



MOFFETT

AUTOMATED STORAGE

AUTOMATED PALLET STORAGE SOLUTIONS



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MANUFACTURED IN IRELAND

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MAS BACKGROUND

In 2017, having spotted an opportunity in the market for an automated pallet storage system capable of achieving high storage density whilst also maintaining rapid throughput and pallet selectivity, managing director Sam Moffett and Director of Software, Joonas Ryyänen set about founding Moffett Automated Storage Ltd. With their combined experience in mechanical engineering and software development the first prototype system was designed and manufactured at the company's modern manufacturing facility in Clontibret, Co. Monaghan, Ireland in late 2017.

Since that time, we have successfully delivered automated turn-key projects providing pallet automation solutions to customers in a diverse range of industries around the world. We have the ability to create innovative solutions to the exacting and varying demands of our clientele. The mechanical equipment and software systems are designed, manufactured and supported by our in-house team.

OPT FOR AUTOMATION

With ever increasing demands on warehouse facilities there are a number of trends which will shape the future of the sector, not least of which is the huge increase in e-commerce. Competition for warehousing is at an all time high and this looks set to continue apace. The question now being posed by owners of traditional warehouses is how long is it before they upgrade to an ultra efficient sustainable 21st century automated pallet handling system?



The MOFFETT Name

We pride ourselves on the Moffett family tradition of engineering innovation which dates back to 1945 when Sam's grandfather Cecil Moffett set up business in a small workshop on the family farm in Clontibret, Co. Monaghan. Moffett Automated Storage Ltd. is firmly focused on continuing in that tradition and our customers can have peace of mind knowing our track record and commitment to providing solutions to their storage needs.



MOFFETT MOUNTY



STRADDLE CARRIER



COMBILIFT



AISLEMASTER

The MAS team

Customers do not just trust us to provide innovative and reliable automated storage systems. They also trust our experienced team and the expertise they have developed in the logistics and materials handling industry. We believe in investing in our people and bringing together some of the industry's top talent to consistently deliver the right result for our customers. We pride ourselves on the strength of our after-sales and customer support team who are available to resolve any issues within a 24 hour period. Client satisfaction is our core priority.



MOFFETT AS/R System

Our System - How it Works

The MOFFETT AS/R has reimagined automated pallet storage. We study the needs of each customer and provide a bespoke pallet storage solution.

The design of our equipment allows our taxis to move in X, Y and Z directions thanks to MAS VTUs (vertical transfer units) enabling them to travel between levels, allowing any taxi to carry any pallet to any storage space within the system.

Pallets are inbounded through a size and quality verification system which checks that the pallet size falls within the accepted tolerances before being taken to its storage space.

