GLOBAL ENGINEERING WORLD OF WORK OUTLOOK

GOVERNMENTS WORLDWIDE NEED TO INVEST

$4 Trillion

PER YEAR TO FUTURE-PROOF SOCIAL, TRANSPORT, ENERGY AND DIGITAL INFRASTRUCTURE

GLOBAL DATA CENTER ENERGY DEMAND IS EXPECTED TO DOUBLE IN THE NEXT

10 Years

AS ENGINEERING TALENT SUPPLY REMAINS FLAT

MOST EMPLOYERS WORLDWIDE

73%

SAY THEY ARE STRUGGLING TO FIND THE SKILLED ENGINEERING TALENT THEY NEED

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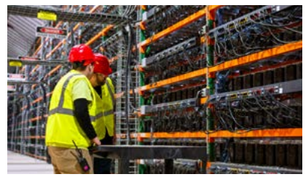




An average person cannot get through the day without the previous work of skilled engineers. If you drive an automobile, each of the roughly 30,000+ parts were rigorously designed, engineered and tested for quality and safety. The phone in your pocket, your home, your workplace, as well as the infrastructure that delivers your food and water, is equally complex.

This ManpowerGroup Work Intelligence Lab report explores the future of work for the men and women building the future today. **It will examine the global megatrends shaping the future of engineering as well as the opportunities to address growing challenges.**

- What are the top challenges for engineers today?
- Where are skills and talent gaps growing?
- How can employers find the skilled engineering talent they need?

Augmented Engineers

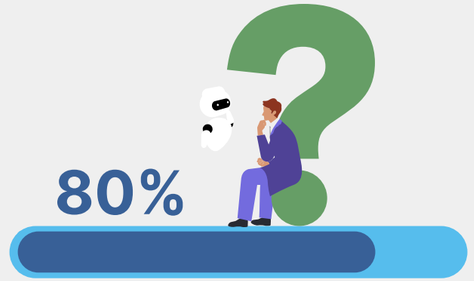
Across engineering disciplines, AI is reshaping traditional roles by automating routine and time-intensive tasks—such as drafting, data analysis, and administrative work—while elevating the importance of human judgment, systems thinking, and cross-functional collaboration. The future of augmented engineering work is taking shape today as both employers and workers reimagine team structures and workflows.

- **Skills Gaps:** There are still opportunities to close skills gaps as nearly one-third (29%) of engineering employers worldwide say their current workforce does not have the skills to use AI effectively.[1]
- **Skills Erosion:** In a recent survey asking engineers and architects about AI-related risks, most (76%) said over-reliance on AI and critical skills erosion was their top concern.[2]

- **AI Augmentation Opportunities:**
  Engineering employers worldwide say Problem-Solving (80%), Creativity (80%) and Training (78%) are the greatest workforce augmentation opportunities in the next year.[1]

Workforce Implications:

- **Employers that can overcome the current learning curves will be well-positioned to leverage the innovation ROI of fully AI-augmented engineering teams.**
- **Skills erosion concerns should be taken seriously since most workers (57%) tell us they have never been mentored or coached by anyone at their current employer.[3]**
- **Boosting mentoring is a low-cost opportunity for employers to mitigate skills erosion as younger AI-native engineers enter the workforce.**



OF EMPLOYERS SAY **PROBLEM-SOLVING, CREATIVITY AND TRAINING** ARE THE GREATEST OPPORTUNITIES FOR AI TO AUGMENT ENGINEERING TALENT.[1]

1. ManpowerGroup Employment Outlook Survey, Q2 2026 2. Engineering Management Institute
3. ManpowerGroup Global Talent Barometer, January 2026

Growing the Corps of Engineers

The aerospace and defense sector is rapidly expanding worldwide as geopolitical instability grows. This is fueling growing global demand for engineering talent throughout the aerospace and defense supply chain. Recruiting and retaining the right top talent is already a challenge, but in many cases, organizations in this sector must also overcome the added complexity of navigating stringent security clearance requirements.

