# STUCK IN THE PAST:
WHY MANUFACTURERS MUST LEAVE LEGACY EQUIPMENT BEHIND

As manufacturers look to leverage the benefits promised by the digital era, Visual Components, developer of 3D simulation software for the manufacturing industry, has worked with research house Vitreous World to gather the thoughts of 100 manufacturing decision makers in the US. This data will also be compared with 100 manufacturing decision makers in the UK and 100 in France.

This research will explore the capabilities of manufacturers today to ensure efficient factory processes and any challenges that remain in moving to digital solutions. It will discuss areas where innovation has been lacking, the risks of legacy processes and equipment, current levels of training and enthusiasm towards new technology. It will also explore how the industry is dealing with an aging workforce and the steps being taken to attract new talent.
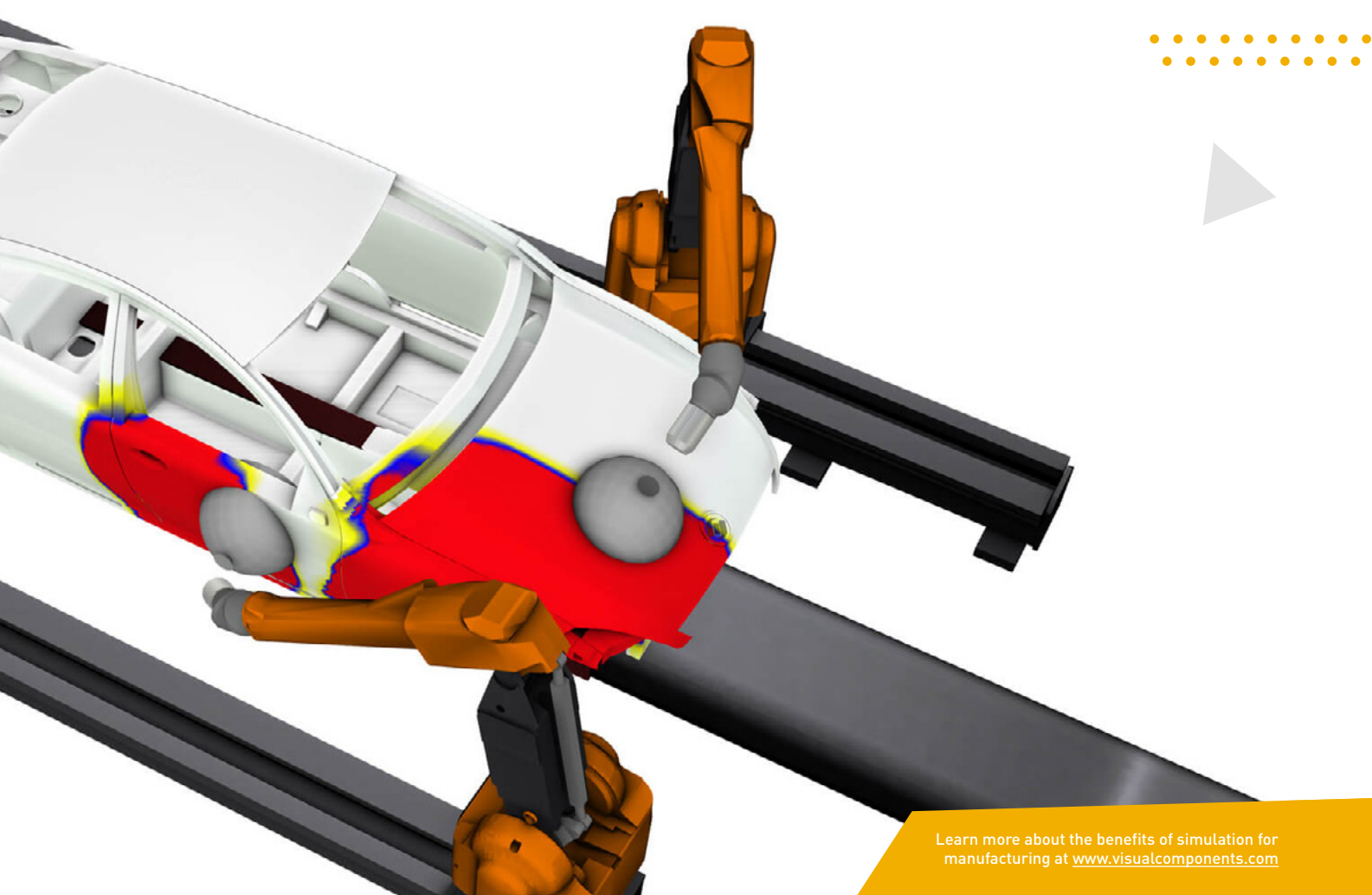
HYPOTHESIS

The factory floor, in many instances, is an area filled with bulky legacy equipment and heavy machinery that in some cases has been in place for decades. Large robots used for welding, cutting, polishing or painting or machinery that need to be worked on are usually fenced off for safety purposes. Staff going behind this line to complete manual programming leave themselves at risk of accidents, which can also take time and incur downtime and/or additional costs. In rare circumstances, such as the welding of ships, engineers may even need to mount themselves to the ceiling to program overhead gantry robots.

