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Women at Work: Shaping the Future of Manufacturing



Manufacturing is undergoing a profound transformation with women at the forefront. Historically underrepresented, women are increasingly stepping into leadership, technical, and operational roles that are reshaping the future of the industry.

This report – written by a team of women at Brightly Software – goes on a journey of women in manufacturing, outlines the business case for gender diversity, and defines some strategies for building more inclusive and resilient workplaces.

The Evolving World of Women in Manufacturing

A Legacy of Contribution

Women have played a critical role in the manufacturing industry for most of its history. Their contributions date back centuries, from textile mills in the Industrial Revolution to factories during war. While women's presence has fluctuated with different economic and political times, women have continuously proven their value in skilled labor, production, efficiency, and operational support.

In the 19th century, women were a cornerstone of America's fabric and garment industries. While these jobs were physically demanding and exploitative, they also provided women with rare financial independence and helped spark early labor movements, including some of the first organized strikes in U.S. industrial history.

The 20th century brought an unprecedented surge of women into industrial roles during World War I, and even more dramatically during World War II. As men were drafted into military service, women stepped into roles in shipbuilding, aircraft assembly, and manufacturing of wartime materials. The cultural icon Rosie the Riveter showed that women were not only capable of meeting production demands but were also instrumental in winning the war effort.

By 1943, women made up more than one-third of the U.S. manufacturing workforce, a historic peak at the time. They proved highly adept at learning new machinery, managing logistics, and maintaining standards. However, as men returned from war, women were pushed out of their manufacturing roles even those that enjoyed their work.

The legacy of women in manufacturing is not just historical. It's foundational. Their persistence in the face of exclusion and their contributions to efficiency and innovation laid the groundwork for today's push toward equity and inclusion. Their trailblazing work has shaped a new generation of female talent poised to redefine manufacturing.

Growing Representation

While manufacturing has traditionally been viewed as a male-dominated industry, the landscape has been slowly changing. More women than ever before are stepping into manufacturing careers. Not only on the floor, but also in engineering, data science, operations, and leadership.

According to the U.S. Bureau of Labor Statistics, as of 2023, women make up approximately 29.5% of the manufacturing workforce. This represents a meaningful increase over previous decades, especially in skilled roles that were once considered out of reach for women. Although there is still significant ground to cover, the growth signals a positive shift in both hiring practices and perceptions of women in manufacturing.

Key Growth Areas

Women are making significant progress in a number of areas:

Advanced manufacturing and automation

As physical strength becomes less central and data-driven decision-making becomes more important, the physical barriers that once limited women are diminishing.

Engineering and technical roles

The number of women earning degrees in mechanical, electrical, and industrial engineering has steadily increased, feeding a growing pipeline of female talent into manufacturing. According to the National Science Foundation, in 2020 a quarter of all engineering degrees were awarded to women.

Leadership and management

More women are being promoted to operational manager, director, and VP roles. The growth of both internal leadership development programs and external pressure for more equitable representation has led to manufacturers being very intentional about promoting women from within and investing in the women who work for them.



What's Driving Change?

Several factors are contributing to the growing number of women entering and staying in manufacturing:

→ **Workforce development initiatives**

Programs like the Manufacturing Institute's STEP Women's Initiative and Women in Manufacturing (WiM) are connecting women to training, mentorship, and leadership opportunities.

→ **Company culture shifts**

More manufacturers are investing in diversity, equity, and inclusion (DEI) strategies. While these programs can have a variety of names, they exist to invest in populations that do not traditionally feel included in the manufacturing workplace.

→ **STEM education support**

Early education and outreach efforts targeting girls and young women are helping to correct misconceptions about what manufacturing careers involve and who can succeed in them. These programs start in elementary school and continue through college. They are often sponsored by large manufacturers or non-profit organizations.

→ **Technology-driven roles**

With the rise of smart factories and Industry 4.0, there is greater demand for cognitive, analytical, and collaborative skills. These are areas where diverse teams, including women, thrive with a variety of different perspectives and unique approaches to problem-solving.



Ongoing Challenges

Despite progress, barriers persist. These include:

→ **Limited access to mentorship and leadership development:**

Many women in manufacturing report a lack of mentors who understand their unique experiences and challenges, especially in male-dominated workplaces. This limited access can hinder career growth, reduce visibility for advancement opportunities, and contribute to feelings of isolation within the profession.

→ **Gender pay gaps**

Women in manufacturing often earn less than their male counterparts, even when performing similar roles with equivalent qualifications. These differences can discourage long-term commitment to the field and reinforce a perception that women's contributions are undervalued.

