White Paper

Robot Efficiency Gains: Unlocking UK industrial productivity through strategic automation

Gary Livingstone - September 2025

Executive summary

The UK faces an historic opportunity. With productivity stagnating, global competition intensifying, and geopolitical pressures reshaping trade flows, our manufacturers must evolve or risk decline. Robotics and automation offer a proven route to transformation: not as a threat to jobs, but as a catalyst for growth, competitiveness, and sustainability.

Independent analyses forecast that widespread adoption of automation and digitalisation could add £150 billion to UK GDP by 2035[1]. For manufacturing specifically, robotics could deliver productivity gains of up to 22%, strengthen supply chains, and create higher-value employment[2]. Yet the UK lags its international peers: with just 112 robots per 10,000 manufacturing workers, we rank 24th globally — barely half the EU average, and far behind leaders such as South Korea (1,012) and Germany (415)[3].

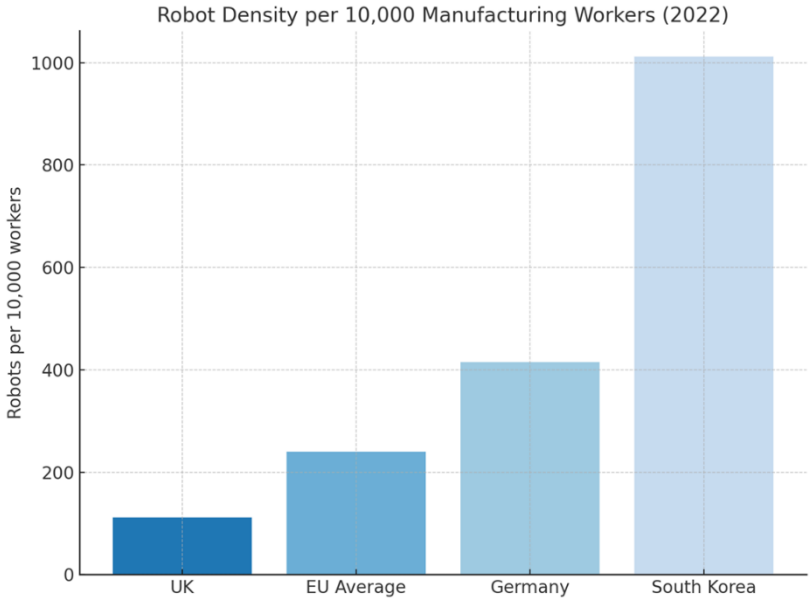
The UK context: Productivity under pressure

The UK's manufacturing output is substantial at $265 billion, yet its global share has slipped from 3.1% in 2000 to 1.6% today. Over the same period, Germany, Singapore, and South Korea have climbed the UNIDO Competitive Industrial Performance Index, while the UK has dropped to 19th place[4].

The structural issues are clear:

- **Low robot density**: Just 112 per 10,000 workers, compared with South Korea's 1,012[5].
- **Declining competitiveness**: Share of global exports halved since 2000.
- **Underutilised SMEs**: 99% of UK manufacturers are SMEs, yet digital adoption is highly uneven, with only 10% operating fully digitalised factories[6].

Skills shortages: 46% of manufacturers cite lack of technical skills as the biggest barrier to automation adoption.



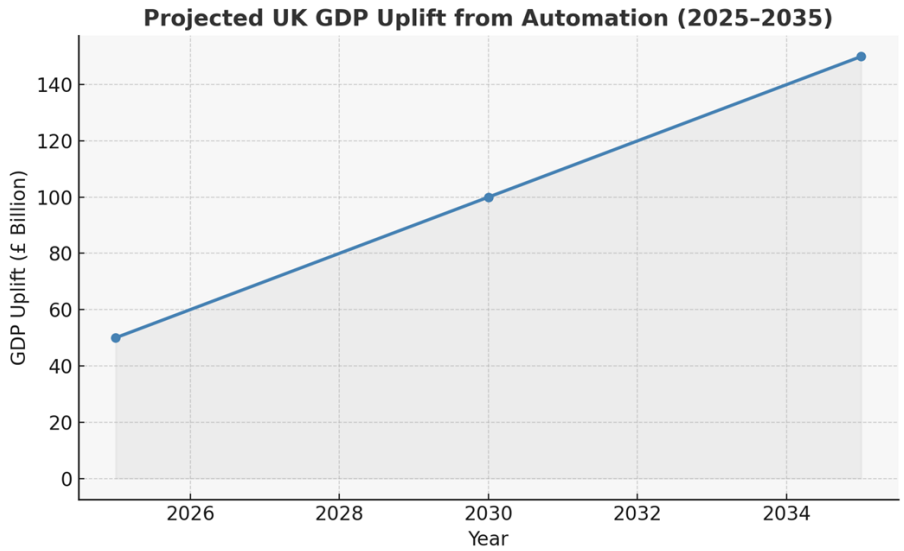
[1] Oxford Economics, 2019; Make UK, 2022
[2] Oxford Economics, 2019
[3] IFR, 2023
[4] UNIDO, 2022
[5] IFR, 2023
[6] Make UK, 2022

Quantifying the gains: What robots can deliver

Research by Oxford Economics suggests that a 30% increase in robot adoption globally could add $5 trillion to global GDP by 2030[7]. For the UK, the numbers are equally compelling:

- £200 billion+ GVA uplift from robotics by 2030
- 22% productivity improvement in manufacturing
- Net employment growth of around 7% over the long term, as automation creates new higher-value roles
- £150 billion boost to GDP by 2035 if the UK closes the adoption gap with leading nations[8]

Case studies reinforce these projections. South Korea's Smart Factory Initiative drove a 25% increase in productivity and 27% reduction in defects across participating firms[9]. German SMEs leveraging automation via the Fraunhofer Institutes consistently outperform peers, thanks to targeted support and risk-sharing innovation models[10].



