



# Automation



AN ISO 9001:2015 COMPANY

STORAGE SOLUTIONS

Since 1991

Creating<sup>®</sup>  
**space**  
within  
**space**





## Overview

Since its inception in 1991, Metafold Engineering Pvt. Ltd. has undergone a remarkable journey of growth and transformation. Beginning with a fabrication of simple material movement trolley, the company has continuously expanded its product portfolio to meet the evolving needs of the storage industry, establishing itself as a prominent player in the market.

Our state-of-the-art engineering and production facility covering an extensive area of 1,25,000 sq. ft. boasts an impressive manufacturing capacity of 1500 tons per month. This robust infrastructure empowers us to effectively serve a diverse clientele across various industrial sectors not only in India but also internationally.

Metafold operates through four specialized divisions: Warehouse, Automation, Machine Shop, and Roll-Out. Each division focuses on specific product lines, enabling us to offer comprehensive solutions and serve as a ONE-STOP DESTINATION for all storage-related requirements.

We take immense pride in our positive outlook and noteworthy achievements within the storage industry. Our unwavering commitment to customer satisfaction has paved the way for an exceptional track record of delivering projects on time, solidifying our reputation as a reliable and trusted partner.



## VISION

To create a  
DIVERSE AND SUSTAINABLE ECOSYSTEM  
where our  
EMPLOYEES AND CLIENTS  
flourish in a non complacent market,  
driving  
MUTUAL GROWTH AND SUCCESS.



## PURPOSE

To FUEL customer's growth  
by  
enhancing productivity and  
ease of operations  
through our  
Simple but yet innovative,  
effective and reliable solutions.



## Our Core Values



### TEAM WORK

Collaborating effectively with others to achieve common goals through shared effort and communication.



### CUSTOMER DELIGHT

Making customer satisfaction our priority by actively listening, anticipating needs, and delivering best service.



### INTEGRITY

Upholding honesty and ethical principles, consistently doing what's right, even when no one is watching.



### EXCELLENCE

Continuous improvement and setting high standards to achieve the best possible results in every task and endeavor.



# IN PLANT MANUFACTURING FACILITIES



**ROLLING SHOP** Capacity: 1000 tonnes/month



**CNC SHOP** Capacity: 150 tonnes/month



**FABRICATION SHOP** Capacity: 500 tonnes/month

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# Stacker Crane ASRS





# RACK AUTOMATION

Automated Storage and Retrieval Systems (ASRS) thrive in applications where high volumes of inventory move in-and-out of manufacturing or distribution operations. Upgrading to an automated storage system improves throughput and efficiency with reliable, secure storage that eliminates damage to products and equipment while providing safer, more ergonomic working conditions.

Metafold Solutions experts have designed and integrated automated storage solutions across a variety of industries and product handling needs. With this expertise, they can assess your operational needs, business objectives and technology options to identify a right-sized automated solution to reliably and effectively handle the complexities of moving and storing payloads in your facility. From large, heavy pallet storage to smaller, lightweight goods, or custom features that accommodate unique requirements, our experts work with you to integrate the appropriate level of flexibility and functions to support current labor availability, security of goods, throughput and efficiency, and maximize your vertical space for reduced facility expansion costs.

## APPLICATIONS

ASRS Stacker Cranes follow the goods-to-person (GTP) principle and are managed by a central system for inventory control and crane coordination.

The horizontal carriage on the mast offers two options:



Telescopic forks can efficiently handle single or double deep racks, making them versatile for various materials and handling needs. This solution is limited to selective pallet racking, after every four deep pallet an additional aisle is required.

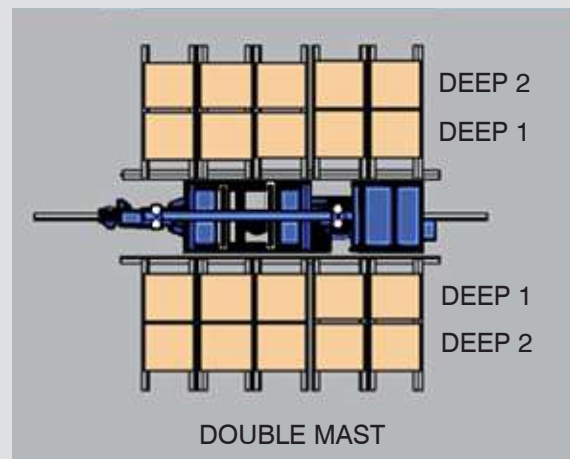
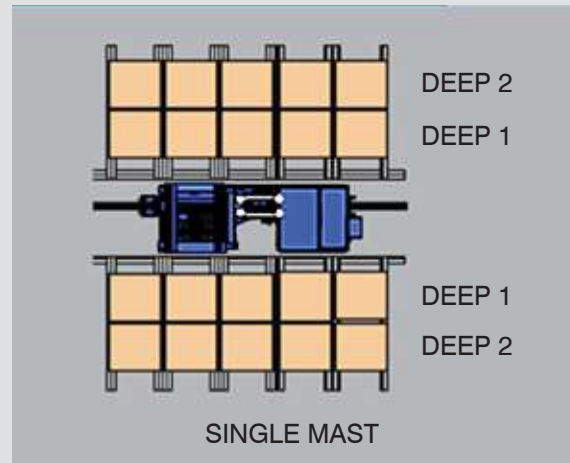
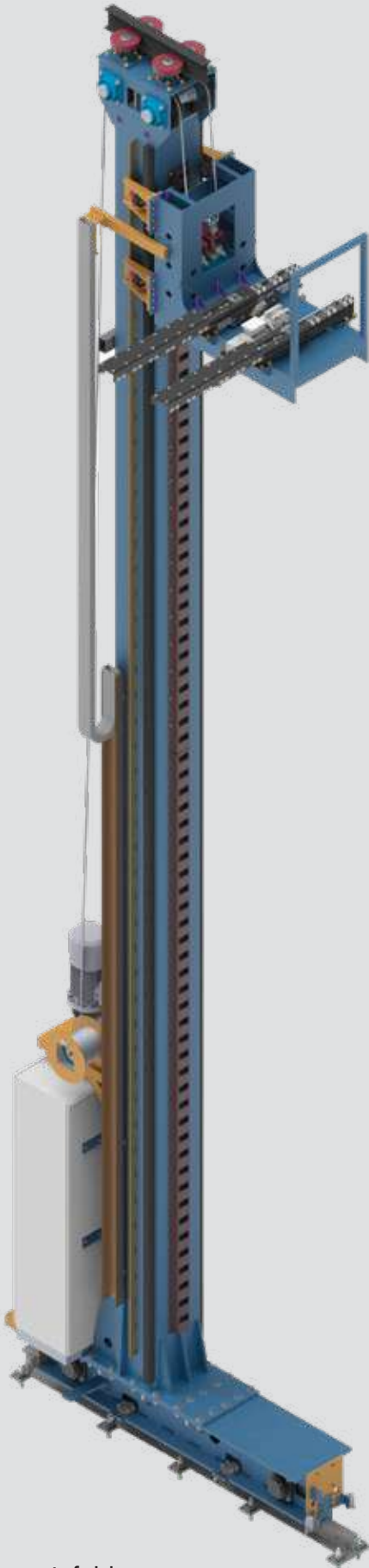
Telescopic Forks for high throughput but lower batch quantity