→ **Outdated perceptions about gender roles**

Stereotypes that portray roles in manufacturing as a “man’s job” continue to influence how women are perceived and treated both at work and when sharing what they do for work with others. These outdated views can lead to biases in hiring, promotion, and team dynamics, making it harder for women to be successful and feel like their work is valued.

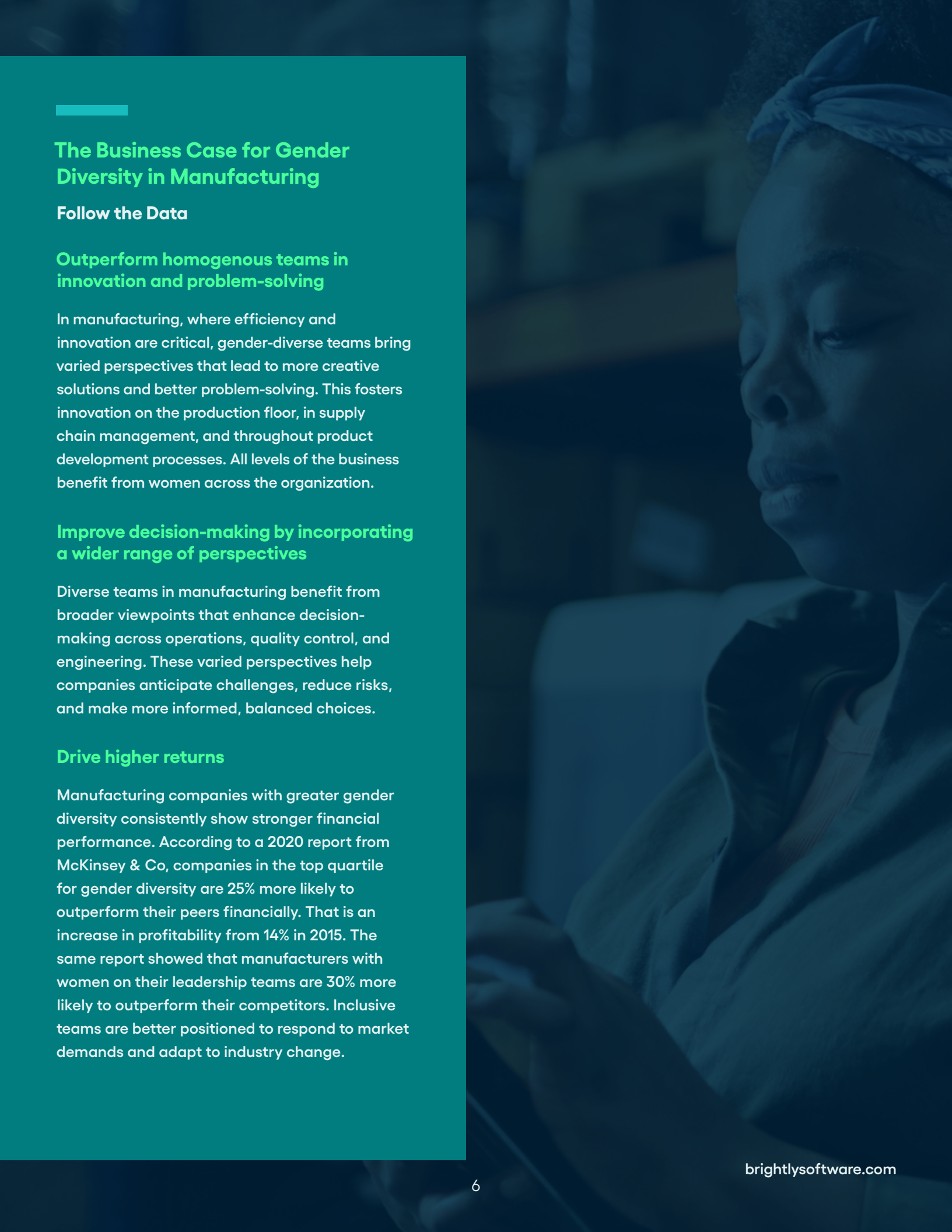
→ **A lack of flexible scheduling and support for caregivers is a problem**

Manufacturing roles often lack the flexibility needed by those with caregiving responsibilities. Without workplace policies that accommodate family needs, many women may find it difficult to balance career progression with personal obligations.

Destroying Stereotypes

Despite all the gains women have made, cultural biases still linger. Many young women continue to view manufacturing as dirty, dangerous, or unfriendly towards work-life balance. Industry leaders must continue to reshape the narrative, highlighting how modern manufacturing is high-tech, requires high-skill, and offers rewarding, stable career paths.

Manufacturers who succeed in recruiting, retaining, and promoting women are not only closing the gender gap they are also building smarter, stronger, and more resilient teams that understand team member diversity is key to being transformative and successful.



