

THE SMART WAREHOUSE

Optimization for Automation

CESO 





Revolutionizing the Warehouse

In recent years, shifting consumer habits have positioned e-commerce as one of the biggest industries. As the rapid growth of e-commerce has increased, facilities have had to up their game to handle the sheer volume of consumer demand. With the growth of the e-commerce market, warehouse design has evolved and the smart warehouse has emerged. These facilities are designed to be highly automated and rely more on technology to manage inventory, process orders, and fulfill shipments. Investing in smart warehouse practices is crucial for companies to remain competitive.

Why it Matters



Improved Operational Efficiency



Enhanced Accuracy



Reduced Labor Costs



Increased Speed



Improved Safety



Competitive Advantage

Out of the Box Benefits

Smart warehouses are revolutionizing the way companies manage their warehousing operations. By incorporating advanced technologies like automation, robotics, and artificial intelligence, smart facilities can streamline operations, reduce labor costs, and increase efficiency.



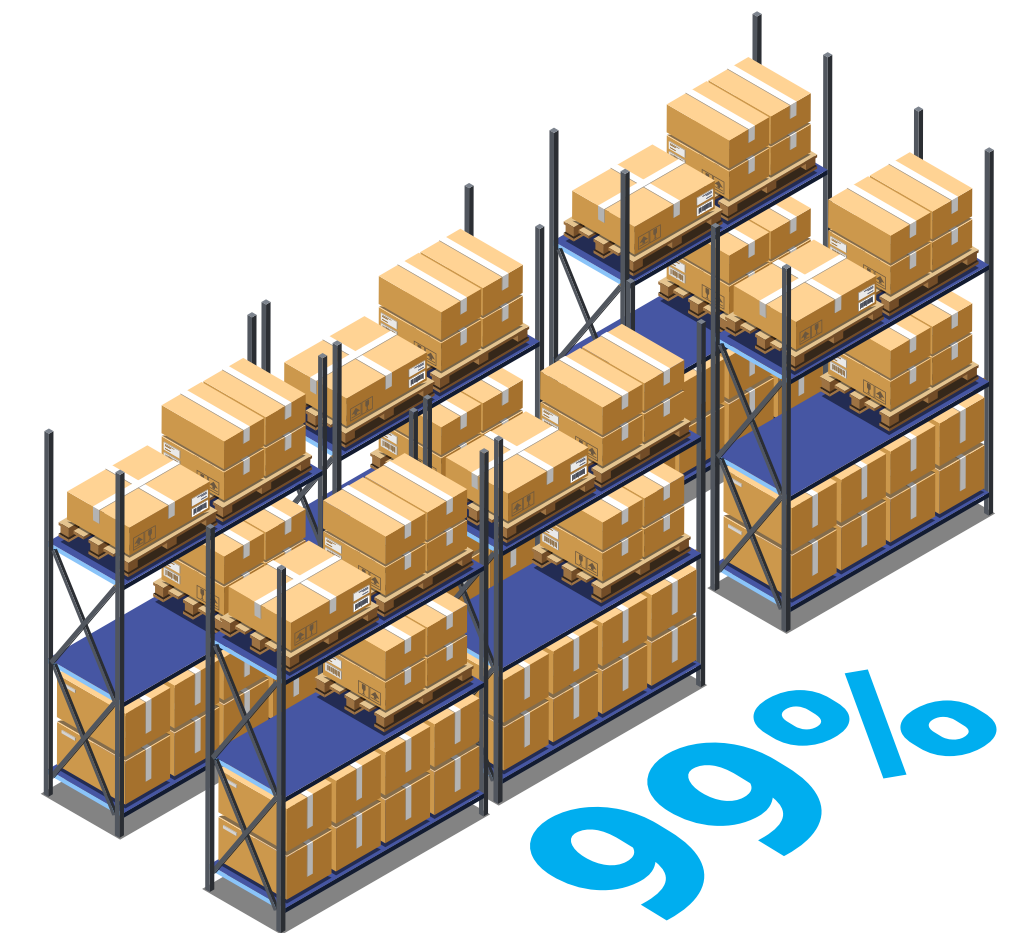
Increased operational efficiency by up to **25%** leading to significant cost savings for businesses.

- Capgemini Research Institute



Automating tasks that were previously performed manually reduces labor costs by up to **50%**.

- Deloitte



Improved accuracy of inventory management by up to **99%**.

- Zebra Technologies

Smart Facility Considerations



Space Utilization

Space utilization is a critical consideration in smart warehouse design as it significantly impacts efficiency and productivity. Layouts must minimize wasted space while providing sufficient room for automated equipment, storage, and mobility.



Sustainability

Sustainability is an increasingly important consideration in warehouse design and thought should be given to minimize the environmental impact. Considerations include reducing the structural carbon footprint, energy-efficient lighting and HVAC systems, solar panels, rainwater harvesting systems, and green roofs.



Structural Support

Automated storage and retrieval robots travel along tracks built into the racking systems to deposit/retrieve products. With many of these weighty devices traveling along the racking systems at once, the structural design of the building should consider the impact of such movement on a facility.



