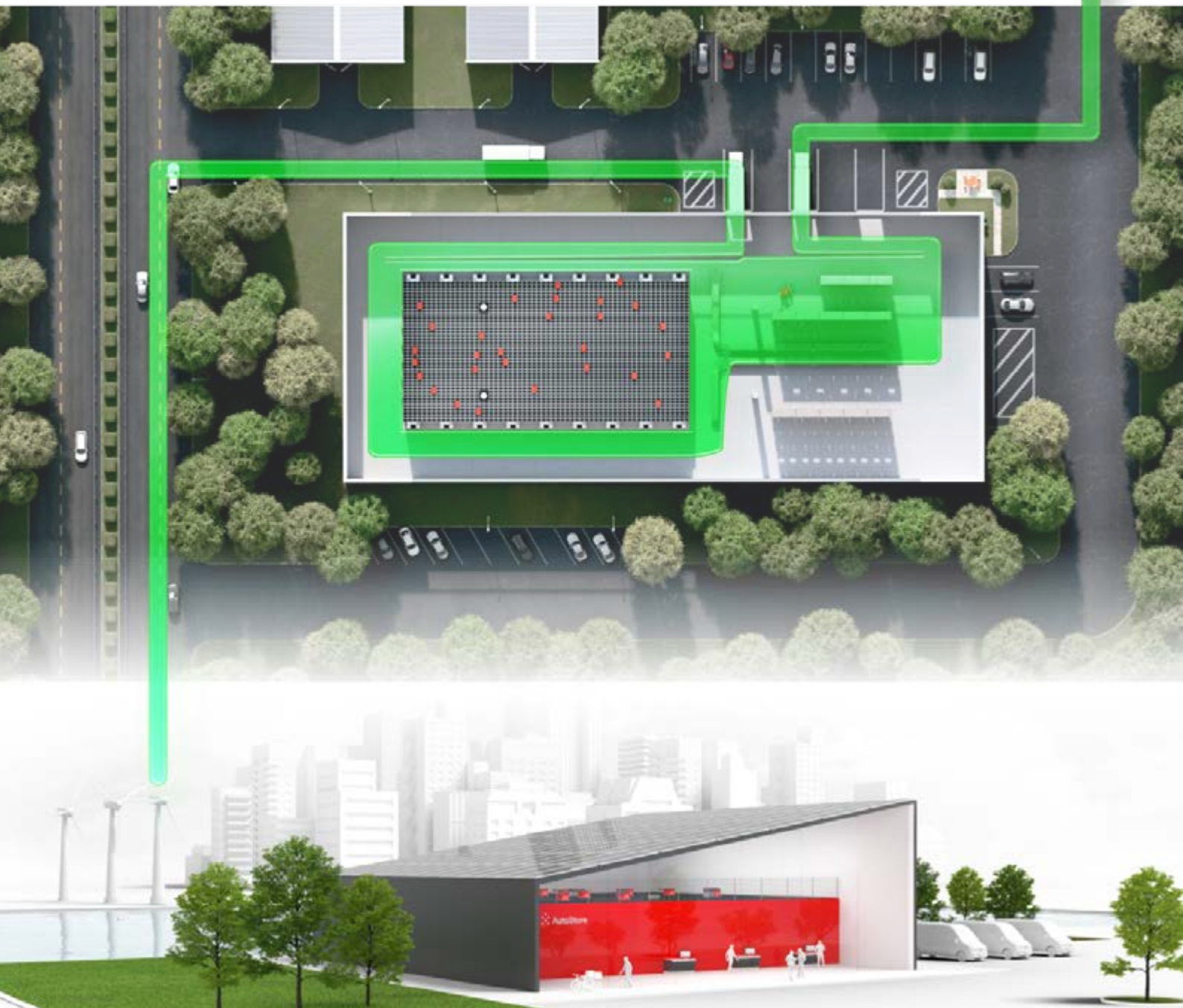


# Sustainable Intralogistics and Automation

– Is it Even Possible?



## Executive Summary

# Strengthen your Business Strategy with Sustainable Practices



Kevin Kempe, Vice President  
Sustainability & ESG  
Element Logic

In today's business landscape, being environmentally conscious is no longer just a choice but a crucial component for sustained success.

The escalating impacts of climate change, resource depletion, monetary costs, and environmental degradation have heightened the awareness of businesses towards their ecological footprint. Embracing sustainable practices is not only viewed as a moral responsibility but also a strategic move that aligns with shifting consumer preferences, regulatory pressures, and long-term economic resilience.