The Business Case for Gender Diversity in Manufacturing

Follow the Data

Outperform homogenous teams in innovation and problem-solving

In manufacturing, where efficiency and innovation are critical, gender-diverse teams bring varied perspectives that lead to more creative solutions and better problem-solving. This fosters innovation on the production floor, in supply chain management, and throughout product development processes. All levels of the business benefit from women across the organization.

Improve decision-making by incorporating a wider range of perspectives

Diverse teams in manufacturing benefit from broader viewpoints that enhance decision-making across operations, quality control, and engineering. These varied perspectives help companies anticipate challenges, reduce risks, and make more informed, balanced choices.

Drive higher returns

Manufacturing companies with greater gender diversity consistently show stronger financial performance. According to a 2020 report from McKinsey & Co, companies in the top quartile for gender diversity are 25% more likely to outperform their peers financially. That is an increase in profitability from 14% in 2015. The same report showed that manufacturers with women on their leadership teams are 30% more likely to outperform their competitors. Inclusive teams are better positioned to respond to market demands and adapt to industry change.

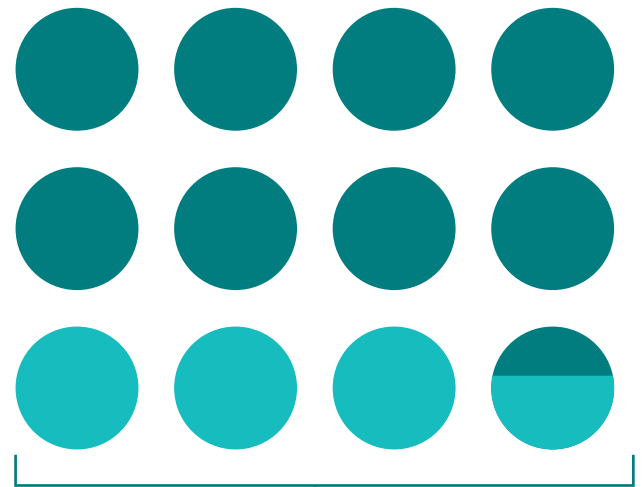
Creating Loyal and High-Performing Teams

Companies that prioritize gender diversity are doing more than just the right thing. They're gaining a competitive edge as companies move forward into the future. Research consistently shows that organizations with diverse teams experience higher levels of employee engagement, reduced turnover, and a stronger ability to attract and retain top-level talent.

When employees see a commitment to inclusivity at every level of leadership throughout a company, it signals that their contributions are valued, and that opportunities for advancement are based on merit rather than bias. This builds a workplace culture fundamentally built on trust and belonging, which in turn boosts morale and productivity. Team members are more likely to go above and beyond when they feel respected, represented, and heard. They stay with companies longer, become mentors themselves, and the cycle continues, bringing in more top talent from different genders, backgrounds, and life experiences.

Gender-diverse teams also bring a variety of perspectives to problem-solving and innovation. A mix of viewpoints leads to better decision-making and more creative solutions. These are key advantages in today's competitive landscape. Studies have shown that companies with greater gender diversity in leadership outperform their peers in profitability and value creation. According to The Peterson Institute for International Economics and EY, companies with at least 30% women in leadership roles experienced a 15% boost in net profit margins compared to those without female leaders. The study analyzed 22,000 companies across 91 countries and found that the most significant gains occurred when women held senior positions such as Chief Financial Officer or Chief Operating Officer.

By building inclusive environments where women can grow in their careers and have leadership opportunities, businesses position themselves as employers of choice for top talent across the board. Gender diversity is not just good for people. It's also good for business.



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Fostering a Supportive Workplace for Women in Manufacturing

Empowering women in manufacturing is a strategic imperative for building a more agile, innovative, and sustainable industry that is also the right thing to do. Yet, despite progress, women remain significantly underrepresented in many manufacturing roles, especially leadership positions. To close this gap and drive long-term success, organizations must create environments where women are supported, valued, and equipped to lead.

There are several key strategies manufacturers can implement to build that kind of culture:

- **Establish** mentorship programs that connect emerging female talent with seasoned professionals. These relationships help women navigate workplace challenges, build confidence, and gain critical insights into career advancement.
- **Invest** in leadership development programs designed with women in mind. Tailored training can address industry-specific barriers such as visibility in male-dominated spaces, unconscious bias, and access to high-impact projects. Create programs that are flexible and can be done on the employee's schedule.
- **Promote** flexible work models that support work-life balance in roles where it is possible. Flexibility around schedules, remote work options, and caregiving accommodations are essential for attracting and retaining top female talent. This is especially important in an industry where long shifts and rigid schedules are the norm.
- **Create** safe, inclusive workplaces where women feel heard and respected. This includes establishing clear policies around harassment and discrimination, providing opportunities for women to lead meetings or initiatives, and celebrating their contributions across the organization.