Integrated Radio Shuttles cranes, racking structure is converted into high-density racking. The horizontal carriage stops in front of the desired bay, and the radio shuttle travels within the rack for pallet storage or retrieval.

Integrated Radio Shuttles for larger batch quantities but lower throughput.

# Stacker Crane



**Guaranteed Pallet Throughput**



**Controlled Inventory**



**24/7 Availability**



**High Efficient Regenerative Drives**



**WMS Operated**



## OPERATIONS

The Stacker Crane ASRS is designed as per the customers process requirement. Stacker crane ASRS form a part of a comprehensive solution that incorporates other automation technologies like conveyors, AGVs, AMRs, pick and place robots and efficient material movement methods to address all your needs.

## ADVANTAGES

Often selected for its dynamic functionality, efficient use of space, and improved work environments, these technologies can integrate with other automation technologies and warehouse software for even greater efficiencies. Other benefits include:



### **Increase throughput and efficiency**

with various storage configurations, transport mechanisms, and horizontal and vertical speed options



### **Inventory storage security**

with secure enclosures and real-time inventory control



### **High density storage**

makes the most of available footprint and maximizes vertical space



### **Turnkey or custom solutions**

providing a right-fit solution for your operation



### **Accurate, real-time inventory data**

eliminates the need for physical inventory inspections



### **Ease of installation and maintenance**

with modular design and built-in diagnostics



### **Safe and efficient pallet handling**

provides high level of process reliability



### **Integrate into larger systems**

to further streamline operations and improve workspace ergonomics



### **Eliminate damaged or missing inventory**

with safe and secure storage and improved picking processes



### **Ensuring safe operation**

involves mitigating most vibrations, which is achieved through the implementation of anti-oscillation devices and damping programs



### **Reduce travel between operations**

for improved order cycle time



# Mother Child Shuttle





Mother Child Shuttle ASRS or also known as Multi-deep Pallet Shuttle ASRS is a dense automated system, wherein the mother shuttle operates within the main aisles and acts as a carrier transporting the child shuttles to the appropriate bay location within the structure. The child shuttles, in turn, travel within the individual storage bay where they are responsible for retrieving and storing goods.



The Mother Child Shuttle ASRS stands as a pioneering advancement in the domain of storage solutions, enhancing the utilization and efficiency of automation in storage while maintaining its inherent simplicity. This solution integrates various types of equipment that collaborate harmoniously:

- Compact Battery Operator pallet shuttle (Child Shuttle)
- Bus Bar powered Shuttle-carrier (Mother Shuttle)
- Pallet lift
- Inbound and Outbound conveyors
- Buffer conveyors



