AT THE INTERSECTION of INNOVATION & SUSTAINABILITY

CONVEYCO | Integrated Solutions & Software

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The Critical Role of Sustainability in Warehouse Automation

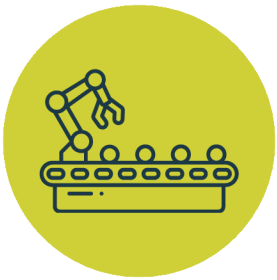


In the rapidly evolving world of automation, innovation is often driven by the promise of efficiency, speed, and profit. Yet, as these systems become increasingly integrated into our industries and daily lives, an important question arises -- How can we ensure that progress does not come at the expense of the environment? Sustainability in the automation industry is no longer just an afterthought, but a critical imperative that will define the future of both technology and the environment.

As companies strive to stay competitive, the environmental costs of their technological advancements can often be overlooked. However, with the growing awareness of climate change, resource depletion, and environmental degradation, it is clear that innovation must focus on creating solutions that are both efficient and environmentally responsible.

In this eBook, we will explore the intersection of automation and sustainability, examining how intelligent systems, green technologies, and mindful practices can create a new paradigm where progress and preservation exist. By focusing on cutting-edge solutions and strategies, we highlight how automation, when designed with sustainability at its core, can drastically reduce environmental impact while improving operational efficiency. We will also examine the ways in which sustainability driven automation can offer you benefits, fostering long-term growth, cost savings, and a competitive edge in an increasingly eco-conscious market. Ultimately, embracing sustainability is not just good for business; It is essential for the future we all share.

Building a Green Tomorrow: The Process to Becoming Sustainable



Achieving sustainability involves leveraging innovations that reduce **environmental impact**, increase **operational efficiency**, and promote **resource conservation**.

Key strategies include the adoption of energy efficient technologies, such as:

- **Solar power,**
- **LED lighting, and**
- **Electric vehicles.**



These energy efficient approaches, alongside automation systems like **robotic pickers** and **automated sortation systems**, improve productivity while minimizing waste.

Additionally, advancements in warehouse design such as **vertical storage systems** optimize space and reduce material handling costs, further enhancing sustainability efforts.

Building a Green Tomorrow: The Process to Becoming Sustainable

Innovative solutions like **electric forklifts** and **closed-loop packaging** systems also play a significant role in reducing emissions and waste, contributing to a greener supply chain.



The benefits of these innovations extend beyond environmental impact, offering notable **cost savings**, improved **supply chain resilience**, and a **competitive advantage** in the marketplace.



As companies in the automation industry embrace these technologies, they not only reduce their **carbon footprint** but also position themselves as **leaders** in sustainability, steering to long-term **operational** and **financial success.**

Building a Green Warehouse: The Business Case for Sustainable Automation

At Conveyco, we believe that sustainability is more than just a buzzword, it is a vital component for success in the automation industry. It is not just a moral responsibility; it is a strategic advantage.

By prioritizing sustainable practices, we are not only contributing to the health of our planet but also creating long-term value for our clients and our company.

Sustainability is not just about being environmentally responsible, it is also about driving significant business value. One of the primary benefits is that it can lead to substantial cost savings.

By implementing energy-efficient automation systems and optimizing production processes, businesses can significantly reduce their resource consumption and lower operational costs. These improvements not only help in minimizing waste but also contribute to creating more sustainable operations. As a result, businesses can achieve a more streamlined and cost-effective approach, ultimately enhancing profitability and boosting their bottom line.

Building a Green Warehouse: The Business Case for Sustainable Automation

Sustainability is key to building operational and supply chain resiliency. As ecosystems face growing pressure like climate change and resource scarcity, companies must adapt to ensure long-term stability. These environmental shifts can disrupt supply chains, increase costs, and introduce new regulatory challenges. By embedding sustainability into their strategies, businesses mitigate risks, strengthen their supply chains, and create more adaptable and future ready operations.

A critical component of a truly sustainable and green warehouse is the adoption of **circularity**, such as reusable and returnable container systems, which radically reduce both packaging waste and greenhouse gas (GHG) emissions. This shift not only minimizes environmental impact but also enhances logistical efficiency.

