a workforce ready for the future.

Strengthen Storytelling for Attraction

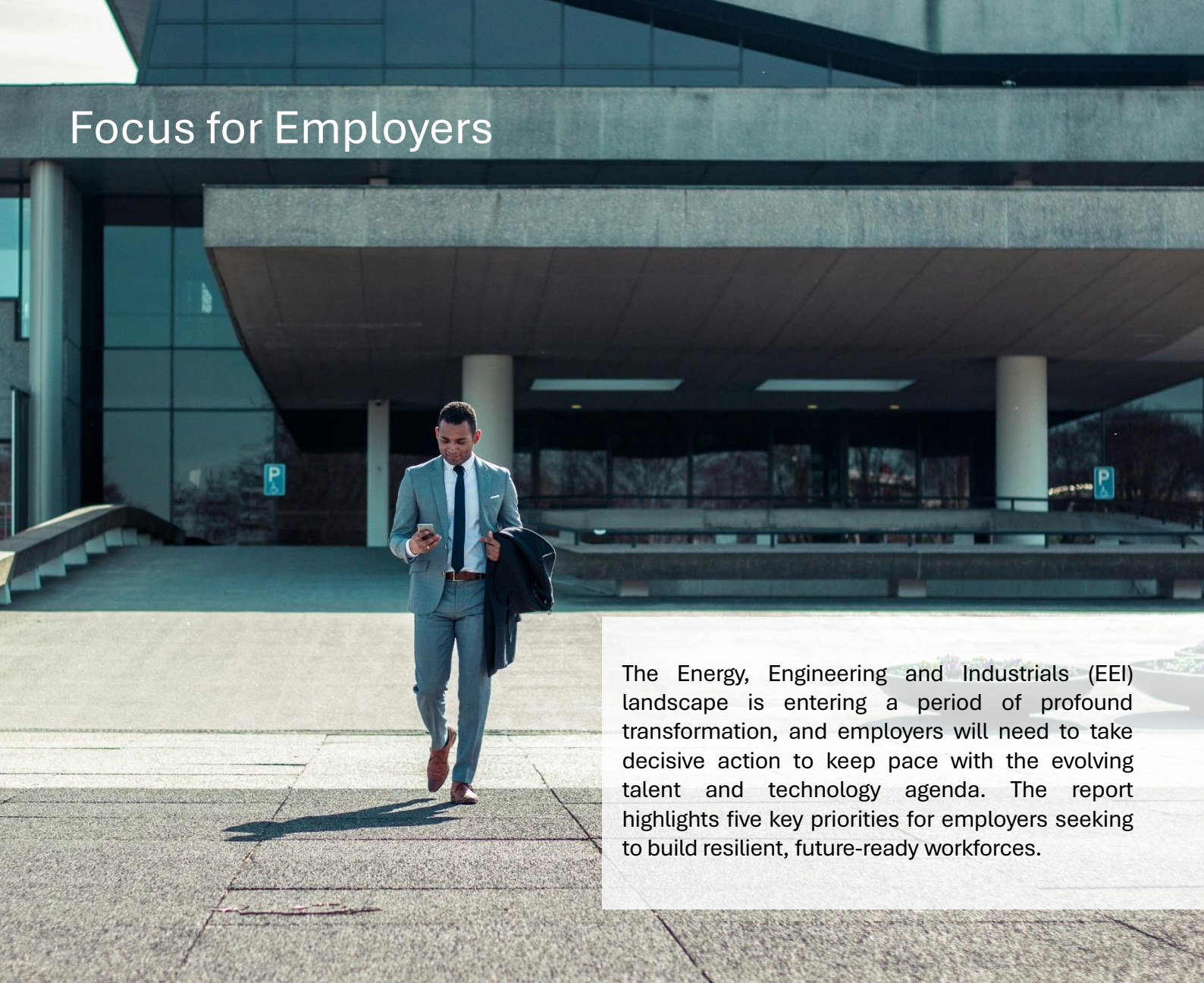
To compete with tech and consumer brands, EE&I employers must communicate their purpose and innovation more effectively. Highlighting real-world impact such as building resilient infrastructure, enabling net-zero transitions and developing future-proof technologies can attract a new generation of talent.

Embed Green Skills Universally

Finally, sustainability should not be confined to specialist roles. Embedding green capabilities across all job functions, from engineering to finance, will ensure every part of the organization contributes to the transition.

“
The EE&I sectors need to be explaining to candidates that if they want to shape the future, solve complex problems and leave a legacy of innovation, there is no better place than the industries that power, build and connect our world.