Dispelling myths: Robots as a tool for all businesses

A common misconception is that robots are only viable for multinationals. Today's collaborative-application robots prove otherwise. Priced from £20,000–£30,000, they can be installed in weeks, require minimal coding, and deliver ROI in 18–24 months for SMEs.

A West Midlands precision engineering SME reduced scrap rates by 40% and raised throughput 25% within a year of adopting a single collaborative-application robot cell.

Make UK data shows that 43% of UK manufacturers already report robotics adoption — but diffusion remains patchy, with most activity concentrated in larger firms[11].

[7] Oxford Economics, 2019
[8] Make UK, 2022
[9] South Korea Ministry of SMEs and Startups, 2020
[10] Fraunhofer-Gesellschaft, 2021
[11] Make UK, 2021,

Robots as catalysts for sustainability

Automation also advances the UK's sustainability agenda. Robots reduce energy consumption by optimising motion, cut material waste by up to 50%, and enable nearshoring to lower logistics-related emissions[12].

Digital tools such as AI-led optimisation are already reducing industrial carbon footprints. Make UK estimates that closing the digitalisation gap could save UK manufacturers millions in energy costs while strengthening global competitiveness.

The global trade challenge: Resilience through domestic automation

Geopolitics is rewriting the rules of trade. U.S. tariffs of 10% on all imports and up to 60% on Chinese goods threaten UK exporters reliant on overseas components. Meanwhile, reshoring is accelerating worldwide: 40% of UK manufacturers are considering bringing production home in response to global instability.

Robotics makes reshoring viable by offsetting higher UK labour costs through efficiency and consistency. South Korea, Singapore, and the U.S. demonstrate how coordinated industrial policy, generous R&D incentives, and workforce integration can drive sovereign capability[13].

Lessons from global leaders

The *Making it Smarter* report highlights five international models with lessons for the UK:

- **Germany**: Fraunhofer Institutes anchor SME innovation through applied R&D, co-financing, and regional delivery.
- **Singapore**: Aligns generous R&D incentives with SME transformation, targeting 50% manufacturing growth by 2030.
- **South Korea**: Smart Factory Initiative transformed tens of thousands of SMEs, backed by consistent tax credits and a workforce strategy training 40,000 in automation skills.
- **Switzerland**: SME-first innovation funding and decentralised fiscal incentives boost SME competitiveness despite small scale.
- **USA**: The Manufacturing Extension Partnership (MEP) provides localised, practical SME support, linking digital adoption with workforce development.

Action plan for the UK: Turning vision into execution

To capture these gains, UK policymakers, industry, and innovators must act decisively.

a. **Start Small, Scale Fast**
   Pilot cobots in high-labour, repetitive areas.
   Leverage modular systems to de-risk adoption.

b. **Invest in People**
   Embed automation training in the Growth and Skills Levy.
   Develop sector-specific reskilling pathways.

[12] McKinsey, 2020
[13] OECD, 2021

c. **Simplify SME Access**
Unify Made Smarter, Catapult Centres, and Growth Hubs under one national platform.
Introduce SME-first funding schemes modelled on Germany's ZIM and Switzerland's Innosuisse.

d. **Strengthen Regional Capacity**
Enable devolved authorities to tailor tax incentives and R&D credits to local strengths.
Expand partnerships between universities and local SMEs to translate research into applied automation.

e. **Align with Sustainability**
Prioritise robotics projects that deliver measurable energy and carbon savings.
Incentivise nearshoring through automation-enabled efficiency.

Conclusion: A national opportunity in motion

The UK has everything it needs for success: world-class research, entrepreneurial spirit, and an engineering heritage second to none. What is missing is consistent execution.

Robotics is not about replacing people; it is about empowering them. If the UK embraces automation with urgency, inclusivity, and clarity, we can:

- Restore manufacturing competitiveness
- Safeguard supply chains
- Create rewarding, higher-value jobs
- Deliver on sustainability goals

As the Make UK report stresses, transformative growth does not happen by accident. It requires stable governance, institutional coherence, and the courage to invest long term.

The choice is simple: remain a follower, or become a leader in the 4th Industrial Revolution. The prize — a more resilient, innovative, and productive UK economy — is well worth the fight.

To learn more about how automation and robotics can transform your business, contact **LG Motion** today:

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🌐 **www.lg-motion.co.uk**
✉️ **sales@lg-motion.co.uk**

About the author: Gary Livingstone

Gary is a trailblazer in the manufacturing and engineering industries, known for his entrepreneurial drive and transformative leadership. Over nearly two decades, he has successfully founded, grown, acquired, and sold businesses, leaving a legacy of innovation and growth. Currently, he leads LG Motion and MiniTec UK, while his guidance has shaped industry leaders such as Precision Acoustics and Fox Robotics.

Gary's entrepreneurial journey began in 2005 when his employer collapsed, and he seized the opportunity to build something new. With fantastic family support and the bold move of re-mortgaging his home, he launched LG Motion. Within three months, he also founded MiniTec's UK division, showcasing his determination and strategic vision.

In 2014, Gary became the majority shareholder of Precision Acoustics, a leader in ultrasound technologies, leading it to a full sale in 2024. As CEO of Fox Robotics in 2023, he spearheaded innovation in autonomous robotics, navigating challenges posed by constrained funding.

Gary thrives on building strong teams, optimising processes, and driving innovation. By empowering talent from apprentices to PhDs, he has delivered solutions with global impact. His passion, resilience, and forward-thinking leadership continue to inspire and shape the future of science and industry.