Additionally, **Green Chemistry** plays a vital role, with businesses transitioning from solvent-based to water-based cleaners, lubricants, and other materials where possible.

These advancements help reduce hazardous waste, improve workplace safety, and further align with evolving environmental regulations.

Building a Green Warehouse: Statistics

Through this, Conveyco is able to help drive operational efficiencies that lower costs for our customers while also positioning them for long-term success.

This commitment to sustainability ultimately translates into lasting financial benefits, such as lower energy bills, reduced operational downtime, and increased resilience in the face of an evolving global landscape; allowing our clients to achieve a higher return on their investment.

30%

Companies can reduce energy costs by **15-30%** by adopting a strategy integrating technology solutions with equipment optimization and operational changes to drive lasting improvements. Automated systems optimize energy use by controlling lighting, heating, and equipment on demand.

30%

Warehouse robots streamline operations, reducing the need for manual labor and speeding up processes. This leads to lower operational costs. According to a study from McKinsey, automation can reduce labor costs by up to **30%** over time.

160K

Energy Star released a report stating Intelligent Energy Optimizers LLC (IEO) supplied LED lighting to replace the fluorescents and HIDs at KC Berkley Mill, resulted in a annual savings of **$160K** ROI in just over 1.5 years.

Sources: McKinsey, ShipSage

Building a Green Warehouse: Statistics





40%

According to Data from FirstEnergy Corp., the average operating cost per hour for propane and gas forklifts is **$2.00**, compared to **$1.25** for electric forklifts. Electric models also provide a **40%** reduction in maintenance costs

30%

According to the Alliance for Water Stewardship, businesses that implement water-saving technologies can reduce water usage by **20-30%**, which translates to significant savings, especially in large facilities like warehouses.

20%

Automated systems can enable predictive maintenance, reducing costly emergency repairs. According to Deloitte, predictive maintenance can reduce inventory carrying costs by **5-20%,** reduce overall maintenance costs by 5-10%, and material costs by **5-10%**.

Sources: Deloitte, AWS, First Energy

Sustainable Warehouses In Action



Amazon
Amazon's fulfillment centers are equipped with solar panels, generating clean energy and supporting the company's goal of net-zero carbon emissions by 2040

Amazon is committed to achieving net-zero carbon emissions across its operations by 2040. A key strategy in this is transitioning to carbon-free energy sources. In 2023, Amazon reached a significant milestone by matching 100% of its electricity consumption with renewable energy sources, achieving this goal 7 years ahead of the original 2030 target.

Amazon supports this goal with over 600 global renewable energy projects, including wind, solar farms, and rooftop solar, powering fulfillment centers, offices, stores, AWS data centers, and subsidiaries. In 2024, it added nuclear power to its energy mix, further diversifying its carbon-free energy sources.

By scaling its carbon-free energy initiatives, Amazon aims to enhance its resilience and sustainability, contribute to the global transition toward cleaner energy, and fulfill its commitment to The Climate Pledge of reaching net-zero carbon emissions by 2040. (Amazon)

Sustainable Warehouses In Action



DHL
DHL's warehouses are energy-efficient, using electric vehicles and alternative fuels to achieve the company's goal of zero emissions by 2050.

DHL Group is dedicated to achieving net-zero greenhouse gas (GHG) emissions by 2050, striving for clean operations to protect the climate. In July 2024, the Science-Based Targets initiative (SBTi) approved DHL's net-zero target for 2050. To reach this goal, the company has set an interim target to reduce emissions to below 29 million metric tons of CO_2 equivalent by 2030, aligning with the Paris Agreement. Key strategies include increasing the use of sustainable fuels to over 30% and deploying electric vehicles for 60% of pickups and deliveries by 2030.

Additionally, DHL plans to invest 1% of its net profit in social impact initiatives and aims to plant 5 million trees by 2025 through its GoGreen program. The company emphasizes collective action, encouraging employee participation in climate protection projects to foster a sustainable future. (DHL)

Sustainable Warehouses In Action



Walmart

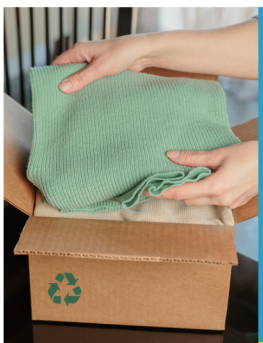
Walmart's sustainable warehouses are powered by energy-efficient systems. Electric trucks and optimized delivery routes cut carbon emissions and fuel consumption. They are also hoping to achieve net-zero emissions by 2040.