- **Seeking Reinforcements:** Most aerospace and defense employers (76%) report sustained challenges finding the right engineering talent. More than half (56%) also reported challenges filling skilled trade roles.[1]
- **Veteran Talent Exodus:** Aerospace and defense employers in Europe say a significant percentage of their senior engineers and technicians are within 5-10 years of retirement. For example, in "Hauts-de-France", a highly industrialized region, retirements are projected to exceed 43% for technicians and 36% for engineers and executives by 2030.[2]
- **Thinning Ranks:** Across the manufacturing sector, one in four workers (42%) say they want to leave their employer to find a new job in the next six months.[3]

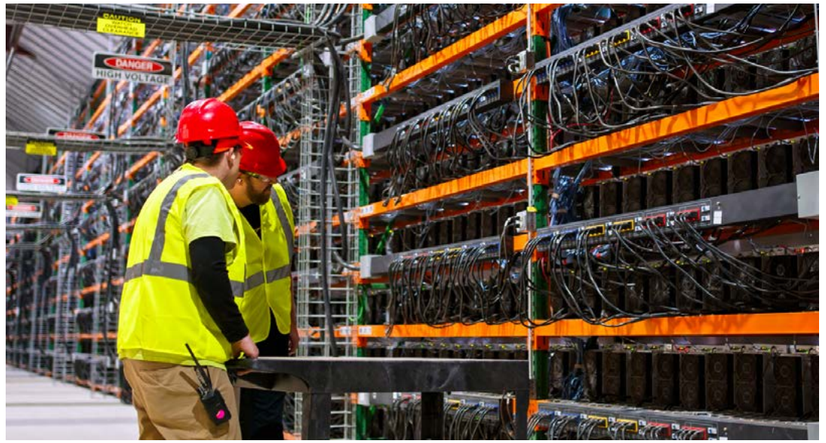
1. McKinsey 2. PwC 3. ManpowerGroup Global Talent Barometer, January 2026

MOST AEROSPACE AND DEFENSE EMPLOYERS ARE **STRUGGLING TO FILL KEY ENGINEERING (76%) AND SKILLED TRADE (56%) ROLES.**[1]

Workforce Implications:

- **The combination of limited talent supply and increasing demand means employers may need to rapidly build the workforce they need through accelerated training programs.**
- **Programs such as Manpower MyPath and the Experis Academy can help rapidly train workers for skilled trades and technology roles.**
- **Strategic workforce planning will be increasingly important to find the right balance of full-time and contingent labor.**

Surging Demand for Electrical Engineers



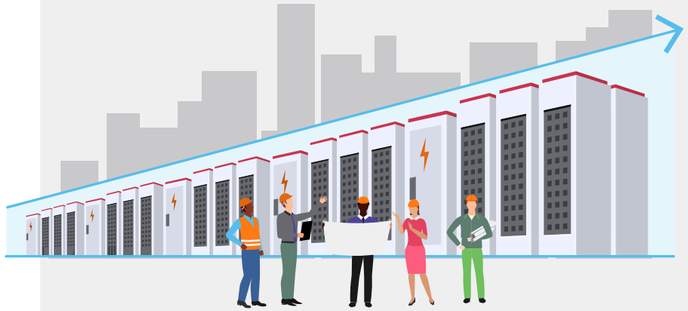
Amid rapid advancements in technology and increased electrification across industries, the global demand for electrical engineers is experiencing significant growth. Companies worldwide are seeking professionals skilled in designing, developing, and maintaining complex electrical systems to support infrastructure modernization, renewable energy projects, and digital transformation initiatives. This will continue as megatrends such as vehicle electrification and data centers drive exponential energy demand.