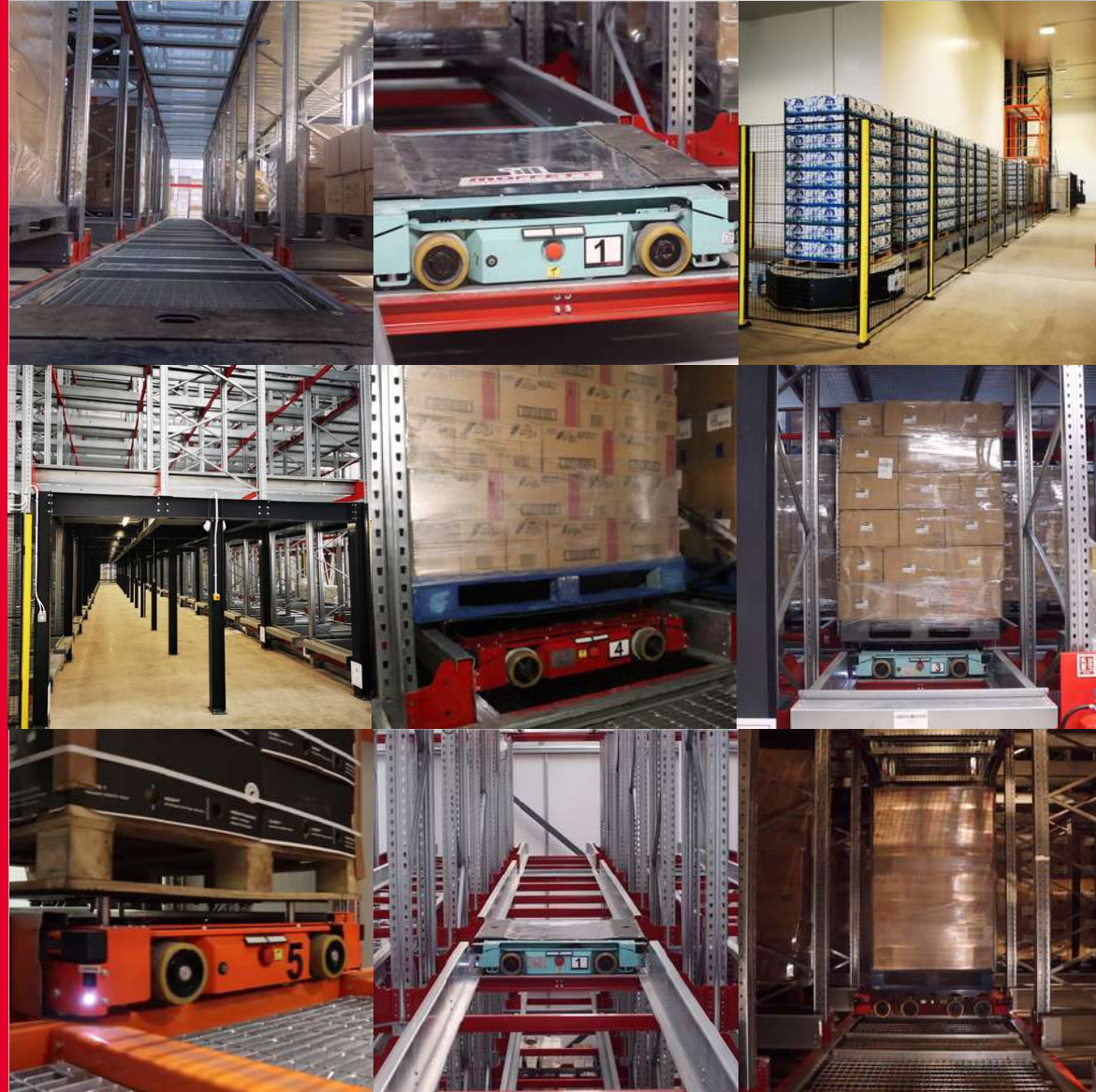
Each system is tailor-designed to meet the needs of each customer which may include order picking, accommodating peak periods of inbounding or outbounding, pallet buffering, integrating with different manufacturing processes or already existing storage technologies.



Key Benefits of Automation

Below is a list of the key benefits of the Moffett AS/R warehouse automation system:

- Increased storage density while maintaining optimum throughput
- Significant energy savings in cold storage
- No requirement for personnel in warehouse
- 100% stock accuracy
- Higher throughput rates
- Reduced factory lead times
- Less than 1% operational downtime
- Creating a more sustainable storage solution
- Reduction in labour requirements
- INDUSTRY 4.0 Ready
- Elimination of damage to product and racking
- Easily integrated into existing ERP systems
- Interconnected racking structure - ensuring total stability
- Pallet security
- Efficient and ergonomic order pick face system
- Long lifespan
- Super flat flooring not required
- Reduced salary overheads
- Turn-key solution fits existing warehouses