Safety

Safety measures are critical to ensure the risk of accidents and injuries are minimized. Fully autonomous areas present unique code challenges that require fire protection, emergency lighting, and clear evacuation routes should be given attention. A facility should also comply with relevant safety standards and regulations.

Designing for Smart Facilities



Multi-Level Mezzanines

Modern warehouse design includes rows of towering mezzanine racking systems to accommodate product storage. To best utilize vertical space, designs must address adequate building height in new facilities or the addition of raised ceilings in existing facilities to support the substantial amount of space that the structure will assume.



Clash Detection

Clash detection is an essential aspect of smart warehouse design because it helps to identify and prevent potential clashes or collisions between different components of the warehouse. Clash detection modeling can identify areas where these systems might come into conflict.



Charging Stations

A robot-friendly facility must consider space for the charging of such devices. The design should incorporate both dedicated docking stations and compact wireless stations throughout a facility. A benefit to the compact stations is that they support 'charging integration into the daily workflow, limiting "down-time" and keeping operations moving.

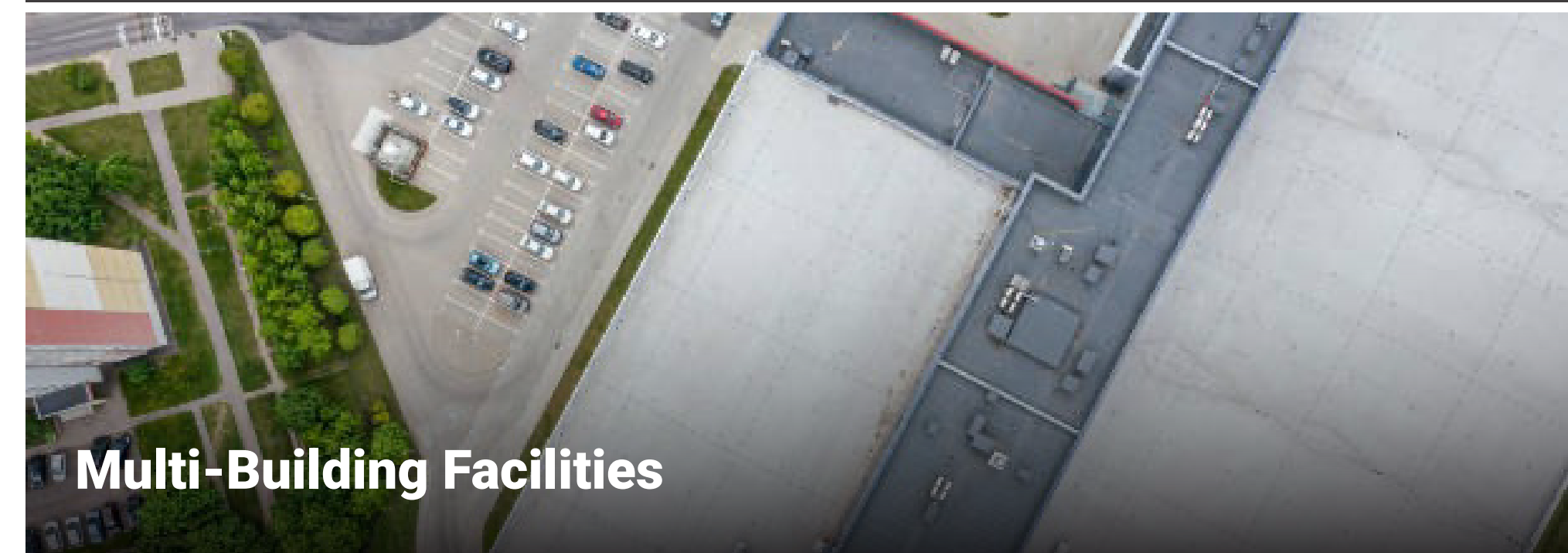


Drone Towers

Aerial delivery is becoming increasingly popular among fulfillment strategies for brands. When designing drone towers for pilots to facilitate the transportation of goods to their intended recipient, solutions should cater to location, functional, structural, and zoning needs.

Smart Collaborations

Warehouse design constantly evolves and incorporates new efficiencies to stay ahead of the curve. CESO has helped many leading retail and e-commerce brands pioneer automation trends within their facilities. As a leader in the industrial market, our breadth and depth of expertise position us to understand our clients' project needs better and strategically support their industrial goals.



Your Vision and Beyond

Manufacturers and distributors need a lean, value-engineered approach and a design team that understands efficiency, profitability, and adaptability. From the visioning and master planning of new spaces to rehabilitating and renovating existing facilities, we leverage our vast experience across the industrial market to address design challenges. Our diverse portfolio encompasses projects of varying sizes and complexity.

From site selection to the opening of a facility, our in-house team of multi-disciplinary experts leads programs ranging in scope, scale, and complexity across the nation. By combining imagination and ingenuity, we think big - positioning us to turn bold ideas into reality.