The challenge within intralogistics is that the very essence of our goal to facilitate the rapid movement and consumption of consumer goods is viewed as a contributor to resource depletion, emissions, and waste generation. However, recognizing these challenges presents an opportunity for warehouses worldwide to adopt more sustainable practices while enhancing their business strategies.

The incorporation of sustainable practices in automation can also position businesses as leaders in

responsible innovation, fostering brand loyalty and stakeholder trust.

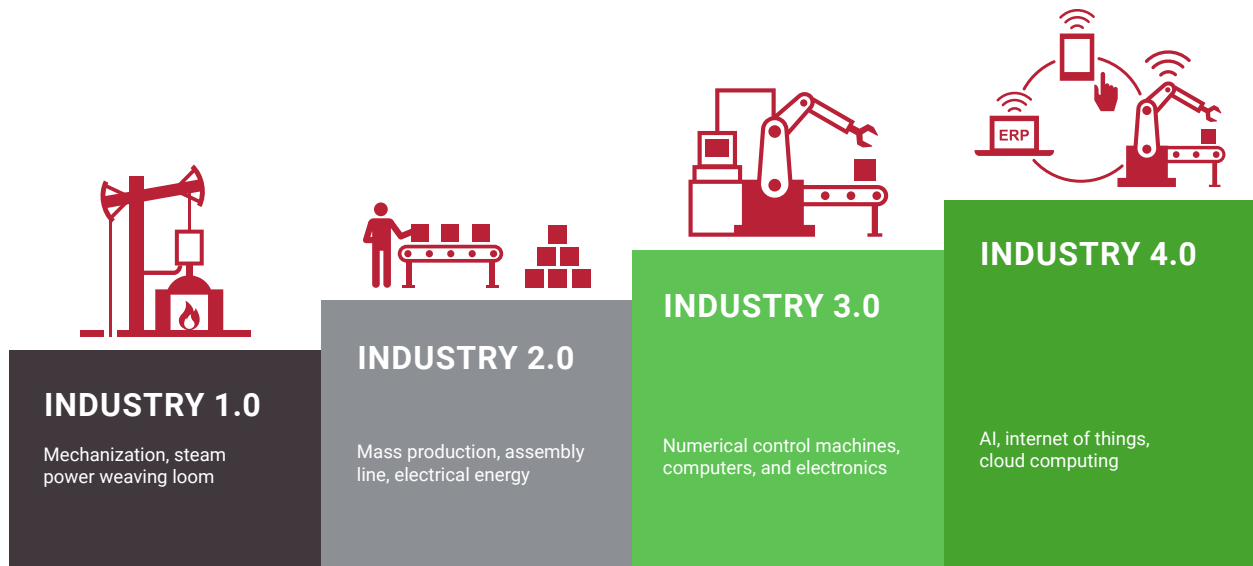
This whitepaper explores different ways you can make your warehouse operations more sustainable, including the possibilities with new technology and how these systems can be a handy tool in a distribution center to achieve those goals.

We delve into how you can become more socially responsible and how automation can help you report on sustainability requirements.

You'll also learn how one of our customers successfully integrated solar energy with their solution, showcasing the transformative potential of renewable energy in warehouse management and much more.

A handwritten signature in black ink, appearing to read 'K Kempe'.

Kevin Kempe, Vice President  
Sustainability & ESG  
Element Logic



## Introduction: History of Automation

The history of the automation industry unfolds through a series of transformative eras, each marked by technological breakthroughs and shifts in manufacturing paradigms.

### A Brief History

The Industrial Revolution of the 18<sup>th</sup> century ushered in the mechanization of textile production, fueled by water and steam power.

In the early 20<sup>th</sup> century, Henry Ford's assembly line techniques revolutionized mass production, laying the groundwork for further automation.

The mid-20<sup>th</sup> century witnessed the integration of electronic computers into industrial processes, giving rise to Numerical Control (NC) machines.

In the 21<sup>st</sup> century, Industry 4.0 emerged, bringing smart

technologies like artificial intelligence (AI) and the Internet of Things (IoT), which fosters more efficient and interconnected systems. As the automation industry continues to evolve, the pursuit of efficiency and adaptability remains central to its development.

### Growing into an Eco-Friendly Industry

In the early stages of automation, particularly during the 20<sup>th</sup> century, environmental considerations were often secondary to the primary goals of efficiency and productivity. The automation technologies of the

past were characterized by energy-intensive processes and resource-heavy manufacturing practices.

Awareness and emphasis on environmental sustainability have significantly increased in recent years. Modern automation technologies, especially those developed under the principles of Industry 4.0, strive to incorporate eco-friendly practices.