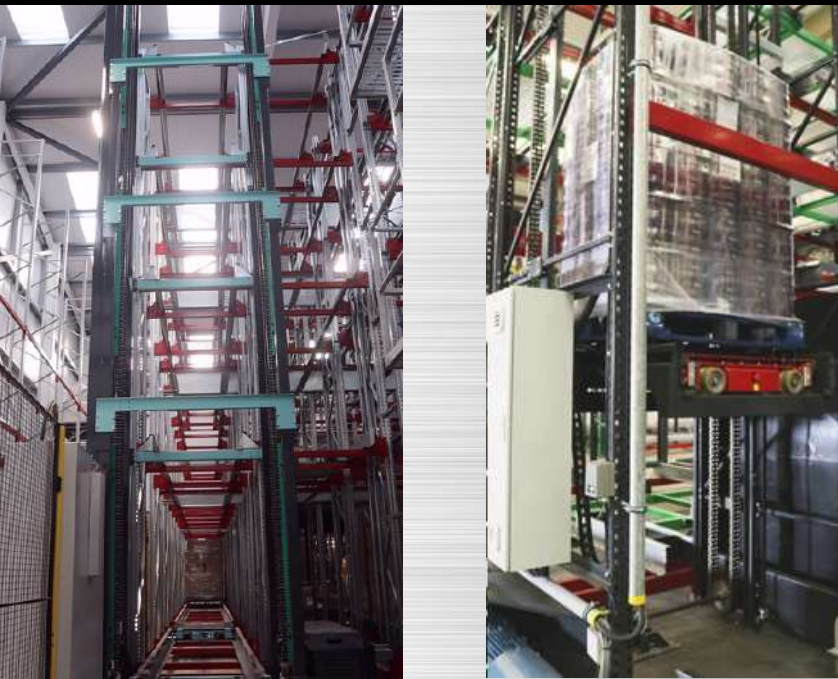


4D Taxi

The MAS 4D Taxi completely redefines the traditional pallet shuttle. Thanks to its clever design, the 4D Taxi can move in all directions and is capable of carrying heavy pallet loads up to 1500kg. A key feature of the system is that any taxi can take any pallet to any storage space allowing access for optimum utilisation of the system.



Scan to view the 4D taxi in action



MAS VTUs (Vertical Transfer Units)

To allow any Taxi to travel to any level to access any storage space, MAS VTUs are integrated into every system. Capable of carrying heavy loads up to 1500kg, MAS will design each system with enough VTUs to achieve the required throughputs. VTUs have no max height limitations and therefore can be installed in warehouses of any height up to 30m.

MAS Conveyors

To facilitate inbound and outbound pallet transportation from the storage system, MAS design, manufacture and install conveyor units. Each conveyor is tailor-made to meet customers' exact specifications and can also be integrated with existing processes within the facility, such as AGVs or existing conveyor systems.



MAS Designed Racking Structure

MAS have designed special inter-connected racking which accommodates existing pallet dimensions ensuring optimum storage density. The racking structure is designed and installed to a high tolerance, ensuring total accuracy and utilisation of the space available.



MAS Picking Tunnels

To allow for order picking, MAS can install pick tunnels and pick stations into each automated storage system. Products can be picked safely off pallets eliminating the need to outbound the full pallet. Our software team can tailor the picking stations to suit the demands of the business and auto-replenishment can be integrated which allows for the automatic changeover of pallets once they are picked to empty.



Pallet Buffering

In order to meet peak periods of inbound and outbound, MAS can designate areas around the inbound and outbound zones to accommodate pallet buffering.

This means that pallets are directed first of all to an area close to the inbound conveyor so that large volumes can be inbounded during peak periods and then taken to different storage locations during quieter periods.

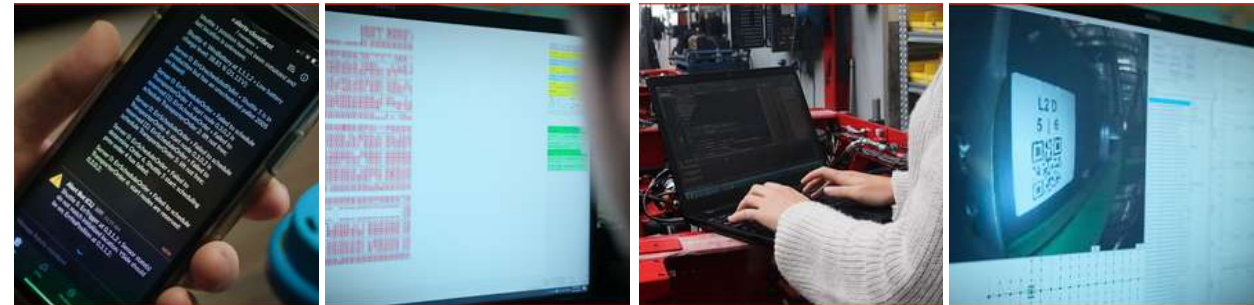
For outbounding, prepared orders are all transported close to the outbound area before the peak outbounding period so that the speed is greatly increased.