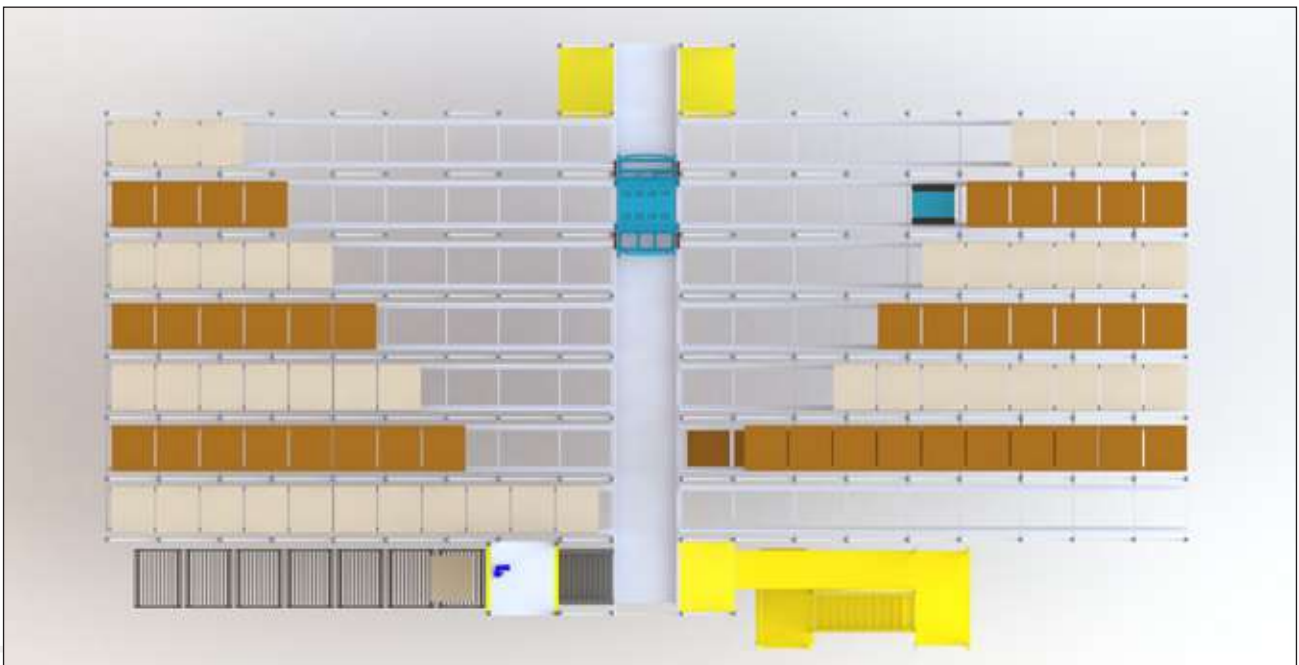
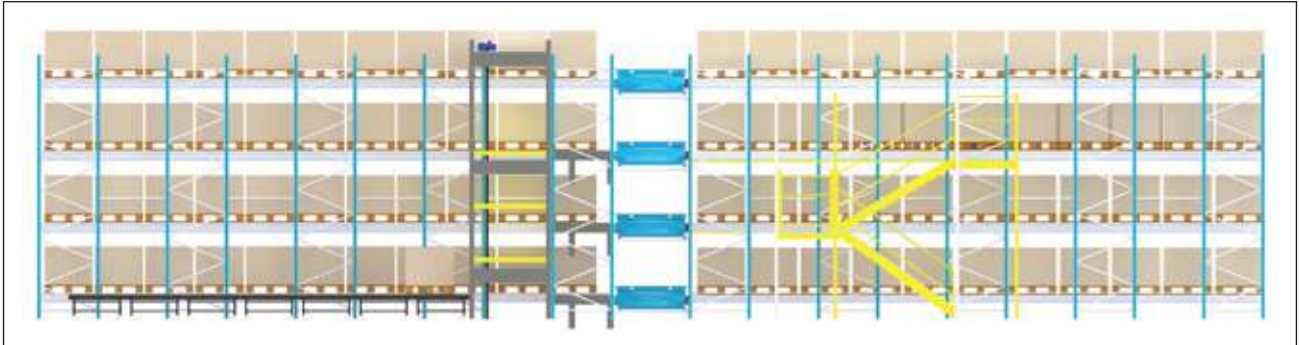
**100% automated  
storage operations**



**Safe and efficient  
pallet handling**



**Modular design  
for scalability**



## SYSTEM ARCHITECTURE

Our Shuttle Fleet Control Software (SFCS) serves as the central control hub for the entire system and ensures that your entire inventory is easily accessible and handled with the utmost safety and efficiency.





## APPLICATIONS

Mother Child Shuttle ASRS systems are commonly used in high-intensity inventory operations with large batch quantities of SKU. This system provides increased storage capacity, faster retrieval times, reduced labour requirements and improved inventory accuracy.

## OPERATION

The stacking and retrieval processes in these fully automated systems are customized to your needs. Specialized training is provided to certify operators in operating these systems.

## ADVANTAGES



### **Higher throughput compared to Stacker Crane ASRS**

due to multiple shuttles operating simultaneously at every level



### **Quick access and faster delivery times**

through continuous loading and unloading



### **Best use of space**

as it provides high density storage almost double than Stacker Crane ASRS



### **Inventory storage security**

with secure enclosures and real-time inventory control



### **Safe and efficient pallet handling**

provides high level of process reliability



### **Integrate into larger systems**

to further streamline operations and improve workspace ergonomics



### **Reduced Operational Cost**

through increased utilization of space

# Auto Store



VERTICAL STORE-INSOL



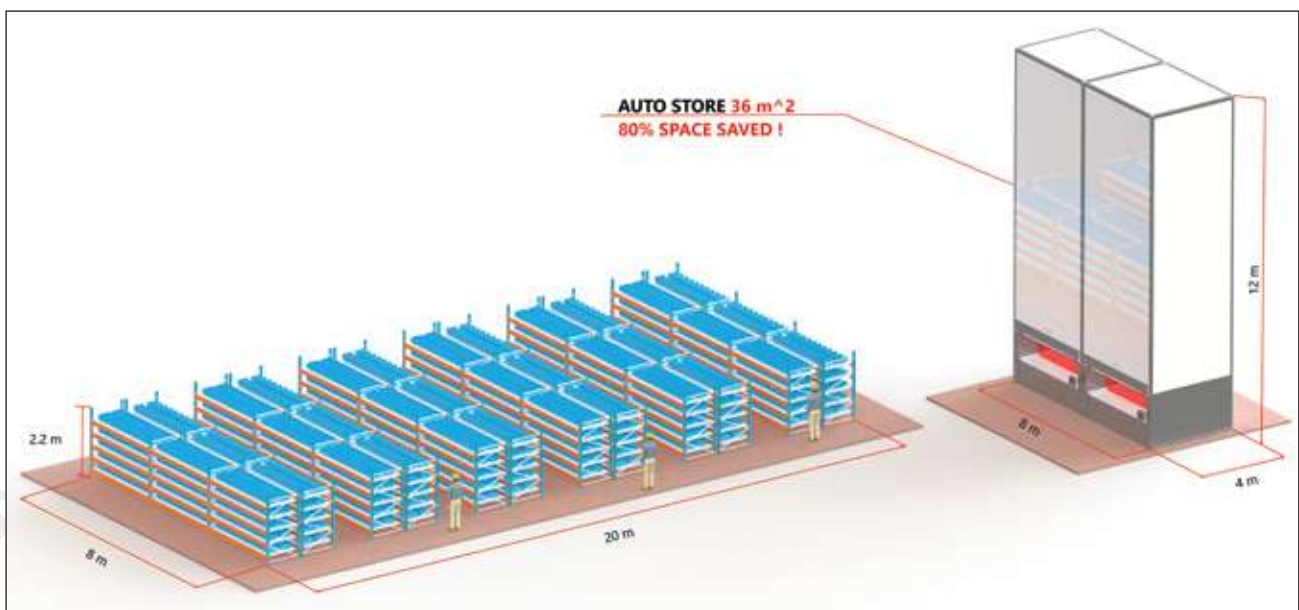
# VERTICAL LEAN LIFT

Auto-Store is an innovative enclosed shelf-based automated storage and retrieval system that effectively maximizes capacity within a small footprint.