- **Growing Global Energy Demand:** Global power demand is set to grow by more than 3.5% per year on average over the rest of this decade, with electricity generation from renewables, natural gas and nuclear all expanding to keep pace.[1]
- **Data Center Growth:** Conservative estimates of global data center power demand expect their energy consumption to double by 2030. Most of the growth is anticipated in the U.S. and Europe.[2]
- **But Limited Engineering Talent Supply:** The US is already unable to fill about a third of its more than 400,000 new engineering roles created each year. The UK will see 20% of its engineers retire by 2030 — leaving a shortfall of 1 million jobs. Japan will see a deficit of 700,000 in that period.[3]

1. International Energy Agency (IEA) 2. S&P Global Market Intelligence 3. Bloomberg

Workforce Implications:

- **Without significant government action, it is likely the current engineering talent shortage will continue.**
- **Working with skilled recruiters who understand the engineering sector will be increasingly important as employers seek to attract a limited pool of qualified candidates.**
- **Cross-border talent sourcing will play a growing role in markets with acute engineering talent scarcity.**

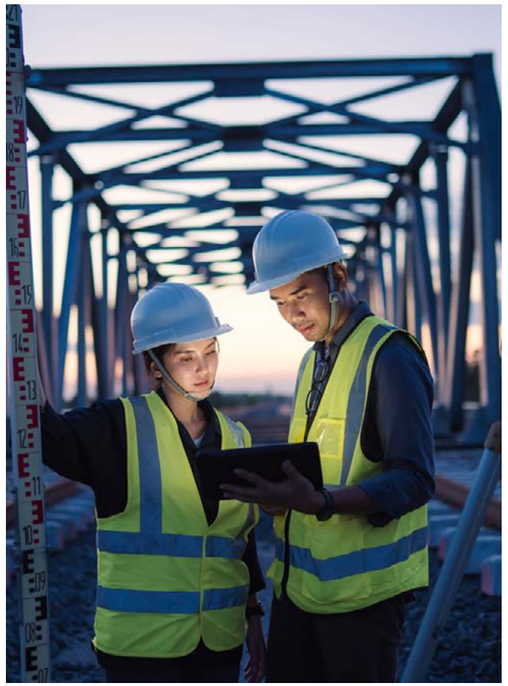


GLOBAL DATA CENTER **ENERGY DEMAND IS EXPECTED TO DOUBLE** IN THE NEXT TEN YEARS AS ENGINEERING TALENT SUPPLY REMAINS FLAT.[2]

Infrastructure Constraints

As nations focus on rebuilding and expanding critical infrastructure—from transport networks and bridges to water systems and energy grids—the need for significant investment is rapidly increasing. This surge is directly driving demand for civil engineers, who are essential in designing, constructing, and maintaining these projects. With aging infrastructure and new development plans, governments and private organizations are competing for a limited pool of skilled civil engineers, intensifying pressure on the already strained talent market.

- **Rebuilding Europe:** In Europe alone, governments will need to invest €12 trillion through 2040 to build or repair critical infrastructure. Barriers such as underinvestment and skilled labor shortages risk €3 trillion in cost overruns.[1]
- **A Global Challenge:** Over the next decade, the global economy will need to invest nearly 3.5% of GDP per year (~$4 trillion) to future-proof social, transport, energy and digital infrastructure against megatrends such as urbanization, supply chain disruptions and AI-driven digitalization.[2]
- **Civil Engineers Needed:** With civil engineering talent needs growing around the world, it is no surprise most (76%) public sector employers hiring engineers tell us they are having difficulty finding the skilled talent they need.[3]



1. BCG 2. Allianz 3. ManpowerGroup 2026 Global Talent Shortage Study

AS GLOBAL INFRASTRUCTURE NEEDS GROW TO **$4 TRILLION PER YEAR,** MOST PUBLIC SECTOR HIRING MANAGERS

76%

ARE STRUGGLING TO FIND THE ENGINEERING TALENT THEY NEED.[2]

Workforce Implications:

- **Employers hiring civil engineers must get creative since the global need to build and repair critical infrastructure is not going away.**
- **In this environment of sustained demand, it is critical to reduce time-to-hire and differentiate with benefits such as flexible work.**
- **Building the skilled workforce you need through closer partnerships with universities and mid-career training partners will be key.**

Engineering for Circularity

Our global economy still operates in a largely linear fashion: we extract resources, use them, and then dispose of what remains. This approach results in over 2 billion tons of waste each year. This figure is expected to climb to 3.4 billion tons by 2050. Since 1970, resource extraction has tripled, contributing to 90% biodiversity loss and 55% of all greenhouse gas emissions.[1] This poses both a historic challenge and opportunity for the next generation of engineering talent to create more sustainable alternatives.

- **Economic Potential:** In the U.S. alone (figures are similar in other developed economies), a shift to more circular business models could create up to $1.5 trillion in new economic growth.[2]
- **Jobs Impact:** An estimated 121-142 million people worldwide currently work in the circular economy. Examples include engineers and skilled trades working in industries such as renewable energy, remanufacturing and sustainable construction.[3]
- **A Circular Talent Advantage:** Most workers (60%) say clear action to address environmental issues will positively influence their decision to consider a job opportunity.[4]

Workforce Implications:

- **Employers engaged in circular and sustainable business models can more easily attract skilled talent, particularly younger workers.**
- **This business impact needs to be actively communicated in recruitment marketing to capitalize on this preference among candidates.**
- **Engineering talent will play the most important role in making the future sustainability ambitions of the C-Suite reality.**

ARE MORE LIKELY TO **CONSIDER JOB OPPORTUNITIES** WITH ENVIRONMENTALLY RESPONSIBLE EMPLOYERS.[4]

1. United Nations Development Program 2. Oliver Wyman 3. World Bank 4. ManpowerGroup Green Transformation Study

Semiconductor Shortfalls

As the semiconductor industry accelerates investment in advanced fabs and next-generation technologies, engineering workforce constraints are becoming a central risk to execution. Demand for process, design, equipment, and manufacturing engineers is rising faster than the industry can develop or replace them, just as experienced engineers begin to retire and operational complexity increases. The shortage is especially acute at the mid-career and senior levels, where engineers are expected not only to solve highly specialized technical problems but also to lead teams, scale production, and transfer hard-won tacit knowledge into new facilities.

- **Growing Global Demand:** As a backbone and enabler of data centers, AI, autonomous vehicles, smartphones and further emerging technological trends, the global semiconductor market is expected to grow from $627 billion (2024) to $1.3 trillion in 2030.[1]
- **Global Talent Shortages:** By 2030, the industry will need to add 1 million skilled workers globally, with shortages of over 100,000 engineers in Europe and more than 200,000 engineers in Asia-Pacific region.[2]
- **AI & Engineering Skills Needed:** Tech employers say AI Application Development (34%), AI Literacy (30%) and Engineering (26%) skills are the most difficult to find.[3]

1. PwC 2. Semiconductor Industry Association 3. ManpowerGroup 2026 Global Talent Shortage

Workforce Implications:

- **Employers will need to think beyond traditional hiring methods in regions where semiconductor manufacturing has not existed at scale for decades.**
- **Current talent supply is not sufficient, and the challenge will require substantial efforts to close skills gaps within the existing workforce.**
- **The challenge will require the partnership of employers, policymakers and non-governmental organizations. For example, ManpowerGroup is partnering with the Semiconductor Industry Association in Europe to scale training programs.**

Building the Future of Engineering Talent

The global shortage of engineering talent is becoming increasingly pronounced as the most experienced professionals retire and fewer younger workers choose to enter the field. This demographic shift is creating a critical gap as globalization fractures, and many countries seek to reshore manufacturing closer to home. It also offers an opportunity for a competitive advantage as all employers confront the same challenge.