In-house Software

All the software for MAS systems is developed in-house meaning that our development and support teams work together in the same building. As every customer is different, MAS can ensure that the storage system is tailor-made to suit each individual customer's specifications.

Our WCS (Warehouse Control System) is integrated into existing WMS (Warehouse management system) to control stock and pallets and we offer front-end control of the system to display current storage capacity and stock levels.



Remote Access Support

All our systems are supported by our software support team based in Monaghan, Ireland. Our support team operates 24/7 ensuring that downtime is minimised.

The remote access support team maintains and supports live systems through a VPN for a rapid response. The support team also updates each live system ensuring that the most up-to-date software is running on all systems.



ERP/WMS Integration

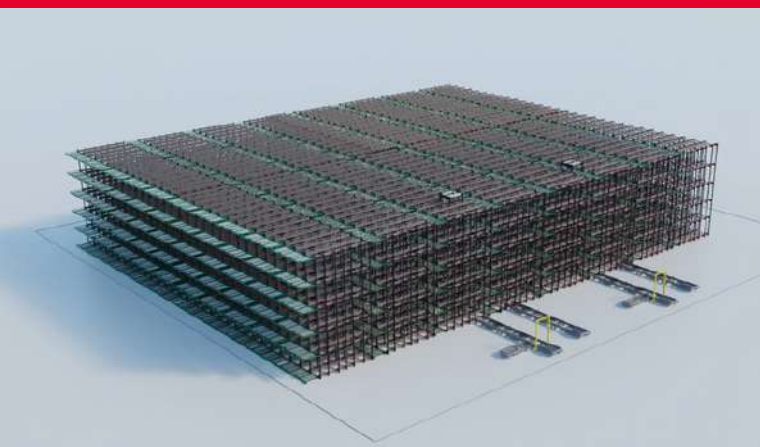
The MOFFETT WCS (warehouse control system) will integrate with all new or existing ERP or WMS thus ensuring more efficient stock control accuracy than with traditional storage solutions.

Thanks to our in-house software team, MAS are able to integrate with any ERP or WMS company.



Fully Scalable: Adding Taxis to increase throughputs

MOFFETT AS/R Systems are fully scalable. As business expands, and as throughput requirements increase more pallets can be moved by adding more taxis to the system. This is a quick and easy process which ensures that business growth is not hindered and that the automated storage system can expand and accommodate future growth.



Time to Delivery

The race to deliver goods as quickly as possible has become an unrelenting demand in the warehousing sector. Customers require their products as soon as they are ordered and it is up to the storage and logistics companies to deliver these products in a timely manner.

The MOFFETT AS/R system guarantees a very rapid pallet throughput. Our system is capable of operating 24/7, allowing distribution companies to maximise efficiency and reduce response time to delivery demands. Automation also guarantees lower labour costs, particularly when a warehouse operates 24/7.



Maximise Storage Space

Real estate close to shipping ports and prime locations can be expensive. To increase storage capacity without breaking new ground, warehouses are being built up rather than out. It is therefore vital that companies maximise the space in their warehouse and what better way to do it than by introducing automation. A MOFFETT AS/R System helps warehouse operators to increase their storage density and can be built to a height of up to 30 metres, adding up to potentially 60% more pallet spaces compared with traditional warehousing solutions within the same footprint.