Based on the "goods-to-person" concept, the Auto-Store enhances productivity by directly delivering goods to the operator, eliminating the need for manual searching and retrieval. Our Indigenous Auto-Store solution features exceptional versatility, serving a broad spectrum of industries, from manufacturing facilities to warehouses, thanks to its modular and flexible design that easily adapts to your evolving business requirements.

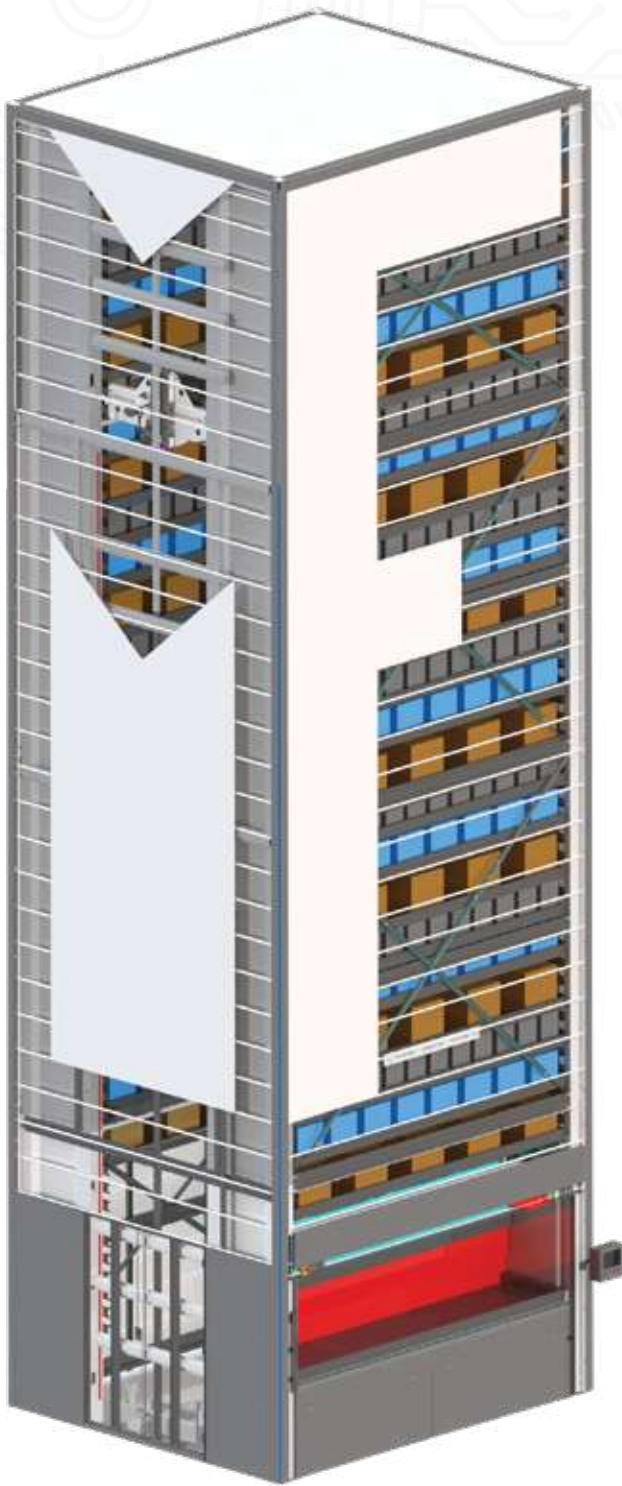


## FOOTPRINT COMPARISON



Wherever there is a need for effective space utilization and speedy item retrieval, Auto-Store provides the optimal solution.

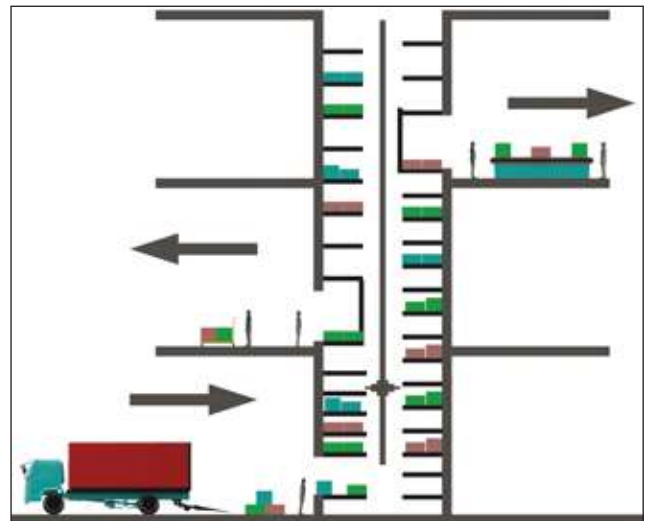
## TECHNICAL SPECIFICATION



Tray Dimensions	Length (mm)	Up to 3650
	Width (mm)	650, 850, 1000
Load Capacity per Shelf (kg)		Up to 1000
Tray Adjustment Pitch (mm)		50
Tray Pitch (mm)		150*
System Height (mm)		15,000*

\* Minimum value, actual pitch depends upon the load per shelf

\*\* Standard height offered. For additional height, external supports are required. Get in touch with our technical experts for specific requirement of additional height.