The integration of energy-efficient systems, the adoption of sustainable materials, and a growing focus on circular economy principles are reshaping the landscape of automation to be more responsible.





# Your Customers Expect You to be Conscious

"Customers nowadays want to have the peace of mind in knowing that the companies they buy from are environmentally conscious," Kevin Kempe, Vice President of Sustainability and ESG at Element Logic, says.

"This goes beyond ensuring that they themselves are considered 'green', but also ensuring that their entire supply chain utilizes sustainable practices," Kempe added.

"Because of this, Element Logic actively encourages our supply chain to be more sustainable and transparent on these topics through our [supplier code of conduct](#)."

As the world continues to prioritize sustainable development, the automation industry is evolving towards greener solutions, seeking to mitigate the environmental impact associated with historical automation practices.

# How to: Sustainable Warehouse Operations

**Being sustainable refers to several aspects of your operations. This whitepaper focuses on two main categories: green technology and social responsibility.**

## Defining Greener Technology

When discussing green technology within the intralogistics industry, we usually refer to the development and utilization of environmentally sustainable practices and solutions in the design, manufacturing, and operation of automated systems.

Key aspects you should look for when investing in automation technology for your warehouse include:

### Effective space utilization

A key investment for more sustainable practices is automated solutions that maximize your space utilization. This minimizes CO2 emissions related to warehouse expansions and negative environmental damages to nearby nature and ecosystems.

### Energy Efficiency

Greener automation technology can minimize overall energy consumption by using energy-efficient components, intelligent

control systems, and optimization algorithms to reduce energy waste. Read more about how this can be done on page 12.

### Circular Economy Practices

Automation systems designed with longevity in mind promote reparability, upgradability, and recyclability. This approach minimizes waste and maximizes resource efficiency throughout the life cycle.

### Renewable Energy Integration

Incorporating renewable energy sources like solar or wind power into automation systems is critical to achieve greener warehouse operations. This helps reduce the dependence on non-renewable resources and lowers greenhouse gas emissions associated with energy generation.

**Smart and Sustainable Design**  
Solutions that use sensors, data analytics, and artificial intelligence to optimize resource usage ensure systems that prioritize efficiency with minimal environmental impact.

### Sustainable Materials

Your automation solution can be more sustainable by moving towards more sustainable and environmentally friendly materials to manufacture components and equipment. You should look for materials with a lower environmental impact, reduced toxicity, and increased recyclability.

### Reduced picking errors

Automated solutions that streamline picking operations can significantly reduce picking errors and the need for returns. Less transportation of returns can minimize your carbon footprint.

"If you invest in technology that takes these measures, you'll also get systems that make it easier to track environmental metrics, assess your environmental impact, and identify areas of improvement," XX, Managing Director for Element Logic.

Element Logic can help you navigate available technology to find the solution that enhances your business strategy.





ENERGY

USED



# AutoStore: Shaping Sustainable Practices

**One innovative solution contributing to energy savings in the materials handling industry is AutoStore.**



Agnete Brown Erland,  
VP Sustainability at AutoStore

AutoStore is an Automated Storage and Retrieval System (ASRS) that maximizes warehouse space utilization while working to minimize energy consumption. Its unique cube-based design allows for dense storage of goods, reducing the need for extensive distribution center space and, consequently, the energy required for heating, cooling, and lighting large facilities.

"Our systems are incredibly energy efficient. The robots don't need heat, light, or ventilation, and this can significantly reduce your energy consumption. The robots themselves require very little energy to operate, utilizing only 100 Watts per hour," Agnete Brown Erland, VP of Sustainability at AutoStore, said.

AutoStore's modular and flexible approach enables efficient inventory management, reducing the overall energy impact of logistics operations in the materials handling industry.

"Some of our customers have seen their energy costs go down by 85 percent!" Erland said.

"Of course, cost efficiency is not the main goal of sustainability efforts, but it is a fact that making more sustainable technologies pay back for customers will positively contribute to their adoption."





# Software That Optimizes Your Operations

**In addition to warehouse automation systems like AutoStore, you can implement software solutions to further improve resource utilization, efficiency, and environmental impact.**

One example is real-time visibility into inventory levels, which allows for better demand forecasting and inventory management, ensuring that goods are utilized efficiently, and excess stock is minimized.

Moreover, software-enabled tracking and optimization of product health contribute to sustainability efforts by extending the lifespan of goods. By monitoring factors such as temperature, humidity, and storage conditions, you can identify and mitigate risks to product quality and integrity.