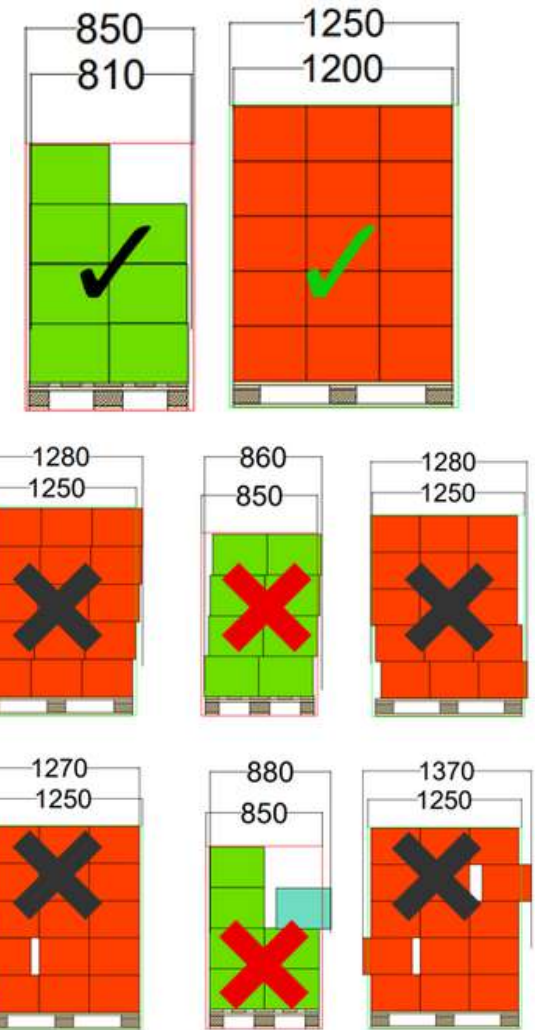
PRE-SALES CUSTOMER ANALYSIS

Pallet Overhang:

During the warehouse design process, MAS will carry out a scoping exercise containing certain information including exact pallet dimensions and overhang.

For the MAS system to recognise and accept pallets, pallets must be stacked in a way that the agreed pallet overhang is consistent. The system cannot organise and accept pallets when the pallet dimensions fall outside the specified overhang. This could be caused by a loose unaligned box or slanted pallets.

MAS can work with any overhang once it is agreed during the design stages as once the racking has been installed it is particularly difficult to change pallet overhang. MAS advise all clients to be aware of this and to ensure that the largest pallets to be used in the system is the pallet size the system is designed around.



SKU Analysis

As part of the scoping exercise MAS needs to understand the exact warehouse dimensions and product specifications and will send out a 'Request for Information' questionnaire to be filled in. The following information will be required:

- Number of SKUs
- Number of batches per SKU (if applicable)
- Average throughputs required
- Peak throughputs required
- Picking required
- Storage environment



Warehouse Layouts

Once the pallet details are available, the MAS warehouse planning team can begin to design the automated storage system. The information supplied will determine the amount of travel aisles, VTUs, 4D Taxis and conveyors that are required in order to meet the required specifications.



Cold Storage



The MAS 4D Taxi system can operate from temperatures of +50 degrees Celsius to -28 degrees Celsius. For cold storage operators, the MOFFETT AS/R System provides significant benefits, including;

- Elimination of need for personnel in cold storage, no one working in harsh environments
- Significantly reduced heat loss during transfers
- More pallets in same cooled area
- Reduced downtime due to no human presence in the storage area

Fun Fact: It would take just 5 people in a cold storage room to lose 1 kilowatt of energy

RAPID ENVELOPE DOORS

To help minimise energy loss when transferring pallets in and out of cold storage, we integrate rapid Envelope Doors. They can be much smaller than the doors used in traditional warehouses, as they only require to accommodate the dimensions of the pallet and taxi.



DUAL ACTING DOORS

In order to ensure no changes in temperature during pallet transfers, MAS can integrate airlocks into dual-acting doors when inbounding and outbounding pallets.



CONTINUE READING TO LEARN ABOUT SOME OF OUR INSTALLATIONS

Proof of our Excellence: Live Systems

3PL Coldstore in Ireland

Location: Monaghan, Ireland
 Commissioned: 2020
 Industry: Third-Party Logistics

This 64,800 sq ft warehouse is split exactly in two 32,400 sq ft operating using VNA aisles and VNA forklifts, with the other 32,400 sq ft operating using our MOFFETT AS/R System. The MOFFETT AS/R System delivers an increase of over 60% in storage spaces, 9,980 spaces compared to 6,250, and since this facility is operating in temperatures of -22 degrees Celsius, significant energy savings are achieved. In terms of labour needs, it takes 5 operators to operate the VNA layout which are fed with pallet trucks whilst only one operator and forklift are needed to operate the MAS layout.