## MULTI FLOOR ACCESS

- Access points at different floor levels, front and back
- Reduce man and material movement time between different floors
- Eliminate Goods Lift
- Store material vertically from basement up to top floor
- Avoid multiple V Store location



## ADVANTAGES

Since our first machine in 2008, we've evolved to our fifth generation. With around 20 distinctive features that distinguish us from existing designs in the market, we offer enhanced functionality, proactive monitoring, and customizable operational preferences, giving our customers a competitive advantage.



### Efficient

- Quick storage and retrieval
- Up to 80% faster retrieval time than normal shelving
- Intelligent height and weight sensing and flexible tray height for optimum usage of vertical space
- Option of reinforced toothed belt drive for quiet operation or high duty chain drive



### Secure

- Store safely and securely
- Password protected with data logging
- Smooth movement of trays for storing fragile products
- Automatic shutter doors for all access openings with safety interlock
- Tray wise User Access Control to prevent unauthorized access
- Avoid multiple V Store location



### Options

- Standard single access, Optional Multiple Access up to three per machine
- Optional customized dividers and partitions available for trays
- Dual tray exchange option to reduce retrieval time



### Save

- Lower floor space up to 80% smaller footprint
- Reduces material handling and storage racks
- Minimum maintenance
- Reduce personnel costs by reducing picking time



### Safe

- Reduced risk of falling loads
- Light barrier for safe hand operation
- Over load detection system
- Automatic height sensing
- IP66 Certified operator touch panel



### Ergonomic

- Adjustable tray positioning in access opening for ergonomic loading and unloading
- Swivel mounted operator panel



### Modular

- Modular construction allows future height increase for expandable storage



# Sheet Store

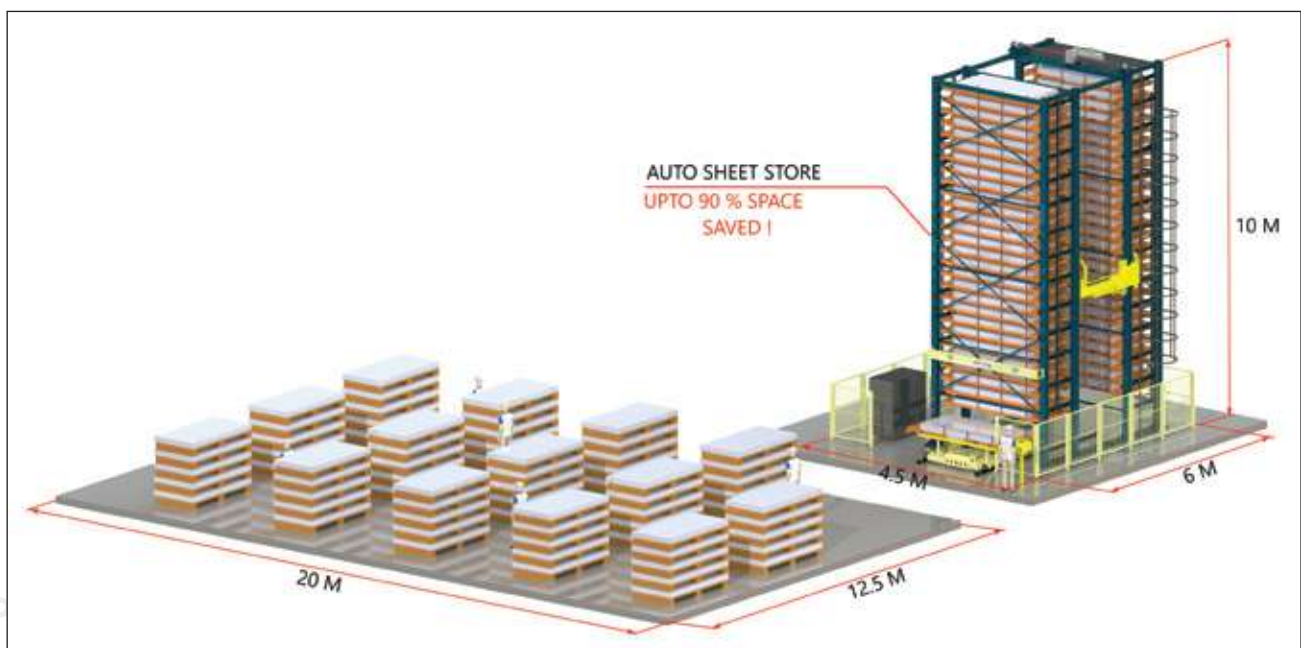




# EXTRA HEAVY DUTY AUTOMATED STORAGE SYSTEM

The Sheet Store is a robust and fully automated storage system designed for heavy-duty applications. By utilizing vertical space effectively, it minimizes the required floor space. By delivering the goods directly to the operator, this system reduces the risk of damage to raw materials and improves productivity.

This system is specifically designed for storing various items such as sheets (with or without bundles), moulds, dies, bar coils, and more. It offers efficient and organized storage solutions for a wide range of materials in an optimized footprint.



## TECHNICAL SPECIFICATION

Cassette	Length (mm)	Up to 6200
Dimensions	Width (mm)	Up to 2000
Load Capacity per Shelf (kg)		Up to 5000
System Height (mm)		12,000
Max Live Load (kg)		180,000

Metafold is the first Indian company to introduce this product into Indian market in 2015. Now in its fourth generation of design, Metafold has successfully sold over 25 systems across India and internationally.