- **The Silver Tsunami**: Most employers hiring engineers worldwide (90%) say the retirement of their most experienced employees is impacting their HR strategy.[1]
- **A Persistent Gender Gap:** Although women have achieved parity in most industries, the gender gap remains in engineering. Today, less than one-third (28%) of STEM (Science, Technology, Engineering, Math) jobs are filled by women.[2]
- **Help Wanted:** Most employers worldwide (73%) say they are struggling to find the skilled engineering talent they need.[3]

Workforce Implications:

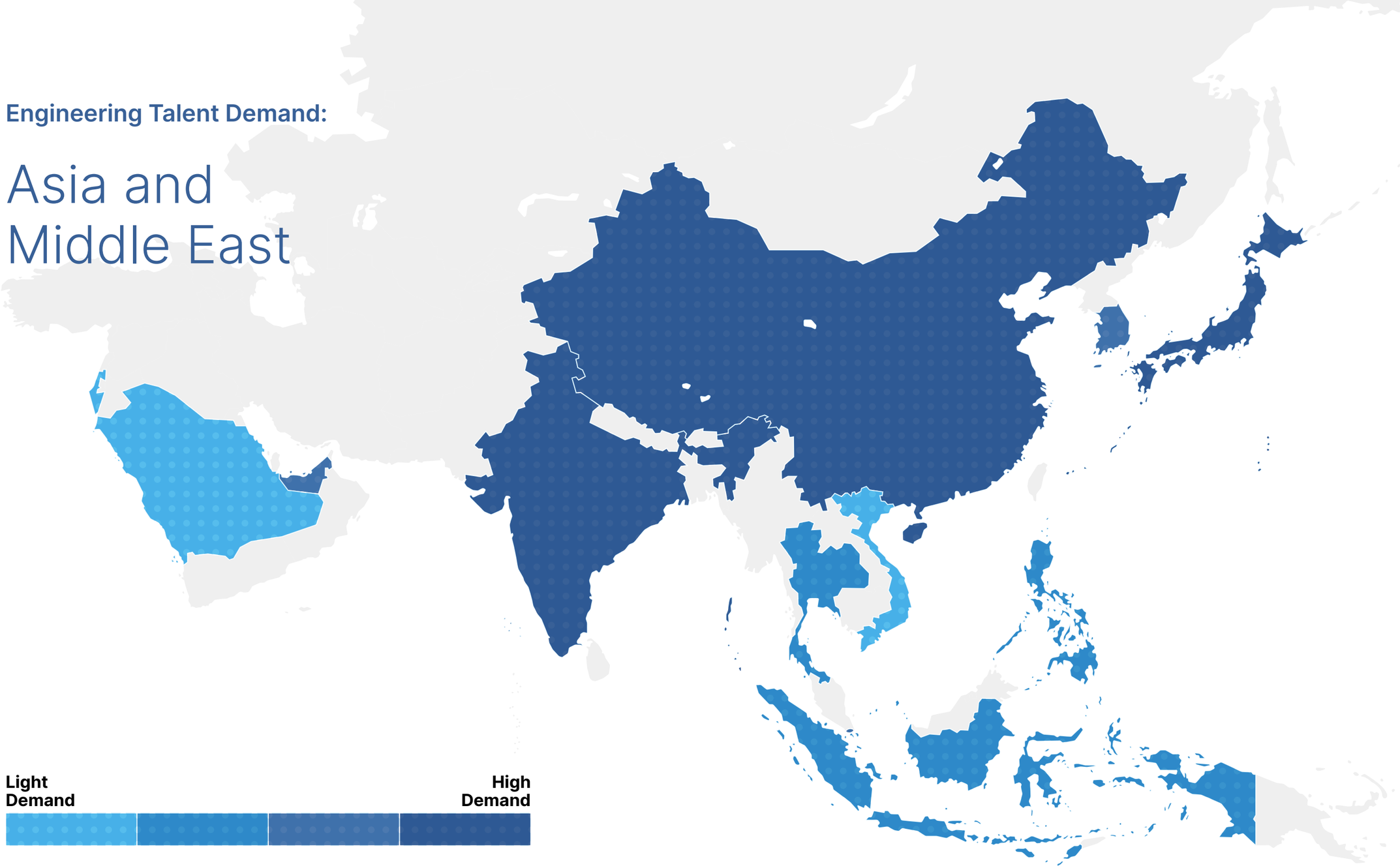
- **Attracting more women into engineering will help mitigate future talent shortages.**
- **Actively working to retain the most experienced engineers and engaging them as mentors before they retire can help close future skills gaps.**
- **Closing any AI skills gaps can help your current engineering workforce do more with less.**