System Specifications

- Taxis: 7
- VTUs: 2
- Racking Spaces: 9980
- Entry points: 1
- Exit points: 1
- Pallet Weight: 1300kg
- Outbound: 40pph
- Inbound: 40pph



Deoxygenated cold storage system in the Netherlands

Location: The Netherlands
 Commissioned: 2021
 Industry: Production

The system installed in The Netherlands is one of the busiest MAS systems with high throughputs achieved, allowing us to showcase to the world our innovation capabilities as the client demanded the ability to move high volumes of pallets. The incoming pallets are directly fed from the production into the MAS storage which operates at temperatures of -25 degrees Celsius. The system operates 24/7, 365 days per year. The customer also integrated deoxygenated cold storage eliminating the need for sprinklers in the warehouse.

System Specifications

- Taxis: 15
- VTUs: 3
- Racking Spaces: 12500
- Entry points: 2
- Exit points: 2
- Pallet Weight: 500kg
- Outbound: 97pph over 8 hours
- Inbound: 44pph over 24 hours



Proof of our Excellence: Live Systems

World's First Automated Banana Ripening System

Location: England
 Commissioned: 2020
 Industry: Banana Ripening

The system installed in England is the first fully automated banana ripening system in the world. This was an incredibly specialised project which MAS carried out in association with a ripening company. Completing this project allowed us to showcase to the world that we are an innovative company and can design systems for more than just a standard warehouse.

System Specifications

- Taxis: 8
- VTUs: 2 (chain drive)
- Racking Spaces: 1500 (25 rooms of 60 pallets)
- Entry points: 1
- Exit points: 1
- Pallet Weight: 1200kg
- Outbound: 42pph over 8 hours
- Inbound: 42pph over 8 hours



FRUIT RIPENING



Automated Storage System for major UK manufacturer

Location: England
 Commissioned: 2022
 Industry: Manufacturing

This system was a specialised project which included MAS installing a train-track like structure from the manufacturing building through a tunnel across a public road to the warehouse building. This allows pallets to be transported directly from one building to the other via MAS Taxis, resulting in a quick and easy storage solution for the customer. With a picking area on a mezzanine floor which allows specific orders to be put together quickly and efficiently, all aspects of the customer's needs are fulfilled by the Moffett AS/R System. This system has a number of entry and exit points which will become busier as the requirement for higher throughputs increase with continued growth.

System Specifications

- Taxis: 23
- VTUs: 6
- Racking Spaces: 14,186
- Pick Area Locations: 144
- Entry points: 6
- Exit points: 9
- Pallet Weight: 1200kg
- Outbound: 45pph
- Inbound: 44pph

MANUFACTURING FACILITY



Proof of our Excellence: Live Systems

Paint and DIY supplier

Commissioned: 2021

Located in the midlands of England, this 3100 pallet space system focuses specifically on order picking and preparation. One of the requirements of this client was the elimination of forklifts at inbound and outbound zones and to achieve this we designed the innovative MAS Pallet arm which allow a the pallets to be moved by a PPT (powered pallet truck) instead of a Forklift truck. A picking tunnel was incorporated into this system allowing the customer to meet picking requirements in a quicker and more efficient way than with standard warehousing.

System Specifications

- Taxis: 3
- VTUs: 1
- Racking Spaces: 3100
- Entry points: 1
- Exit points: 1
- Picking Tunnels Installed
- 1200kg Pallet Weight

Outbound: 30 pph

Inbound: 40 pph



3PL Ambient Warehouse in Ireland

Commissioned: 2018

With 3325 pallet spaces, located in Dublin, Ireland, this system was the first commercially installed MOFFETT AS/R system in the world. Picking tunnels have been installed in this system to allow for easy order picking.

System Specifications

- Shuttles: 3
- VTUs: 2
- Racking Spaces: 3325
- Entry points: 1
- Exit points: 1
- Picking Tunnels Installed
- 1200kg Pallet Weight

Outbound: 30 pph

Inbound: 40 pph



Sustainable Warehousing

Sustainability is the buzzword of our times. It applies to all aspects of our lives in the 21st century. The warehousing sector, like all others, has to address this urgent issue and the imperative of 'going green'.