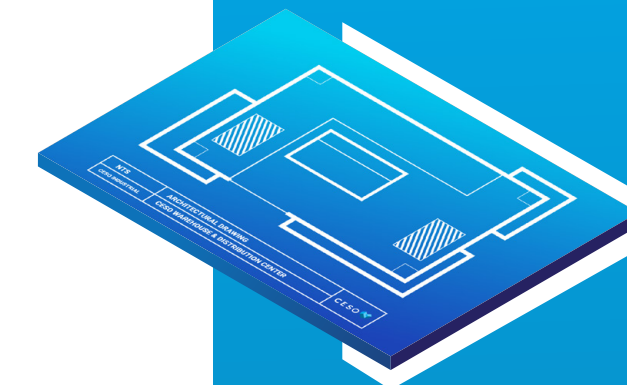
More than 300 retail and e-commerce fulfillment centers, production facilities, and delivery stations



Coast-to-coast solutions



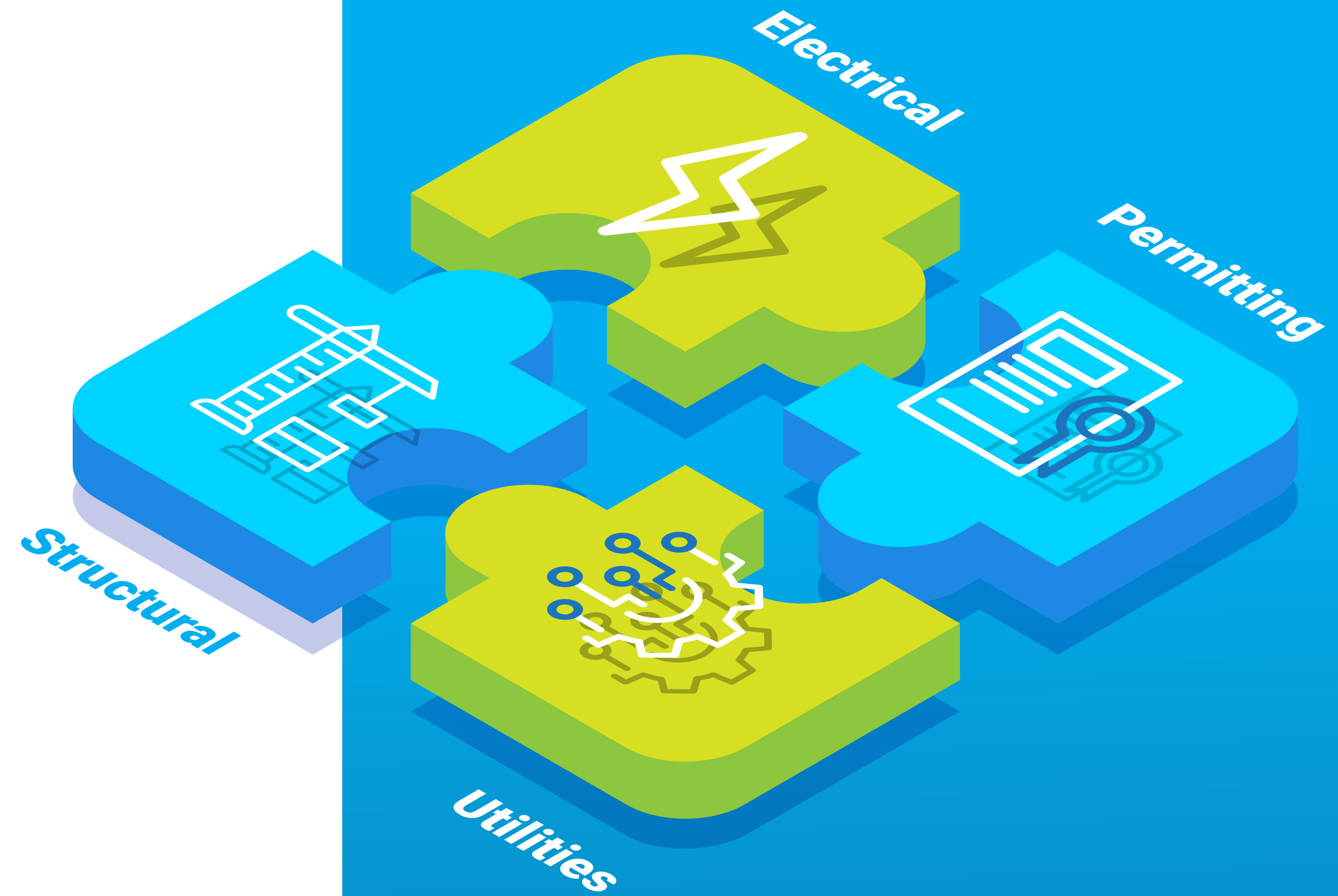
Experience in many of the most challenging jurisdictions



Approximately 40 million SF of industrial space

Synergetic Coordination

Designing an automated facility requires putting the right parts and pieces into place. We save clients the stress of coordinating vendors by tapping into our established partnerships to ensure your facility is structurally sound, has adequate electrical production and wireless connectivity, and is within regulatory compliance.





CESO 

Thank You

To learn more about our industrial capabilities,
visit us @ cesoinc.com

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