## **Predictive Maintenance is a Game Changer**

Recent developments in software analytics enable more sustainable warehouse management. By

monitoring equipment performance and identifying potential issues before they escalate, you can minimize downtime, extend the lifespan of machinery, and reduce the need for resource-intensive repairs or replacements.

Software-driven analytics can also facilitate more informed purchasing decisions, ensuring that you procure only what is needed, when it is needed.

This lean approach to inventory management conserves resources and reduces the environmental footprint associated with production, transportation, and storage of goods.

## **eLogiq: Turning Data into Actions**

eLogiq is our data platform, which enables data-driven warehouse optimization.

The SaaS solution collects, integrates, and processes data from multiple sources to provide valuable warehouse performance insights, analyses, and predictions.

By combining data from multiple sources, eLogiq empowers you to avoid negative trends, view benchmarking logistics, and tweak processes so you can optimize your warehouse and stay competitive and sustainable.





# Warehouse Automation and Social Responsibility

**Warehouse automation significantly enhances social responsibility through its positive impact on the well-being of warehouse workers. By implementing automated systems, you can create a work environment that prioritizes employee health, safety, and overall satisfaction.**

Traditionally, warehouse jobs have been associated with demanding physical labor, such as lifting heavy objects and repetitive tasks that can lead to strain injuries over time. With automation taking over these tasks, workers are relieved from the burden of heavy lifting and repetitive motions. Instead, they can focus on overseeing and managing the automated processes, leading to a decrease in workplace injuries and musculoskeletal disorders.

This shift in job roles not only increases job satisfaction but also

fosters a sense of empowerment. Additionally, automation can lead to a more predictable and structured work schedule, providing workers with greater work-life balance and reducing stress levels associated with irregular or long hours.

Warehouse automation contributes to the well-being of employees and a more sustainable and socially responsible approach to business operations. carbon emissions. This helps combat climate change by minimizing the environmental impact of industrial processes.



# Is it Possible to Make Logistics Sustainable?



At their core, logistics, and intralogistics are often associated with practices that prioritize speed, efficiency, and convenience, making them inherently challenging to align with environmental sustainability goals.

While the primary goal of logistics is to ensure timely delivery of goods, companies must also consider the environmental impact of their operations and seek ways to minimize it.

As discussed in this whitepaper, optimizing space utilization within warehouses and distribution centers is a crucial step towards sustainability. This may involve implementing technologies such as automated storage systems, vertical shelving, and inventory optimization algorithms.

A sustainable business model embodies more than your environmental footprint. It also

requires a continuous focus on people, planet, and progress. You can achieve that by promoting diversity and inclusion within your workforce.

Employing individuals from multicultural backgrounds enriches the talent pool and brings diverse perspectives and innovative ideas to the table.

## Transparency is Key

When implementing sustainable practices, transparency and authenticity are paramount. You must be honest and forthcoming about environmental initiatives, sharing both successes and challenges openly.

We know that your end-consumers often value and choose to buy from companies they view as sustainable and environmentally friendly. This also applies to recruitment processes. If you want to choose employees from the top shelf, you need to be

prepared to convince them of your environmental initiatives.

According to a Gartner HR Research, "68 percent of employees would consider leaving their employer for an organization that takes a stronger stance on societal and cultural issues."

Talking about sustainability can be tricky. Greenwashing, or the practice of misleading consumers by presenting a false impression of environmental responsibility, must be avoided at all costs. Instead, you should focus on genuine efforts to reduce your environmental impact, engage stakeholders, and contribute positively to the industry as a whole.

By embracing transparency, diversity, and innovation, you can identify areas for improvement, implement sustainable practices, and contribute to a more responsible future for the industry.



# EU Directives you Need to Know About

**If you have warehouse operations in Europe, you must stay informed about and adhere to EU directives governing your operations.**

“Again, transparency is key. EU directives regarding sustainability tend to focus on data transparency, more data tracking, and understanding your responsibility,” Kevin Kempe, VP of Sustainability & ESG at Element Logic, said. Two directives Kempe thinks are especially important for the intralogistics industry are the CSRD and the CSDDD.

Kempe’s advice on how to adhere to these directives:

## **Corporate Social Responsibility Directive (CSRD)**

This directive mandates that large companies disclose information on environmental, social, and governance (ESG) matters, including their impact on the environment, social issues, diversity, human rights, and anti-corruption measures.