The MOFFETT AS/R system has been created with this very much in mind and is fast becoming the 'go to' sustainable solution for warehousing companies and in particular cold storage and freezer facilities. These consume more energy than ambient warehousing and with the Moffett AS/R system no space is wasted and more storage is available on the same footprint.

The energy required to cool the storage area remains the same while the number of pallets being cooled is greatly increased, sometimes by as much as 60% as compared to standard racking. Additionally people, forklifts and lighting create heat thereby wasting energy and putting extra pressure on refrigeration systems. Heat/chill loss is further improved by integrating envelope doors into the system thereby minimizing temperature changes as pallets are fed in and out of the system.

Another potential way of decreasing the environmental footprint of cold storage is by installing an oxy-reduced system. This reduces the oxygen content in the air of the warehouse eliminating the need for sprinklers and maximising use of all space in the warehouse. MAS has successfully installed this in a cold store as part of a recent project, finding that it has helped improve the overall efficiency of the system and has led to overhead cost reductions for the customer. This also allows for the maximisation of the height of the structure without jeopardising high-level safety standards.



Why become a more sustainable warehouse?

For us at Moffett Automated Storage, the question isn't why become a more sustainable warehouse. The question is Why Not?

For the following reasons the Moffett A/S R automation solution is the key to 'going green' in the warehouse management business:

1.Reducing your Operational Costs:

Reduction in operational overheads with lower labour and energy costs than with traditional warehousing set ups.

2. Ensuring the quality of your product:

Reduction in manual handling and use of materials handling equipment resulting in less product damage caused by human error.

3. Maximising your warehouse productivity:

The possibility of increasing the number of pallet spaces in the warehouse as the result of eliminating the need for aisles means better space utilisation. Pallet throughput can be varied by adding additional taxis depending on demands on the business at any given time.

4. Significantly Reduced Energy Costs:

No lighting is required in the warehouse as there is no need for personnel to be working within the building. This represents a significant cost saving. Additionally in a conventional cold store there is huge energy loss when the entrance door has to be large enough to accommodate a forklift entering and exiting all day. With the Moffett AS/R system, the door only has to be the size of the largest pallet and we can install envelope doors that work to minimise the energy loss during pallet movements. These features all contribute to overhead energy cost savings.

5. Reduced Waste Production:

In conventional warehouses utilising forklifts, waste can result from re-packaging and product loss due to damage and mishandling. An automated warehouse eliminates the need for most heavy machinery reducing the likelihood of product damage and loss. A MOFFETT AS/R system can retrieve and transport pallets safely and smoothly across the system ensuring less plastic stretch wrap consumption as securing the pallet is less of a concern.



Labour Savings

How automation reduces labour requirements, ensuring businesses maintain their competitive edge.

- Reducing the number of personnel needed to run the facility results in huge cost savings over the long term.
- Improved Health & Safety compliance
- 24/7 Warehouse Operation
- Low cost operators

Lower Labour Requirements:

The Moffett AS/R is easy to operate, and warehouse operators can be trained very quickly to use the system. MAS supply a user-friendly interface to ensure smooth hassle-free operations

Increased Health & Safety Compliance:

With the MAS system forklifts are not required in the warehouse thereby reducing the risk of accidents. Thanks to the newly developed MAS pallet arm, all that is required is a PPT for pallet handling. All MAS components have CE Certification ensuring that they meet the highest international engineering and safety standards.

24/7 Availability:

A major benefit of installing a Moffett AS/R system is the opportunity to change warehouse working times to run 24 hours a day, 7 days a week with no increase in labour costs. As less labour is needed, the need for shift working hours is reduced compared to a traditional warehouse operating 24/7.



Warehouse Safety

As a workplace, the warehouse can be a dangerous environment with a number of different risks that can cause accidents. According to the Health and Safety Executive in the UK, a worker in the transport and distribution sector suffers a serious injury as a result of the manual operation of warehouses every single day of the year. Vehicles such as forklifts colliding when entering or leaving an aisle, trucks overturning and machines colliding with pedestrians within a warehouse, are among the most common type of accidents recorded. Warehouse operators are also required to work at great heights, whether it be operating machinery that can lift to these heights, or needing to manually pick boxes on upper levels of the racking. This requires skilled individuals with the necessary training to operate these vehicles. Moffett Automated Storage, and our 4D Taxi system, is helping warehousing companies to reduce these risks, and in turn, produce a more efficient storage solution.