## ADVANTAGES



### Safe

- Reduced risk of damages to material and injuries
- Pallet safety during storage in location is ensured by wheel stoppers
- Stopper pins are provided to safeguard sheets stored to avoid damage due to sliding
- Safety barrier to avoid unauthorized entry in access area
- Over load detection system is use of lift is overloaded with material



### Efficient

- Organized and quick storage and retrieval of sheet metal
- Material change over time reduced to larger extend
- Instead of fork lift, cranes also can be used to load and unload the material
- Automatic and faster access to different pallets with higher work efficiency



### Save

- With excellent space utilization, it lowers floor space up to 90% with smaller footprint
- Time saving due to direct automated access with out addition lifting devices
- Reduced operational costs and adds bottom line earnings

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## AUTOMATED PLATE LOADER SYSTEM

Companies in Sheet Metal business, always faces challenges

- **Storage of Raw Material**
- **Material movement from the storage space to the Laser Bed**
- **Picking and Sorting of Cut pieces from Laser Bed to Sorting Table**
- **Space required for manual material movement**
- **Higher cycle time due to dependency on manual operation**

Our Sheet Store integrated with an Automated Plate Loader System provides a comprehensive solution to above challenges.





Raw Sheets are lifted using the vacuum cups, while the processed sheets are lifted by fingers spanning all over the length of the sheet. To lift the sheet from the laser bed, the fingers are designed to fit into the toothed bed gap, raising the entire processed sheet from underneath. This design prevents cut pieces on the sheet from falling during material movement.

The Girder motion is guided on the Linear motion guide and rack and pinion rail and is controlled by a Servo Motor. This approach ensures that the lifting bed always remain aligned with the storage pallet and the laser bed. Due to this confirmed alignment, the horizontal travel speed of the girder reaches 60m/min.

## TECHNICAL SPECIFICATION

Payload (kg)	250 kg
Boom/LT Travel, Length (mm)	As per requirement
Vertical Lift of the Sheet from Base (mm)	700
Finger Metallurgy	Aluminium Extrusions

## FEATURES



**Unlock  
Efficiency**



**Fault  
Removal**



**Sturdy  
and  
Robust  
Build**



**Precision  
Loading  
for  
Enhanced  
Accuracy**



**High-Speed  
Operation  
for  
Optimal  
Utilization**



**Versatile  
Handling  
of Large  
Plates**



# Pipe Store



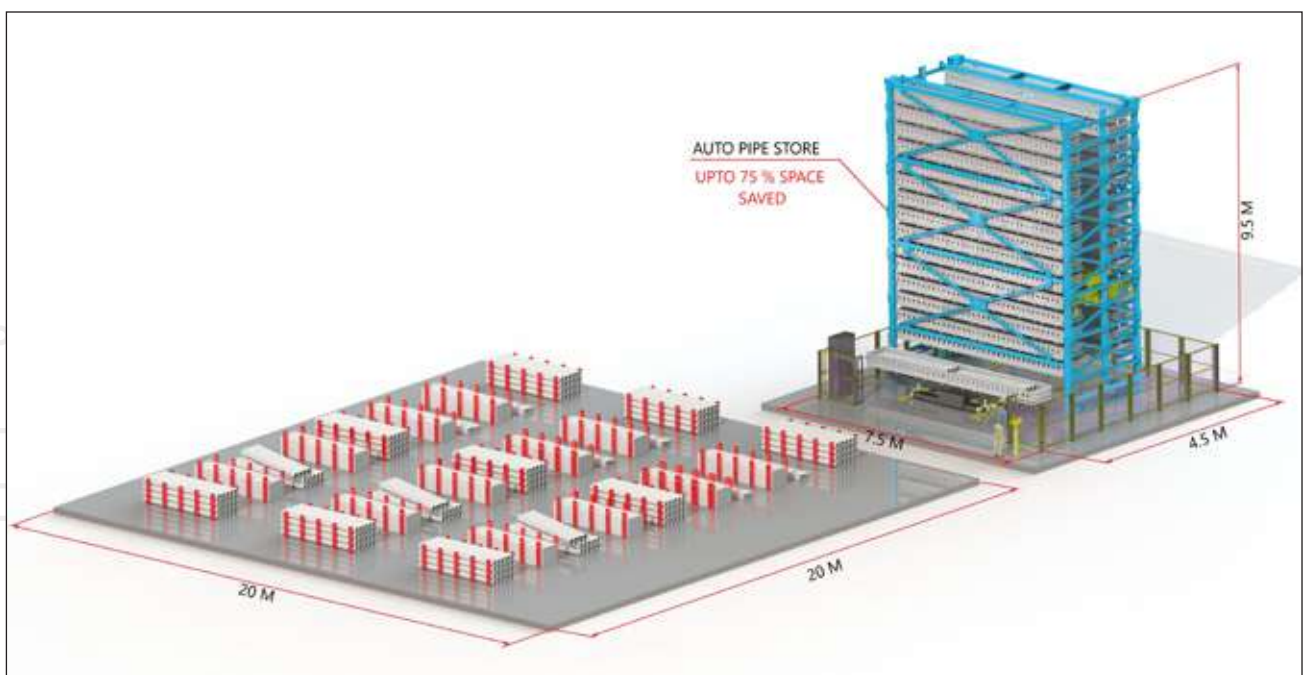


## LONG SPAN GOODS AUTOMATED STORAGE SYSTEM

Pipe-Store is an advanced and robust automated storage and retrieval system designed specifically for the storage of lengthy materials such as pipes, bars, tubes, billets, aluminium extrusions, commercial sections, and more. This innovative system utilizes vertical space efficiently, allowing for maximum capacity while occupying a smaller footprint compared to traditional block storage methods.

The Pipe-Store operates based on the "goods-to-person" concept, which significantly reduces the risk of damage to raw materials and enhances productivity, by delivering the goods directly to the operator. The Pipe-Store eliminates the need for manual searching and retrieval and thus saving valuable time and minimizing the potential for material damage, particularly in the case of round pipes.

Given the constant rise in the land prices and the increasing manufacturing capacity throughout India, it has become essential to capitalize in seamless and secure handling of raw materials, optimizing operational efficiency and preserving the integrity of the materials.