To ensure compliance with the CSRD, you can:

- Conduct materiality assessments to identify your ESG impacts, risks and opportunities.
- Implement action plans that include sustainable practices and technologies when looking to reduce carbon emissions, minimize waste generation, and promote energy efficiency.
- Enhance transparency and reporting to provide a clear and comprehensive disclosure of your ESG performance.
- Integrate corporate social responsibility into your business strategy and decision-making processes.
- Monitor and evaluate performance to track progress.
- Collaborate with up- and down-stream suppliers to increase impact and accuracy.

## **Corporate Sustainability Due Diligence Directive (CSDDD)**

This directive aims to prevent and address the adverse impacts of business activities on human rights, the environment, and good governance.

While the CSRD enhances how efforts are reported and disclosed to the public, the CSDDD focuses on actively managing sustainability risks within your operations and your supply chain.

To ensure compliance with the CSDDD, you can:

- Conduct due diligence assessments to identify and mitigate potential risks related to labor practices, environmental sustainability, corruption, and other relevant factors.
- Engage with suppliers and partners to encourage transparency and dialogue to address potential risks and work together to implement effective mitigation measures.
- Implement risk mitigation measures based on the findings of your due diligence assessments. This may include establishing policies and procedures to ensure compliance with human rights standards, environmental regulations, and ethical business practices.
- Monitor and track the performance of your risk mitigation over time.
- Enhance transparency and reporting by disclosing relevant information about your company’s due diligence processes, findings, and actions taken to address identified risks.

“It’s important to remember that adhering to these directives is the bare minimum of sustainability efforts,” Kempe states.

# Minimize your Carbon Footprint with Renewable Energy

**Adopting renewable energy sources, like solar and wind power, is becoming increasingly common. By harnessing the power of renewable energy, you can reduce your reliance on fossil fuels, decrease greenhouse gas emissions, and minimize your overall carbon footprint.**

Solar energy offers a particularly attractive option for warehouses seeking to transition to renewable energy sources. Installing solar panels on the rooftops of warehouses allows you to generate clean electricity onsite. This not only reduces dependence on grid electricity, which is often generated from non-renewable sources, but also provides a reliable and cost-effective energy solution in the long term.

The solar panels convert sunlight into electricity, which can power robots, conveyor systems, and other components of the automation solution.

Similarly, wind turbines can be installed onsite or nearby to generate electricity from wind energy.

Investing in renewable energy demonstrates a commitment to sustainability and corporate social responsibility, enhancing your reputation and appeal to environmentally conscious consumers and stakeholders.

# Case Study

## Berggaard Amundsen

**Berggaard Amundsen, a Norwegian electronics wholesaler, embarked on a pioneering case study to enhance the sustainability of their operations.**



Niklas Poulsen, Sales Manager  
at Element Logic

Recognizing the environmental impact of traditional energy sources, the company strategically integrated solar power to fuel their AutoStore unit.

"The AutoStore robots' energy consumption is extremely low, and they regenerate power every time they lower a bin or reduce speed – just like an electric car," Niklas Poulsen, Sales Manager at Element Logic Norway, said.

"This means they are a perfect fit for sustainable warehouses. Berggaard

Amundsen's warehouse is better for the environment and also cost-efficient – it's a win-win," Poulsen adds.

This case study explores how they leveraged solar energy to power their AutoStore, providing insights into the synergies between renewable energy and advanced automation technologies, ultimately transforming their warehouse into an energy-efficient and environmentally conscious facility.

**Learn more**





# Conclusion

## Businesses can Thrive in Harmony with the Environment

As an ever-evolving society, we are never where we need to be. At Element Logic, we will continue to improve current solutions and develop new innovations that make us better.

This whitepaper is a snapshot of the current state of affairs and what people will see in the near future. The transformative effects new technology and sustainable practices can have in warehouses and distribution centers are undeniable, as is the effect that this all has on the final customer.

While logistics and intralogistics pose significant challenges to

environmental sustainability, they also present opportunities for positive change. By embracing transparency, diversity, and innovation, you can identify areas for improvement, implement sustainable practices, and contribute to a more environmentally responsible future for the industry.

Balancing business strategy with sustainability requires a concerted effort, but the benefits of adopting eco-friendly practices far outweigh the risk of not doing so when it comes to our current environmental trajectory.

The innovative solutions and software offered by Element Logic provide a practical roadmap for businesses aiming to adopt eco-friendly practices.

Embracing these advancements signifies a commitment to a sustainable future in which businesses can thrive in harmony with the environment while achieving long-term cost savings and operational resilience.



Want to learn more about how Element Logic can optimize your warehouse performance?

**Contact  
us today**