No requirement for heavy materials handling equipment in the warehouse operation

With a MOFFETT AS/R System, there is no need for heavy machinery such as forklifts in the warehouse. Thanks to MAS equipment, a PPT is sufficient to handle pallets both at inbound and outbound stations. Without the need for heavy machinery and large vehicles, the risk of an accident is greatly reduced, as is the requirement for highly skilled and trained operators. And with the current shortages in warehouse operatives, it is a huge benefit to companies that candidates who are less skilled will be able to operate the system and also that fewer operatives are needed to efficiently manage the system compared with standard warehousing.



No More Forklifting Pallets to Heights

The MOFFETT AS/R System requires no further handling within the system. Once the pallet is placed at the inbound point, the pallet requires no further intervention until the order is requested for outbound and the pallet taken out of the system. No human intervention, either physical or by operating a vehicle is needed to transport pallets to spaces or to move pallets at heights. This greatly reduces the risk of an accident. MAS systems can be built up to 30 metres high, maximising the space available in the warehouse whilst also ensuring a much safer working environment for employees.

And if human interaction is required for repairs, all levels of MAS racking have access platforms and grating to ensure the safety of maintenance teams when operating at heights.



Tied Together Racking - No Risk of Collapse

When pallet racking collapses, it can cause huge monetary losses, damaging stock and causing business interruption while also posing a threat of serious injury to anybody present at the time of the collapse. With a Moffett Automated Storage system, the racking is all tied together as one structure, which eliminates the risk of collapse. The MAS system also does not need a “super flat” floor and only requires to be of FM2 tolerances.



INDUSTRY 4.0

Industry 4.0 takes what was started in the third industrial revolution with the adoption of computers and automation and enhances it with smart and autonomous systems fuelled by data and machine learning. The phrase was first used in 2011 but is seen by many as the future of manufacturing and industry processes.

MAS 4D Taxi System: Industry 4.0 Ready

The MOFFETT AS/R System is one of the world's first warehousing solutions which does not require human intervention. Once the system understands the warehouse order processes, with our in-house software, pallet movements are automatically updated and each order is positioned so that it can be processed as efficiently as possible.

Multiple Taxis operate around the system at the same time, and our taxi traffic management system ensures that there is never a collision between vehicles. During peak periods the taxis will store pallets on spaces closest to the inbound/outbound area and then during quiet periods the taxis rearrange these pallets to be stored in spaces that will ensure the system can run at its most efficient speed, guaranteeing optimum throughputs.

The taxis are smart, using our “opportunity charging system” which means the taxi travels to a charging space during quiet periods in the warehouse. Unlike other shuttle systems, our taxis have the ability to move between levels and in all directions, meaning any particular taxi on the system can reach any pallet space on any level.

With companies struggling to keep up with labour costs and demands, yet wanting to maximise the pallet spaces in their warehouse and deliver optimum throughputs, the MOFFETT AS/R System allows warehouse operators to take advantage of what INDUSTRY 4.0 can deliver and to be the most cost competitive operators in their sector.

CONTACT US

To learn more about our systems, to understand the feasibility of automating your warehouse, or to make an enquiry, please visit our website moffettautomatedstorage.com or email us at info@moffettas.com



<http://moffettautomatedstorage.com>



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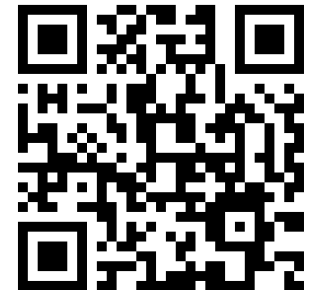


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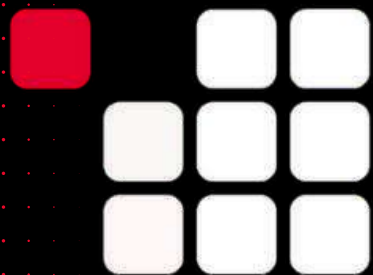


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