These practices are representative of the manufacturing sector persisting with outdated ways of maintaining and optimizing equipment to ensure that products are assembled quickly and efficiently. However, as Industry 4.0 has ushered in the digital era, there are now faster and more efficient ways of doing things.

Today, engineers can utilize offline robot programming (OLP) capabilities to instruct robots on their cutting, welding, assembly or other procedures. Manufacturers can not only avoid any safety concerns, but also save time for engineers by testing programs in a virtual environment.

Beyond this example, the latest innovations can enable time and cost savings to bring manufacturers into the digital era. Collaborative robots, or cobots, have increasingly allowed engineers to deploy lightweight, flexible and resilient technologies to manufacturing processes while avoiding the safety concerns associated with larger equipment. This resiliency and focus on benefitting humans in the business is key to progression in the Industry 5.0 era.
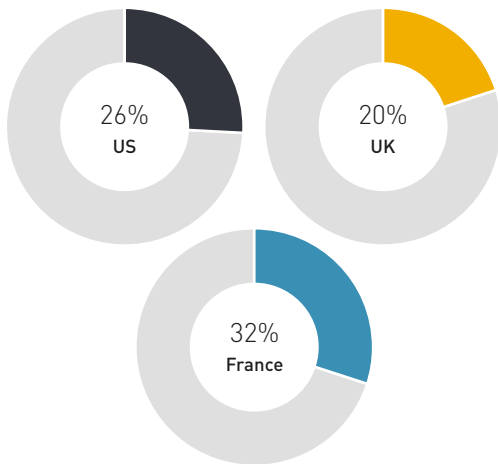
However, barriers need to be broken down to make the leap. A culture around established ways of working, lack of training and skills and absence of technology adoption is likely to be holding manufacturers back.
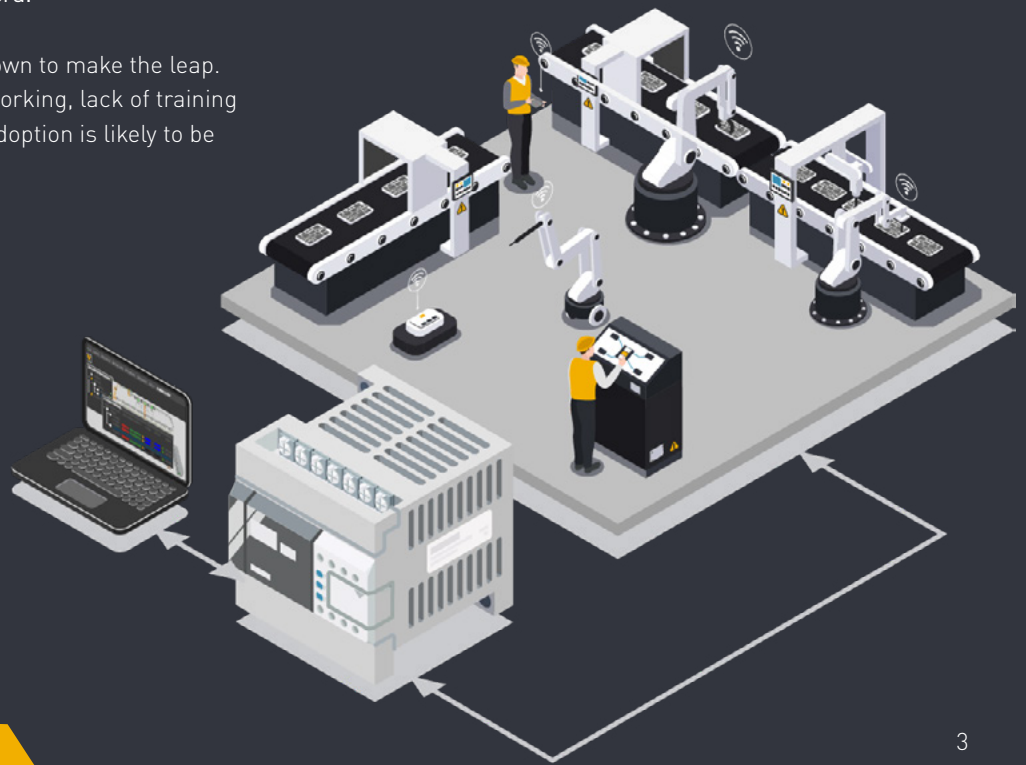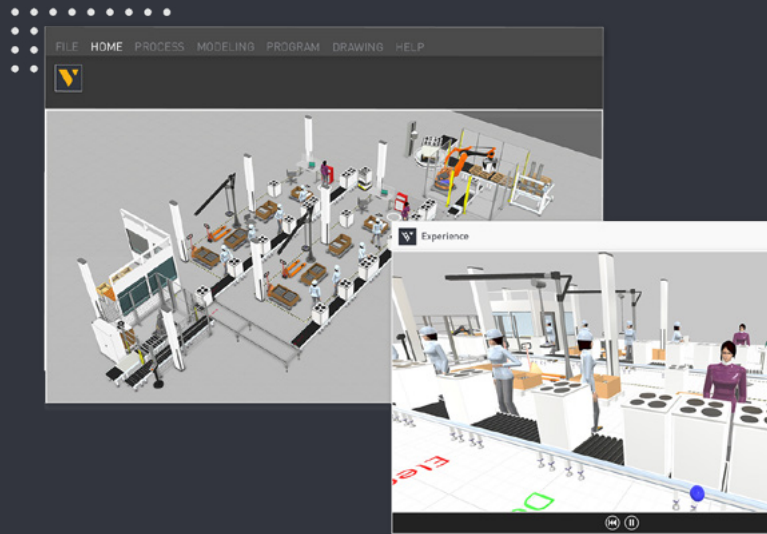
Percentage of legacy machinery equipment in factories