Walmart aims to achieve zero emissions across its global operations by 2040 without relying on carbon offsets. In 2020, it aligned its science-based target to a 1.5-degree Celsius trajectory, seeking to cut Scope 1 and 2 emissions by 35% by 2025 and 65% by 2030, using 2015 as the baseline. Recognizing most emissions stem from supply chains, Walmart launched Project Gigaton in 2017, partnering with over 4,500 suppliers to avoid one gigaton of emissions by 2030. Suppliers have reported 574 million metric tons reduced or avoided, showing notable progress.

However, Walmart is unlikely to meet its 2025 and 2030 targets due to energy policy constraints, infrastructure gaps, and limited affordable low-carbon technologies. Despite setbacks, the company remains committed to its 2040 zero emissions goal.

Walmart actively collaborates with partners like Unilever to cut emissions and waste across supply chains. Its climate strategy focuses on business resilience, climate advocacy, and supplier engagement to drive emissions reductions across the retail and consumer goods industry. (Walmart)

Sustainable Warehouses In Action



Patagonia
Patagonia has their warehouses handle all repairs and refurbishments of any returned items. They do this through their "Worn Wear" program, furthering product life and minimizing waste.

Patagonia, renowned for its commitment to environmental sustainability, addresses the fashion industry's waste and resource challenges through its 'Worn Wear' program. This initiative encourages customers to trade in used Patagonia garments for store credit, after which the company repairs and resells these items, thereby extending their lifespan and reducing waste. Operating North America's largest repair facility,

Patagonia processes approximately 50,000 pieces annually. By promoting product longevity and responsible consumption, the 'Worn Wear' program contributes to decreasing the demand for new clothing production, thus mitigating the environmental impact associated with the fashion industry. _(Patagonia)_

Sustainable Warehouses In Action



H&M

H&M's warehouses play a key role in its circular logistics model, recycling or repurposing old garments to reduce waste and align with sustainability goals such as zero emissions by 2040.

H&M Group aims to reach net-zero greenhouse gas emissions by 2040, targeting a 56% reduction by 2030 and 90% by 2040 (2019 baseline). Verified by SBTi in 2022, the remaining 10% of emissions will be offset through carbon removals. The company is shifting to a circular ecosystem to extend product and material lifecycles.

Its sustainability strategy focuses on three areas: leading industry change through collaboration and transparency, achieving circularity and climate positivity, and ensuring fairness and equality across operations.

Recent challenges have emerged. In September 2024, over 40 fashion suppliers, including H&M partners, rolled back climate commitments to the SBTi, citing financial constraints and unrealistic timelines. In August 2024, ASN Impact Investors divested €70 million from 12 fashion companies, including H&M, due to perceived insufficient sustainability progress. (Vogue Business)

Despite setbacks, H&M remains committed to its sustainability goals, emphasizing collaboration, innovation, and transparency to drive meaningful change in the fashion industry. (H&M)

Sustainable Warehouses In Action



IKEA
Many of IKEA's warehouses are fully powered by solar energy, contributing to their climate-positive goal by 2030 and reducing reliance on non-renewable energy.

IKEA is intensifying its commitment to sustainability by implementing renewable energy projects in the United States. In September 2023, the company announced plans to install solar panels at seven locations, utilizing both rooftops and parking areas, and to upgrade heating and cooling systems at five additional stores. These initiatives aim to align with IKEA's objective of achieving 100% renewable energy usage and reducing fossil fuel dependence by 80% by 2030. The company has already achieved 100% renewable energy usage in its facilities across 25 markets.

These efforts are bolstered by the Inflation Reduction Act of 2022, which offers tax incentives covering 30% of the costs for installing solar panels. This legislation supports both individuals and businesses in transitioning to clean energy solutions.