MOST EMPLOYERS WORLDWIDE (73%) SAY THEY ARE **STRUGGLING TO FIND THE SKILLED ENGINEERING** TALENT THEY NEED.[3]

1. ManpowerGroup Employment Outlook Survey, Q3 2025 2. Society of Women Engineers 3. ManpowerGroup 2026 Global Talent Shortage Study

Engineering Talent Demand:

Asia and Middle East

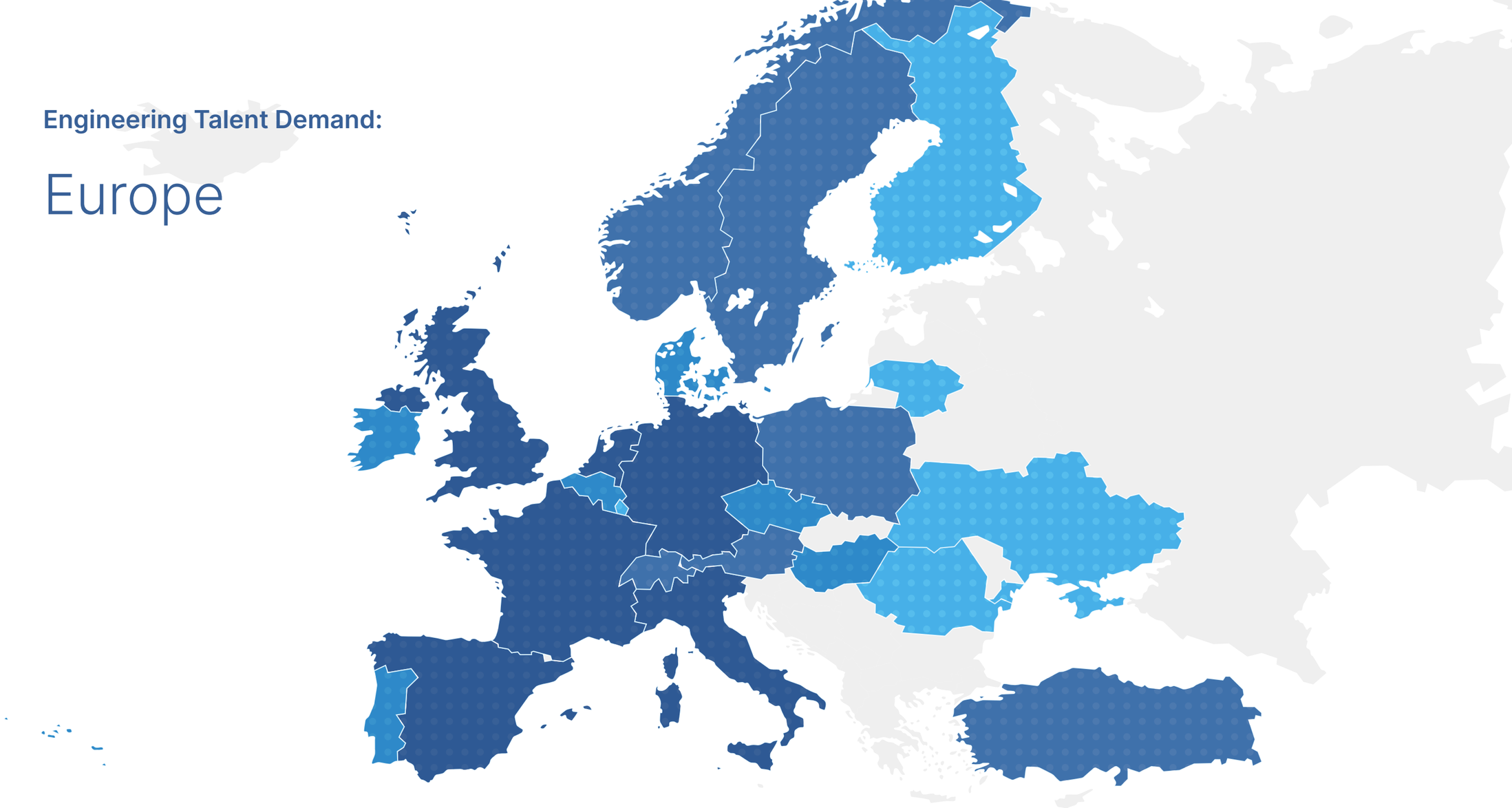


ASIA & MIDDLE EAST EUROPE NORTH AMERICA

Talent Neuron, March 2026

Engineering Talent Demand:

