



AUTOMATED STORAGE & RETRIEVAL SYSTEMS

**OUR INNOVATION
YOUR SOLUTION**

UNDERSTANDING THE POTENTIAL BROUGHT TO YOU BY AUTOMATED WAREHOUSING SYSTEMS



Quality, reliability and flexibility are what define a Westfalia automated storage system. Full in-house manufacturing and software development ensure we control the project from beginning to end.

We begin by protecting the pallet that our equipment must handle by triple supporting it at all times. Triple support eliminates deflection and ensures we can live up to our promises of **reliability**. No excuses, no compromises.

Your business may change, and so can we. Features like dynamic pick lanes, integrated order selection tunnels, and multiple cranes in one aisle provide **flexibility** unmatched by our competitors.



Modern warehousing systems are required to process increasingly complex tasks and provide reliability and flexibility for future needs. Automated Storage and Retrieval Systems (AS/RS) present a unique opportunity to significantly cut labor, electrical and other operating costs, and raise customer service levels.

Westfalia's flexible AS/RS' ensure the ability to adapt to changing market conditions. We are the "one source" for planning, designing, manufacturing and installing material handling systems for new and existing facilities.

Selecting the optimal storage configuration depends on numerous factors: product data, load weights, load sizes, speed and throughput rates, storage capacity, order picking requirements, and space restrictions. These must be analyzed together to lead to the appropriate system solution.

We have profound market knowledge amassed over many years in a variety of industries. We supply automation to manufacturers, processors and distributors for all types of loads and temperature ranges.

- High density storage systems
- Double-deep storage systems
- Single-deep storage systems

FLEXIBLE HIGH DENSITY STORAGE SYSTEMS MEET YOUR NEEDS NOW AND INTO THE FUTURE



Satellite® storage to 12 pallets deep



Integrated pick tunnel



- Maximum warehouse densities
- Patented Satellite® technology
- Fast and smooth access

To store large inventory levels per SKU economically and reliably, look no further than Westfalia's High Density AS/RS with **Satellite® technology**. Our patented Satellite® load carrying device quickly and smoothly transports loads in and out of the storage racks. Our engineers break through the barriers of standard designs, opening new opportunities for higher productivity, better space utilization and greater economic justification.

Westfalia's unique design allows one S/RM to access an almost unlimited number of pallets or loads. In addition, it automatically links large amounts of reserve storage to a pick module. without aisle to aisle transfers.

The ability to store 1 to 12 pallets deep without numerous aisles allows planners to use available land and space more effectively. This generally reduces construction costs and ensures investments are directed towards enhancing productivity, not concrete and steel.

High density AS/RS have **tremendous operational cost savings** such as reduced energy consumption and labor expenses. Our clients typically save up to 30% in energy costs when operating refrigerated and frozen warehouse facilities.

INNOVATION IN COMBINING SINGLE-, DOUBLE- AND MULTIPLE-DEEP STORAGE SYSTEMS



Single-deep storage



With a repertoire of Single-Deep and Multiple-Deep systems, Westfalia can bridge the gap between space restrictions and flexible design.

When inventory levels per SKU (stock keeping unit) are low and all pallets must be instantly accessible, a **Single-Deep AS/RS** is often the appropriate solution. Single-Deep Storage Layouts provide direct retrieval of all units stored from either side of a Storage/Retrieval Machine (S/RM) aisle.

Double-deep storage



Double-Deep storage layouts retrieve loads stored two-deep on either side of an S/RM aisle. They are ideal for higher inventory levels per SKU.

Westfalia's Single- and Double-Deep solutions utilize **Telescopic Satellite® rack entry vehicles or Telescopic forks** with a variety of modifications to fit any load – paper rolls, pallets, totes, etc.