IKEA's initiatives reflect a broader trend among large retailers leveraging expansive rooftops and parking lots for solar energy generation, contributing to environmental sustainability and operational efficiency. (IKEA)

Sustainable Warehouses In Action



Interface
Interface is a flooring company committed to sustainability, with sustainable warehouses and a closed-loop manufacturing process that recycles materials into new products. They strive for carbon neutrality by using renewable energy, sustainable materials, and reducing waste.

Interface is committed to sustainable and eco-friendly practices in the commercial flooring industry, focusing on reducing carbon emissions and advancing environmental responsibility. The company is dedicated to eliminating carbon emissions by investing in direct impact solutions, rather than relying on offsets. Their innovative carpet tile backings incorporate recycled content and bio-based materials, which help store carbon and prevent its release into the atmosphere.

Interface emphasizes product transparency by collaborating with external partners to evaluate the entire lifecycle of their products, with the goal of reducing both environmental and human health impacts. The company is also committed to reusing and recycling materials, incorporating used carpet tiles into new products. Through their "Climate Take Back" mission, Interface aims to reverse global warming and create a climate fit for life, advancing their sustainability initiatives and fostering positive change in the industry. (Interface)

Sustainable Warehouses In Action

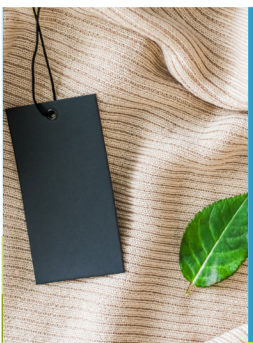


Lush Cosmetics
Lush is known for their commitment to reducing waste and using natural ingredients. They do this by using sustainable packaging materials, such as recyclable or compostable materials, which can be more easily integrated with automated packaging systems.

Lush's environmental policy emphasizes sustainability and minimizes its environmental impact. The company focuses on reducing packaging by offering packaging free products and using recycled products when packaging is needed. Lush prioritizes sustainable sourcing for raw materials, such as replacing palm oil with more eco-friendly alternatives and supporting suppliers who respect the environment.

The company takes serious steps to reduce waste, with 89% of their packaging made from recycled content. They are also working on reducing their energy consumption through efficient processes and energy sourcing, while minimizing water usage. Lush further supports environmental initiatives by campaigning alongside customers and maintaining transparency about its green efforts. (LUSH)

Sustainable Warehouses In Action



Everlane
Everlane's mission focuses on transparency and sustainability, offering products made from eco-friendly materials. Automation helps optimize resource use, cutting down on waste allowing for more precise manufacturing that aligns with their commitment to sustainable fashion.

Everlane's sustainability efforts focus on three key pillars: Keep Earth Clean, Keep Earth Cool, and Do Right By People. The company aims to reduce resource consumption, minimize waste, and use safer materials in production. They also have climate targets to cut greenhouse gas emissions by over 50% per product by 2030 and achieve net zero emissions by 2050.

Additionally, Everlane is committed to improving worker livelihoods, promoting gender equality and supporting communities through initiatives like the Black Friday Fund. Everlane encourages customers to buy fewer but higher-quality items designed for longevity. The brand prioritizes sourcing premium, low-impact materials, and focuses on durable construction to ensure products last longer. By doing so, Everlane takes responsibility for its environment and social impact while striving to create a more sustainable future. (Everlane)

Sustainable Warehouses In Action



BrewDog (craft beer)

BrewDog is a craft beer company that is committed to becoming carbon negative by planting more trees than they use in their operations. Automation helps them improve energy efficiency in brewing and packaging, reducing the environmental impact of their operations.

BrewDog's "Planet: initiative underscores their commitment to environmental sustainability. In 2020, they set a goal to achieve zero operational emissions and have made significant progress to this target. Their annual reports detail their emissions and reduction strategies, with third-party accreditation from Positive Planet for the past two years.

A cornerstone of their environmental efforts is the acquisition of a 9,308 acre plot in Scottish Highlands, known as the Lost Forest. This project aims to plant over 1.1 million native trees, contributing to one of UKs largest reforestation endeavors.