29%
US

31%
UK

30%
France
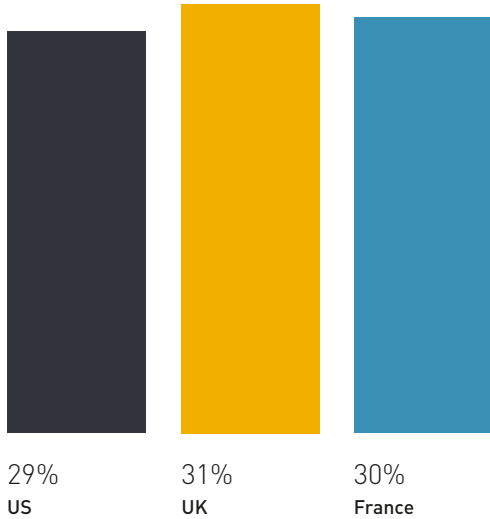
Factories that have deployed three or more robot brands

26%
US

20%
UK

32%
France

TIME IS OF THE ESSENCE

Despite its importance, digital innovation has remained a challenge for many manufacturers in 2023. Respondents in the research estimate that **29% of their factory machinery is legacy equipment,** which is likely to be **affecting productivity and creating frustration among employees.** Other countries present similar figures, with 30% in France and a 31% figure in the UK. It's perhaps no surprise therefore that **every respondent states that they have deployed robots on the factory floor to automate and streamline factory processes.**

But what results have these robots provided? **75% of respondents say that their throughput rate has improved since bringing in robots to replace human tasks, but it leaves 25% questioning their value.** While the French figure sits at 22%, a third (33%) of UK respondents say that throughput rate hasn't increased, and is likely to be driven by the time taken to manually program robots to be effective.

> Over half of respondents (52%) state that manual programming is required for robots to complete welding, cutting, painting or other tasks, and this process can take between a week and a month for over two-thirds of manufacturers (73%), adding further time before robots can complete tasks.

While this issue isn't as severe in the UK (35%), as many as 98% of French respondents agree that it takes between a week and a month.

With so much time needed to get robots up and running, utilization rates are also poor, with an average of 34% reported among respondents. 26% also say that they have deployed three or more different robot brands on the factory floor, further complicating programming procedures. 26% of UK respondents state that they deploy three or more different robot brands. Only 6% have had cobots in place for a prolonged period of time, further showing how time-consuming programming has hindered wider deployment.

CONSISTENT COST PRESSURES

Alongside time pressures, a lack of digital innovation is also placing cost burdens on manufacturers.

> Over a third (38%) of respondents say that the typical cost associated with downtime due to unreliable legacy equipment is between $12,701 - $31,750.