Europe



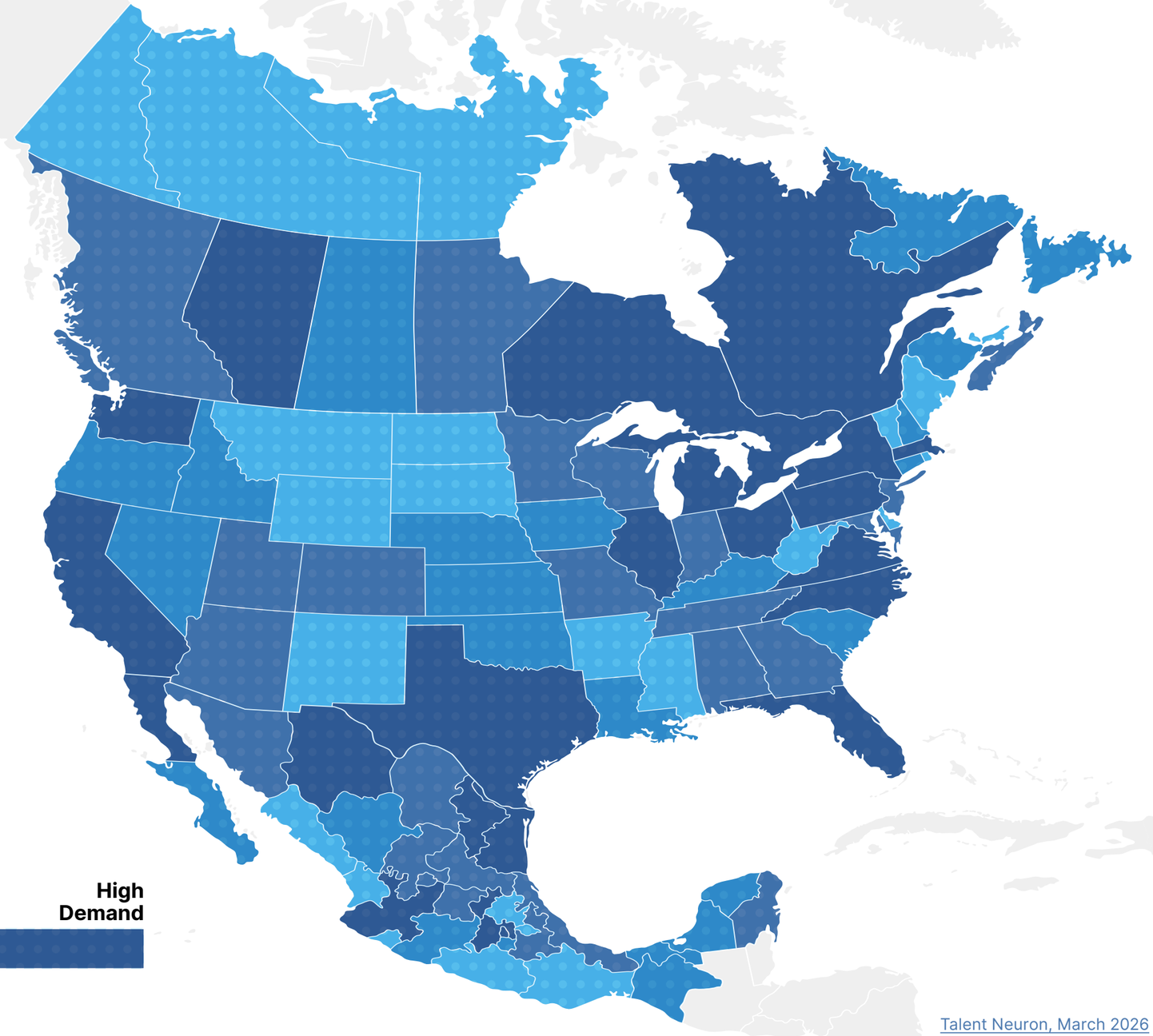
Light Demand — High Demand

ASIA & MIDDLE EAST | EUROPE | NORTH AMERICA

Talent Neuron, March 2026

Engineering Talent Demand:

North America



Light Demand — **High Demand**

ASIA & MIDDLE EAST EUROPE NORTH AMERICA

Talent Neuron, March 2026

Engineering a Brighter Future of Work

Retool your Employer Value Proposition: Competitive pay alone is no longer enough. In-demand engineering talent expects flexible work, purpose, supportive leadership, and clear progression. Failure to deliver will harm both recruiting and retention outcomes.

Redesign Early-Career Pipelines: Graduates often lack job-ready skills, and employers must step in with structured onboarding, mentoring, rotational roles, and practical training. Supporting your rising stars is essential to rebuilding the long-term engineering talent pipeline.

Audit Skills: Conduct regular skills audits to identify current and future capability gaps, hire for demonstrated skills over credentials or tenure, and build targeted reskilling pathways to redeploy existing talent faster and more cost-effectively.

Reinforce Your Core Teams: Invest in reskilling, upskilling, and manager capability: Retaining and retraining existing engineers—especially mid-career and near-retirement talent—is critical. Programs such as Manpower MyPath can help.

Build Buy Borrow Bridge: The growing challenge of engineering talent scarcity cannot be solved with a single approach. Working with an experienced partner to scale recruitment, increase retention and leverage skilled contingent labor can help more rapidly close gaps.

Work Intelligence Lab
by ManpowerGroup®

Global Workforce Solutions for Engineering

Upskilling & Reskilling at Scale

Contingent and Permanent Talent Resourcing

Strategic Workforce Planning

OnSite Management

Talent Resourcing

Manpower® Experis® ManpowerGroup Talent Solutions ManpowerGroup® | ManpowerGroup®

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This report contains statements, including statements regarding global economic and geopolitical uncertainty, trends in labor demand and the future strengthening of such demand, financial outlook, the outlook for our business in regions in which we operate as well as key countries within those regions, and the Company's strategic initiatives and technology investments, including transformation programs and the positioning of future growth for our brands that are forward-looking in nature and, accordingly, are subject to risks and uncertainties regarding the Company's expected future results. The Company's actual results may differ materially from those described or contemplated in the forward-looking statements due to numerous factors. These factors include those found in the Company's reports filed with the SEC, including the information under the heading "Risk Factors" in its Annual Report on Form 10-K for the year ended December 31, 2025, which information is incorporated herein by reference.