BrewDog also focuses on reducing emissions at their bars by calculating their carbon footprints and setting ambitious reduction targets. Initiatives include offering a variety of vegan and vegetarian menu items, sending zero waste to landfills, and minimizing reliance on single-use plastics. These efforts have earned them Positive Planet Gold certification in 2024, recognizing their impactful strides towards sustainability. (BrewDogBeer)

Building a Green Legacy: How Sustainable Practices Enhance Brand Reputation

Sustainability also plays a crucial role in improving brand reputation. Today's consumers and investors are increasingly aligned with companies that demonstrate a commitment to their **environmental responsibilities.**

Businesses that prioritize sustainability not only build **trust** and **loyalty** among their customers but also enhance their **competitive edge.**

At Conveyco, we empower our clients to stand out in an increasingly competitive marketplace. By incorporating green technologies and eco-friendly practices, we help our clients improve their reputation as **forward thinking**, **responsible** organizations.



This Eco-Conscious way of thinking can open doors to new business opportunities, increase **market share**, and foster **stronger relationships** with stakeholders.

As a matter of fact, companies that integrate sustainability often attract investors focused on Environmental, Social and Governance (ESG) criteria, leading to greater access to capital and **lower** investment risk.



Building a Green Foundation: How Sustainability Ensures Regulatory Compliance

Beyond reputation and cost savings, sustainability helps companies navigate evolving regulatory compliance requirements. With Governments around the world becoming more strict and tightening environmental regulations, businesses face increasing pressure to comply with **emission standards**, **waste management regulations**, and **energy use guidelines**.

In fact, according to a 2023 report by the International Institute for Environment and Development, **80%** of countries have now adopted stricter environmental regulations the past 5 years, with penalties for non-compliance escalating.

By working with Conveyco and adopting sustainable technologies, our clients stay ahead of the curve and avoid costly fines or disruption in operations down the road. We also help our clients tap into **tax credits** and **incentives** offered by governments for adopting green technologies, further lowering their overall investment costs and improving their financial outcomes

In many cases, these incentives can offset up to **30%** of the cost of implementing green technologies, delivering immediate financial relief and long-term savings.

Conveyco wants to ensure our clients meet regulatory compliance in a way that maximizes their operational efficiency and profitability.



Building a Green Foundation: Statistics

Almost 50,000 companies were subject to mandatory sustainability reporting in 2024 due to CSRD, including leading companies in Japan, Malaysia, Singapore, South Africa, South Korea, Thailand and the United States.

71%

71% of C-suite leaders believe ESG investment is a competitive advantage for their company.

82%

82% say they believe the significance of ESG in corporate performance will continue to grow.

10%

For every 10% increase in emphasis on material ESG concerns, a company's value goes up by 1.4%.

55%

55% of CEOs expect to see significant returns from sustainability investments by 2030.

Sources: PWC, TR, Wharton, KPMG

Building a Green Workforce: Driving Innovation and Strengthening Partnerships

At Conveyco, sustainability is not just a core value of our business model, it extends to the very people who drive our success and the success of our clients.
We are committed to bringing up a culture of innovation that attracts top tier talent; people who are passionate about making a tangible, positive impact on both business performance as well as the planet.

This dedication to sustainability enables us to not only lead in automation but become a workplace where employees are empowered to bring fresh ideas and creative new solutions to the table.

This focus on sustainability has been a cornerstone of our ability to create strong, lasting relationships with our clients. Our clients not only trust us as a reliable partner in automation but also as a key ally in creating a more sustainable future.

By taking advantage of the latest green technologies and solutions, we help our clients to future proof their operations, ensuring that their businesses remain resilient in the face of incoming environmental challenges.

Building a Green Workforce: Statistics





69%

69% said they want their companies to invest in sustainability efforts, including reducing carbon, using renewable energy, and reducing waste.

80%

80% of C-suite leaders reported that their employees' activism had positively impacted their sustainability plans.

38%

Only 38% of employees surveyed believe their employer is doing enough on climate change and sustainability.

54%

54% of Gen Z and 48% of millennials were "pushing" their employers to start sustainability practices.

Sources: Deloitte, Deloitte

Building a Green Future: The Role of Emerging Technologies in Sustainability

The future of automation is closely linked with sustainability, as new technologies aim to make operations more efficient and environmentally friendly. AI and machine learning will help advance production lines, reduce waste, and save energy.