16% even say they have incurred costs of over $31,750. However, **ineffective utilization of robots has also led to 17% stating that between $31,751 - $63,500 has been wasted due to a mistake when deploying** them. 7% report figures of over $127,001.
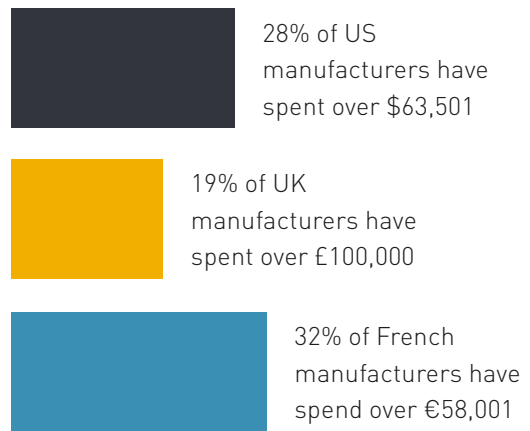
With 28% of manufacturers spending over $63,501 in robot deployments over the last 12 months, **failing to use robots to their full capability is not a financial risk they can afford to take.** Additionally, 19% of UK respondents say they have invested over £100,000 in the last 12 months.

Extra costs are also being incurred by the skills shortage in the sector, with all respondents saying that they have had to offer higher salaries to attract in-demand talent. 94% of UK respondents agree that they have had to do this. However, manufacturers are focusing on sustainable initiatives to both benefit the planet and reduce costs, such as reducing power usage (36%) in a time of spiraling energy prices, with this an even bigger focus among French companies (40%).

Despite a sustainable focus, **just over two-thirds (68%) are confident that their business will play a key role in helping the global drive for net zero carbon emissions.** In France, this level of confidence is lower (58%).

Manufacturer spend on deployments over the last 12 months (July 2022 - July 2023)

28% of US manufacturers have spent over $63,501

19% of UK manufacturers have spent over £100,000

32% of French manufacturers have spend over €58,001

Manufacturers focusing on sustainable initiatives such as reducing power usage

36% US

31% UK

40% France
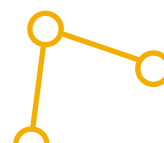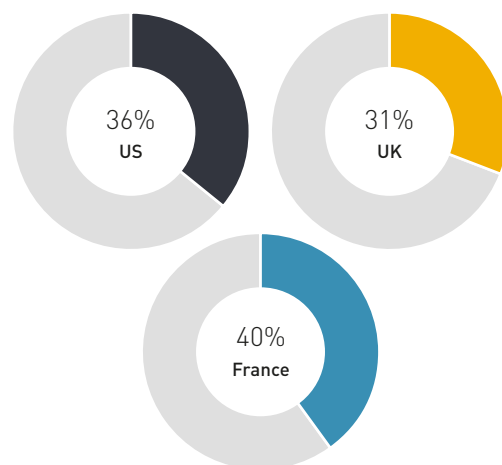
Manufacturers expected to leave the workforce over the next five years (July 2023 - July 2028)

23%
US

25%
UK

23%
France
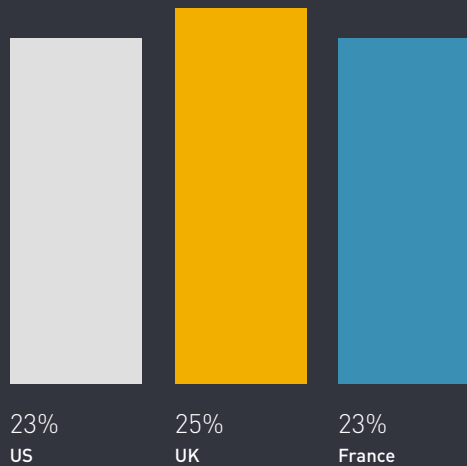
Upskilling employees is one of our top priorities

54%
US

54%
UK

60%
France
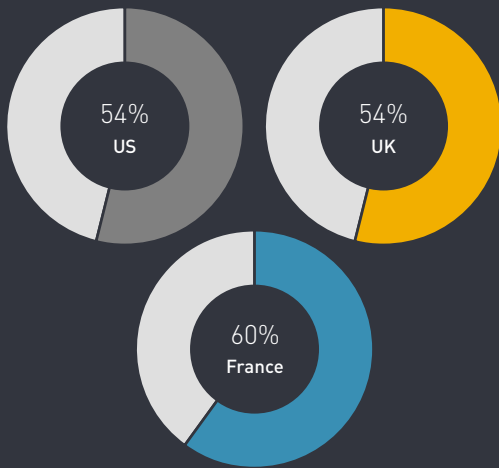
SUPPORTING UNDER-FIRE WORKERS

Manufacturers are increasingly aware that robotic deployments can take care of repetitive actions carried out by humans, with over a third of all processes falling under this description (35%). **Effectively using automated robots where possible to take care of human tasks has become paramount as 42% say that hiring new talent is one of their biggest challenges.** 34% of UK respondents agree with this sentiment.