## TECHNICAL SPECIFICATION

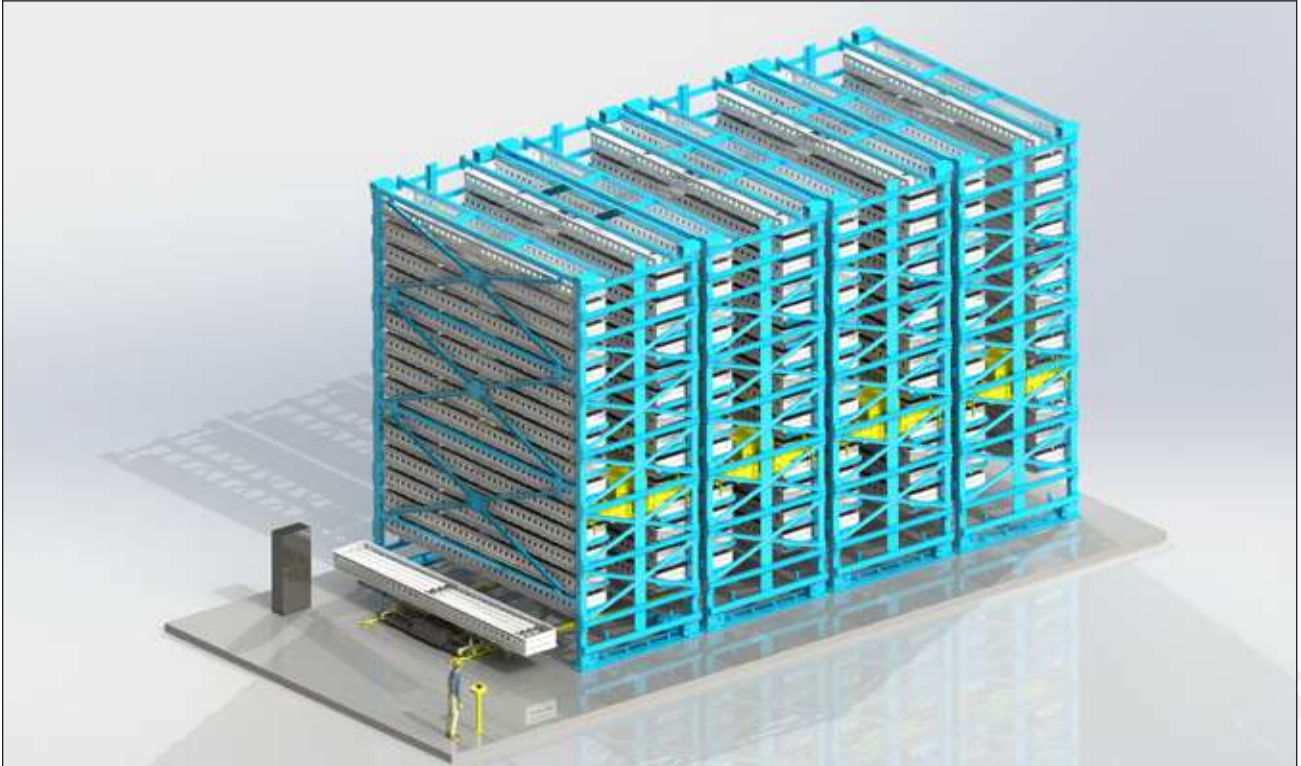
Cassette Dimensions	Length (mm) Width (mm)	Up to 6200 550, 850
Load Capacity per Shelf (kg)		Up to 2500
System Height (mm)		10,000
Max Live Load (kg)		90,000

Metafold is the first Indian company to introduce this product into Indian market in 2019. Now in its third generation of design, Metafold has successfully sold over 25 systems across India.

Companies face significant challenges when it comes to storing and sorting materials, particularly with:

- Managing large quantities of pipes exceeding 100 tons.
- Addressing rust issues caused by improper material storage.
- Tackling bowing in pipes due to uneven storage methods.
- Handling a wide variety of SKUs with variations in outer diameter, inner diameter, length, and metallurgy.

To mitigate the above challenges, our Back-to-Back systems with a shared feeder and extractor trolley provide a comprehensive solution for your storage needs.



Many OEMs have restrictions on the presence of EOT in the installation area. Our system is crafted to address this limitation. To facilitate smooth material movement, EOTs can be easily and cost-effectively integrated with the system.





## ADVANTAGES



### Efficient

- Organized and quick storage and retrieval
- Material change over time reduced to larger extend
- Instead of fork lift, cranes also can be used to load and unload the material



### Safe

- Reduced risk of damages to material and injuries
- Safety barrier to avoid unauthorized entry in access area
- Over load detection system is use of lift is overloaded with material



### Safety

- Heavy Duty Design
- Seismic-resistant structure
- Safety flange to secure cassette in its designated location
- Machine Safety Light Curtain



### Save

- Reduce floor space required by 75%
- Time saving due to direct automated access with out addition lifting devices
- Reduced operational costs and adds bottom line earnings