At Brightly Software, we help manufacturing leaders bring these initiatives to life through our products. When teams can focus on each other rather than tracking down sticky notes or work orders, they are able to build stronger relationships and better trust. Our solutions improve visibility into workforce data, streamline communication, and foster greater collaboration. This lays the groundwork for more inclusive, high-performing teams. When organizations have the right tools in place, they're better positioned to champion diversity, retain talent, and drive meaningful cultural change from the manufacturing floor to the executive suite.

The Future of Women in Manufacturing

As the manufacturing industry continues to evolve, the future holds enormous potential for women to lead, innovate, and shape what comes next. A combination of technological advancement and growing institutional support is helping to remove traditional barriers and create a more level playing field.

Technology as an Equalizer

Technologies like automation and the Internet of Things (IoT) are redefining what manufacturing work looks like. Tasks that once required heavy physical labor are increasingly being handled by machines, opening doors for more individuals, including women, to enter and be successful in roles that may have been inaccessible to most women in the past.

More importantly, today's manufacturers place a premium on skills such as critical thinking, problem-solving, data literacy, and cross-functional collaboration. These are areas where diverse teams, that should always include women, have been shown to excel. As organizations adopt more technology-driven processes, the industry is shifting its focus from physical capacity to cognitive and creative capabilities, expanding the opportunities for women to lead and innovate across the plant floor and beyond.

Partnerships and Progress

Industry organizations are also playing a pivotal role in accelerating gender equity across manufacturing. Groups like Women in Manufacturing (WiM) and The Manufacturing Institute's STEP Women's Initiative are not only advocating for representation but actively building infrastructure to support it. As more women step into manufacturing roles, opportunities for partnership will only expand and grow.

Through mentorship networks, leadership development programs, and visibility campaigns, these initiatives are helping women access career pathways, gain the skills needed for advancement, and visualize themselves in the future of the field. They also give employers the tools and resources needed to cultivate inclusive cultures and retain top female talent.

These efforts shift the narrative from underrepresentation to opportunity. By embracing innovation and supporting equity-focused partnerships, manufacturers can ensure that women are helping to propel the industry forward.



How Manufacturers Can Help

Manufacturers have a critical role to play in driving inclusion across the industry. Meaningful progress requires more than good intentions and promises. It requires sustained action and investment.

Here are three ways manufacturers can continue to embrace the changing demographics across the industry:

1

Partner with organizations that promote diversity in manufacturing.

Collaborating with nonprofits, educational institutions, workforce development boards, and trade associations that focus on women can help manufacturers broaden access to training and career opportunities. These partnerships can provide mentorship programs, scholarships, apprenticeships, and outreach initiatives that expose women to the potential of careers in manufacturing. This can help manufacturers can help build a more inclusive talent pipeline.

2

Invest in digital tools that democratize data and decision-making.

Modern manufacturing technologies, such as CMMS, can empower a more diverse workforce by making data accessible to employees at all levels. These tools reduce gatekeeping, promote transparency, and encourage collaboration across roles, departments, and experience levels. When decision-making is informed by shared data, it fosters a sense of ownership and engagement among employees, leading to more equitable and effective operations.

3

Continuously evaluate culture, policies, and representation.

To create lasting change, manufacturers must regularly assess their organizational culture, internal policies, and workforce demographics. This includes reviewing hiring practices, promotion pathways, leadership development programs, and workplace behaviors to ensure they are inclusive and equitable. Employers should also set measurable goals, solicit employee feedback, and hold leadership accountable for progress. Representation matters and companies that reflect the diversity of their workforce and communities are more likely to attract and retain top talent.

Conclusion

Women are not just participants in a changing manufacturing landscape. They are leaders and innovators who have shaped the industry for centuries. By recognizing the value of different perspectives and fostering an inclusive environment, manufacturers can unlock innovation, resilience, and a stronger future.

Brightly Software is proud to support the industry's evolution through intelligent asset management and operations solutions that empower all employees, regardless of gender, to thrive.



About Brightly Software

Brightly Software, a Siemens company, enables organizations to manage the entire lifecycle of their assets, facilities and infrastructure. As the global leader in intelligent asset management solutions for more than 25 years, Brightly's sophisticated cloud-based platform is expertly designed to improve capital planning through smarter, data-driven decision making, empower technicians to predict, prioritize and manage preventative maintenance activities, and support organizations to achieve sustainability, compliance and efficiency goals. Combined with award-winning training, legendary support and managed services, more than 12,000 clients worldwide depend on Brightly to optimize their teams, operations and strategic planning initiatives. For more information, visit brightlysoftware.com

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