The skills shortage has also made it critical to upskill current employees to ensure that they sit at the center of the production process. Unfortunately for manufacturers, shortages look set to worsen as businesses expect over a fifth (23%) of their workforce to leave the business over the next five years, lower than in the UK (25%) but the same level as France (23%), with as many as 20% also planning to retire. Many manufacturers are also failing to bring in new talented hires to replace the ones who leave, with half (50%) having not yet built relationships with educational institutions to build a pipeline of new talent into the business.

Every respondent in the survey says that upskilling is either the highest priority (57%) or one of their top priorities (43%), which is the same for the UK and France. 60% of French respondents say it is their highest priority.

When it comes to their current technology, 86% believe that it allows their workers to be at the center of the production process, and **almost all (99%) are confident that their workforce is skilled in using automation and robotics in the manufacturing environment, a rise from 67% in 2022.** But only 41% are training them in the use of new technologies, with this figure higher in the UK (46%) and lower in France (42%). **Supporting technology needs to be fully integrated to allow workers to maximize robotic deployments and develop their skills on the factory floor.**

Employees are largely enthusiastic about adopting new solutions, with 89% of respondents stating there's no hesitancy among their workers to make use of new platforms.

THE VALUE OF OLP AND SIMULATION SOFTWARE

Currently, over a quarter (27%) of manufacturers in the US are not using OLP technology, higher than the UK and France (26%), which allows workers to combine the planning and designing of a new robot work cell in a virtual environment. **With wider implementation of OLP, workers can implement automated programming to robots without any disruption to production.**

This expertise can be stored in the software, avoiding the issue of losing this knowledge when skilled professionals leave or retire, which is currently a concern for 57% of manufacturers who don't have a solution to deal with this. **Concurrent planning can allow new products to be launched into production quicker, leading to a reduction in manual programming human work hours by as much as 80%, and only four days for a robot to be operational and complete a task.**

Additionally, cost-effective and efficient decisions can be made in real-time with OLP, from any location, which helps to ensure worker safety and encourages sustainable practices. **OLP can then be integrated into a wider range of technologies to drive a fully automated factory environment.** Lastly, layout design, feasibility and validation of control logics and processes can be simulated and refined in a virtual environment to increase efficiencies and upskill new employees.

Manufacturers not currently using OLP technology

US	UK	France
27%	26%	26%
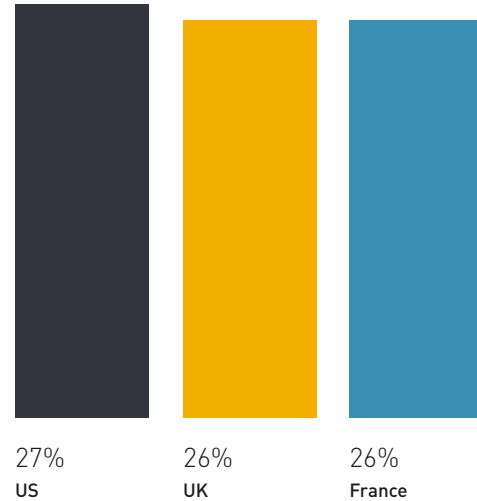
WHY INDUSTRY 5.0 IS IN REACH

Legacy systems, outdated practices and skills shortages have hampered the move towards Industry 5.0 and embracing of the digital era. It remains the case that only 3% of organizations have fully adopted Industry 5.0 practices, revealing room for improvement for the vast majority of businesses.

With work still to be done, manufacturers must consider how to best utilize their robot deployments, with the aim of automating factory processes and removing the burden from employees. Supporting technology such as OLP and simulation software can save time and money, help upskill workers and drive new levels of efficiency on the factory floor. Digital innovation is attainable. Technology adoption can both remove the barriers and keep humans at the forefront.

OUR STORY

Visual Components is a leading developer of 3D manufacturing simulation software and solutions. Founded in 1999 by a team of simulation experts, we started with a humble goal – to make manufacturing design and simulation technology easy to use and accessible to manufacturing organisations of all sizes.

Today, Visual Components is recognised as a global leader in the manufacturing simulation industry and trusted technology partner to many leading brands. We offer machine builders, system integrators, and manufacturers a simple, quick, and cost-effective solution to design and simulate production lines. With solutions for manufacturing design, sales, and application development. Visual Components software is trusted by hundreds of organisations worldwide to support critical planning and decision-making processes.

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