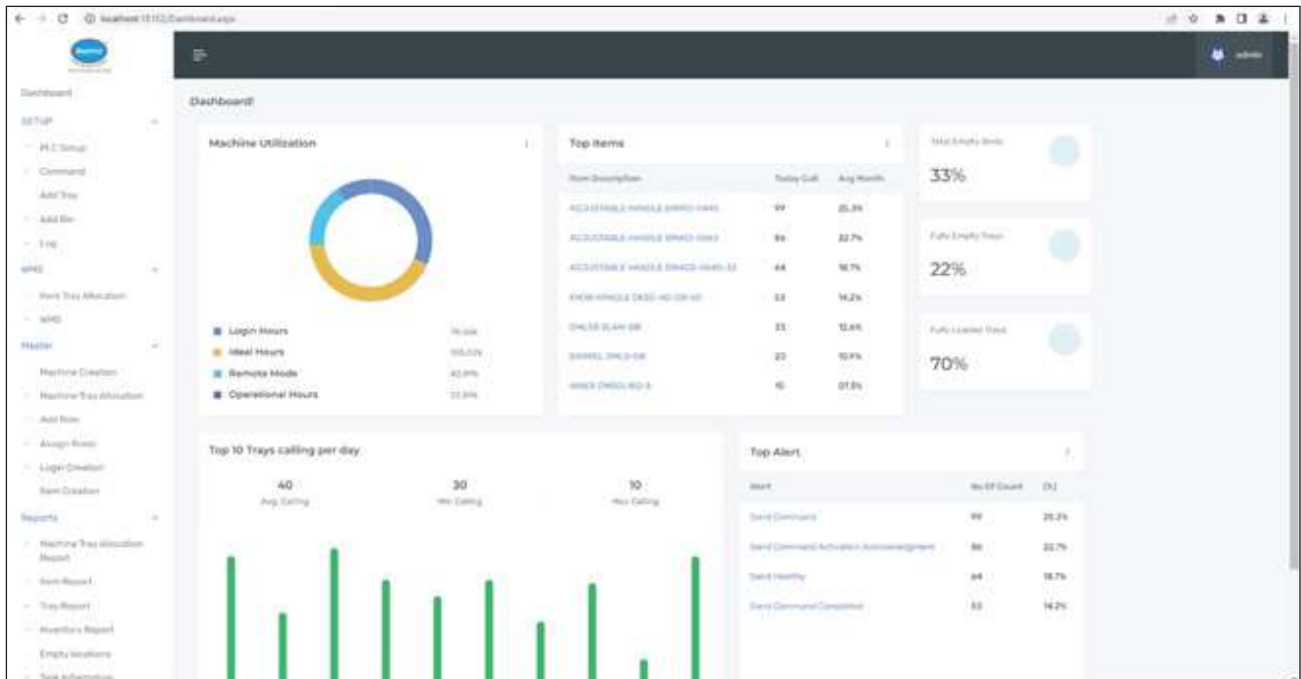
### Operations

- Material extraction at either or both side of system
- Multiple access points as per customer requirement





Our Warehouse Management System (WMS) software is designed to provide businesses with an extensive array of features to enhance their inventory control processes. This robust system ensures real-time traceability, maintaining accurate records of all goods stored within the system. The software goes beyond basic inventory tracking by allowing businesses to monitor the performance and health of their entire inventory management setup.



One of the key advantages of our WMS is its user-friendly interface, where valuable data is just a simple click away. Users can effortlessly access information related to the status, location, and movement of their inventory items. This real-time visibility is instrumental in making informed decisions promptly.

The WMS software facilitates seamless monitoring and management of inventory, offering businesses the ability to optimize their stock levels, reduce wastage, and streamline their supply chain operations. By providing quick access to crucial information, our WMS empowers businesses to respond promptly to market changes and customer demands.

Our Warehouse Management System is a powerful tool that not only ensures accurate tracking of goods but also empowers businesses with valuable insights for efficient decision-making and overall optimization of their inventory processes.

## FEATURES

- Real Time Inventory Stock
- Accurate Traceability and Record Keeping
- Different login credential for operator, maintenance and administrative manager
- Tray wise user access to prevent unauthorized access
- Different Mode of operations
- Single / Multiple WMS windows for operating multiple machines
- Online troubleshooting of system
- Usage pattern of the system for data analysis, if required
- Machine's entire data log at a click

## ADVANTAGES



**Increased  
Inventory Control**



**Access Master Data,  
if required**



**Datasheets,  
containing all  
information related  
to the system**



**Chronology of  
Alarms and  
Operating errors**



**System  
Utilization Report**



**Access  
Scheduled  
Maintenance**



**Flexibility in choosing  
appropriate location  
for fast moving goods**



**Access to User  
Manual offline**



## INTEGRATE YOUR SAP / ERP WITH OUR WMS



**A step  
closer to  
Industry 4.0**



**System  
driven  
approach**



**Seamless  
Integration**



**Customizable  
as per  
requirement**

## SERVICES

From mechanical design to control panel assembly to software development, our entire system is developed and executed in-house, driven by a single goal: to provide prompt service whenever our customers require it, minimizing any potential downtime. Customer satisfaction serves as the cornerstone of our service team's performance, ensuring that we consistently deliver exceptional support and assistance to our valued customers.



# Why Metafold?



**PRECISION**



**HIGH  
PRODUCTIVITY**



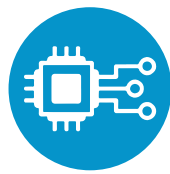
**SUPPORT  
SERVICE**



**ON TIME  
DELIVERY**



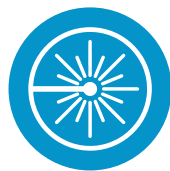
**QUALITY**



**IOT  
COMPATIBLE  
MACHINE**



**IN-HOUSE  
MANUFACTURING**



**LASER  
POSITIONING**



**ENERGY  
RECOVERY  
SYSTEM**



**ANTI-  
OSCILLATION  
SYSTEM**



# Other SBUs

## WAREHOUSE STORAGE SOLUTION



Selective Pallet Racking



Multi Tier Shelving



Modular Mezzanine Floor



Shuttle Racking

## MACHINE SHOP



Storage Solutions for Shop Floor

## ROLL-OUT

Mechanized racks for Sheets, Pipes and Moulds



Sheet Storage Rack



Bar Storage Rack



Mould Storage Rack

For more details log on to [www.metafold.com](http://www.metafold.com)

# Happy Clients



## OEM



## AUTO ANCILLARY



## AVIATION



## E-COMMERCE



## AUTOMOBILE







## INTERNATIONAL



## POWER/ENERGY



## FMCD / FMEG



## LOGISTICS



## AUTOMATION



## IMC / GOVT



## PUMP / GEARBOX



## AGRI



## PARKING



## CHEMICAL



## ELEVATORS



## PACKAGING



Creating<sup>®</sup>  
**space**  
within  
**space**



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