Focus for Employers



The Energy, Engineering and Industrials (EEI) landscape is entering a period of profound transformation, and employers will need to take decisive action to keep pace with the evolving talent and technology agenda. The report highlights five key priorities for employers seeking to build resilient, future-ready workforces.

Build Digital and Green Skills Pipelines

Companies must focus on building digital and green skill pipelines. As automation, AI, and electrification reshape every facet of industry, the demand for professionals who can bridge digital intelligence with engineering expertise is accelerating. Investment in AI, data analytics, and automation training will be critical, as will the development of cross-functional “green skills” that support renewable energy, hydrogen, and grid expansion. Collaboration with universities, technical institutions, and apprenticeship providers will be essential to ensure future talent pipelines are aligned with the demands of a net-zero economy.

Retain and Transfer Critical Knowledge

Employers need to retain and transfer critical knowledge as an ageing workforce approaches retirement. With up to half of the sector’s employees nearing retirement age, knowledge loss poses a major operational risk. Structured mentorship programs, reverse-mentoring, and digital documentation of legacy systems can help safeguard institutional expertise. Flexible or phased retirement pathways may also extend workforce participation while supporting succession planning and continuity.

Focus for Employers



Redefine the Employer Value Proposition

While salary remains a decisive factor for most candidates, professionals are increasingly motivated by flexibility, career progression, culture, and purpose. Organizations that articulate a values-driven EVP that integrates sustainability, inclusion, and innovation will have a competitive advantage. For many EEI roles that cannot be performed remotely, flexibility should be redefined through adaptive scheduling, rotation opportunities, and skills-based development rather than location alone.

Accelerate Graduate & Apprenticeship Pathways

Employers should accelerate early-career and apprenticeship pathways to meet emerging skill needs. Apprenticeship applications have tripled since 2022, reflecting a clear shift toward skills-based learning over traditional graduate programs. Expanding these initiatives, alongside micro-credentialing and targeted reskilling programs, can help close skill gaps faster while opening doors for underrepresented groups. Partnering with government and education bodies will strengthen these efforts and reinforce the sector's role as a driver of inclusive opportunity.

Reimagine Workforce Planning

Finally, employers must reimagine workforce planning for electrification and AI. Electrification, automation, and digital manufacturing are converging, creating overlapping competition for scarce technical talent across energy, automotive, and industrial sectors. Organizations should adopt integrated workforce planning models that connect data, engineering, and sustainability functions, using predictive analytics to anticipate future skill requirements. Aligning recruitment and development strategies with long-term infrastructure and transformation goals will ensure the sector can scale effectively through this next phase of industrial evolution. Crucially, tackling skills shortages must be driven by future business needs and cannot be viewed solely as a TA or HR challenge. It requires a coordinated, business-wide commitment where business leaders, functional heads, and workforce strategists collaborate to embed talent planning into core strategic decision-making.

Ultimately, employers that embrace these strategies by investing in digital fluency, green capabilities, and a modern, inclusive employee experience will be best positioned to thrive. Those that adapt early will not only attract the next generation of engineers but also secure the talent needed to deliver the innovations driving global sustainability and growth.

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Methodology

This report applies a mixed-methods approach to deliver a comprehensive analysis of the Energy, Engineering, and Industrial (EE&I) sectors.

Our research combines secondary, desk-based analysis of external market reports, industry publications, and publicly available datasets with proprietary insights drawn from AMS internal data.

To deepen our understanding of talent acquisition dynamics, we also utilized external candidate aggregation platforms and big data tools to assess real-time supply and demand trends across key skills and geographies.

Additionally, we conducted qualitative interviews with internal industry experts and talent acquisition specialists to gain additional perspectives on talent acquisition challenges and candidate motivators. This triangulated methodology ensures our findings are grounded in both quantitative evidence and expert insight.

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About AMS

We're passionate about helping companies and individuals fulfill their potential through talent acquisition and management.

Today, over 4,500 of our talent acquisition and management experts partner with more than 100 blue chip organizations, operating in 40 languages, and over 90 countries. We deliver a distinctive blend of outsourcing solutions and through Talent Collective a full range of consulting and specialist services.

We provide unrivaled experience, capability and thought leadership to help clients attract, engage and retain the talent they need for business success.

This approach has led to us being identified as a global leader in the 2020 NelsonHall NEAT Matrix and named a major contender in the Everest Group Contingent Workforce Management PEAK Matrix® Assessment 2020.

We also made the Sunday Times PwC Top Track 250 list for the third consecutive year.