Collaborative Robots (Cobots) will work alongside humans to improve safety and precision while cutting down on errors and waste. Technologies like **5G and edge computing** will allow real-time monitoring, making it easier to improve energy usage and decrease emissions in areas like logistics and supply chains.



Blockchain automation platforms can make supply chains more transparent and secure, simplifying processes and reducing risks while also ensuring ethical sourcing and eco-friendly practices.



As a more advanced form of simulation, **digital twins** can gather data to generate precise models that showcase the operation, potential failures, as well as possible maintenance needs of manufacturing equipment and systems, extending the lifespan of said equipment.

Building a Green Future: The Role of Emerging Technologies in Sustainability



Energy-efficient automation systems will improve energy use in factories and buildings**.**



Sustainable manufacturing technologies like **3D printing** will cut material waste.



Automation will also be designed to **support workers,** improving safety and productivity, while promoting sustainable practices.

Together these trends will not only make industries more sustainable and efficient but also emphasizes the importance of adopting sustainability within the automation industry. Companies that lead the way in this shift, or partner with those who do, will be better positioned for long term success.

Consumers of the Future: Statistics

72%
Global Consumers



72% of global consumers are willing to pay more for sustainable products.

34%
Global Consumers



34% of global consumers are more likely to buy products with sustainable credentials.

94%
Global Consumers



94% of consumers are likely to be loyal to a brand that offers complete transparency.

85%
Global Consumers



85% of consumers report experiencing firsthand the disruptive effects of climate change in their daily lives.

40%
Global Consumers



40% of consumers report that waste reduction & recycling initiatives make them more likely to purchase from a brand.

9.7%
Global Consumers



Consumers are willing to pay an average of **9.7%** more for sustainably produced or sourced goods, even with cost-of-living

Sources: NielsenIQ, PWC, INC, PWC

10 Key Takeaways



- Sustainability in automation is essential—it **reduces environmental impact** while driving **efficiency** and **profitability.**



- Energy-efficient solutions like **solar power, LED lighting,** and **electric vehicles** lower costs and carbon footprints.



- Automation enhances sustainability by **improving productivity, reducing waste,** and **optimizing resources.**



- Sustainable practices **strengthen brand reputation** and **attract eco-conscious customers and investors.**



- **Regulatory compliance** is easier with green initiatives, **avoiding fines** and unlocking **government incentives.**



- Sustainability fosters innovation, drawing **top talent** and encouraging **cutting-edge advancements.**



- Green technologies **improve supply chain resilience,** making businesses more **adaptable** and **future-proof.**



- **AI, machine learning**, and **digital twins** optimize **efficiency** and **predict maintenance**, reducing resource waste.



- **Blockchain** enhances **transparency** in supply chains, ensuring **ethical** and sustainable sourcing.



- The **future of automation** is sustainable, and companies that embrace it will **lead their industries.**

About Conveyco

At Conveyco, we are your trusted system integration partner, dedicated to designing and implementing innovative, efficient, and reliable solutions tailored to your unique needs. With almost 50 years of experience, we specialize in creating seamless, end-to-end systems that optimize performance and deliver measurable results. Unlike OEMs tied to their own equipment, we independently select from vetted partners and technologies to deliver solutions that exceed expectations.

Our in-house software expertise ensures seamless integration and performance tailored to your operation. From system design to implementation, our industry-leading controls provide efficiency, reliability, and scalability. Led by a team of seasoned industry veterans, we prioritize building long-term relationships and delivering on our promises with the integrity of a family-owned business. Free from outside investors, we make decisions with your best interests in mind, allowing us to provide solutions without compromise.

Contact Us

Supporting Your Sustainability Goals

We understand the growing importance of sustainable practices in today's supply chain. Our systems are designed to improve efficiency, reduce energy consumption, optimize resources, and support your sustainability objectives—helping you build a greener future without sacrificing performance.

Let's Build Your Future, Together

When you choose Conveyco, you're not just gaining an integrator—you're gaining a partner committed to helping you achieve your goals. We redefine what's possible, together.

Contact Us

To learn more about how Conveyco can help transform your operations, visit www.conveyco.com or reach out to our team at conveyco@conveyco.com.

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