- Fast storage and retrieval
- Direct access
- High flexibility

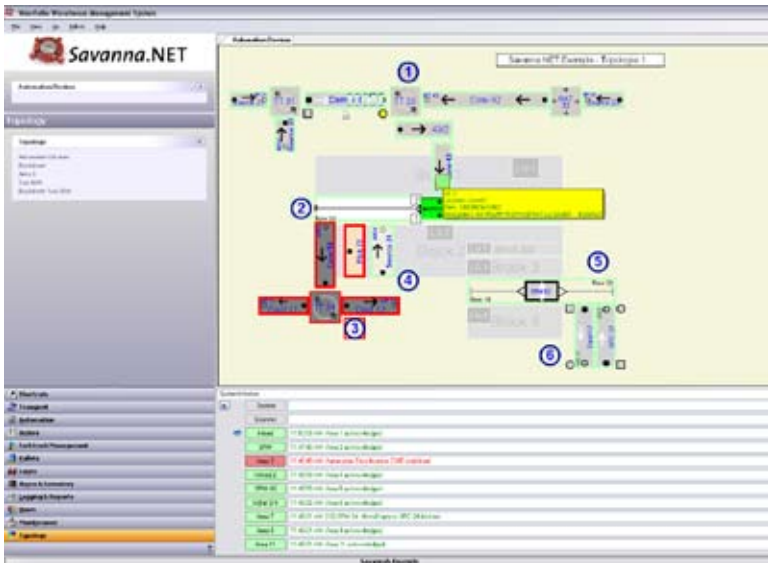
ALL MOVEMENTS CONTROLLED BY SAVANNA.NET® MODULAR SOFTWARE



Innovative solutions from Westfalia, such as **order selection tunnels and accumulation conveyors** within the rack structure, can all be controlled via the WMS.

Order-picking technologies such as Pick-to-Light, Pick-by-Voice or Wireless/RFID only start to become efficient when integrated into *Savanna.NET*®. Our software is both MS Sequel Server and Oracle compatible.

For companies using an existing WMS or ERP software our basic **Material Flow Control System (MFCS)** may be sufficient. The MFCS controls all the automated processes -- conveying, AS/RS, etc. -- and links to your host system.



- Instant accessibility to data via grid views
- Controls all machinery and peripheral devices
- Integrates with wireless communication platforms for order selection

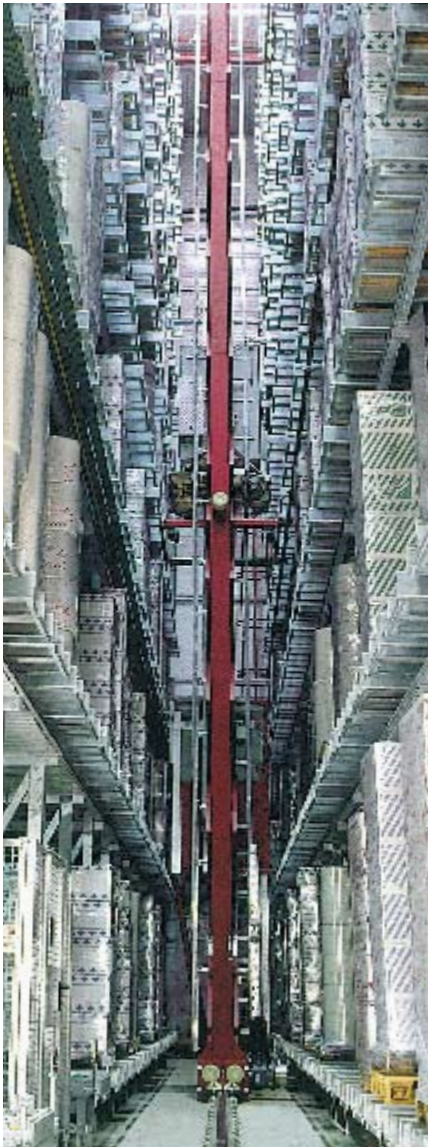
Westfalia's **Savanna.NET® Warehouse Management System (WMS)** is the power behind our AS/RS's. A modular WMS software system, *Savanna.NET* provides unparalleled control of all product flows, maximum system flexibility and unprecedented user-friendliness. Its tab style user interface is designed for users of all computer literacy levels. Because users navigate by objects rather than actions, tasks are completed faster and training time is reduced.

With its flexible modular structure, *Savanna.NET* can be adapted to all individual logistics requirements, and can be easily integrated into new or existing systems. It consists of a **core system (.base)** that can be extended with a variety of logistical application modules.

Customers can invest in only those functions they really need. Additional modules can be added later as needs change, allowing companies to expand their systems incrementally as their business changes.

Savanna.NET is based on Microsoft C#.NET technology. It offers a broad spectrum of interfaces to ERP systems, web interfaces and PLC systems.

STORAGE AND RETRIEVAL MACHINES OF THE HIGHEST CALIBER



Westfalia's **standard heavy-duty double mast crane** assures long life and minimum wear to crane rail and crane components. Dual drives on both the horizontal and vertical axis of the S/RM reduce motor size requirements, creating a more maintenance friendly machine. All moving parts are at or below five feet for easy access.

Regenerative braking option allows power to be injected back into the power grid during deceleration, thereby reducing electrical costs. With numerous load carrying devices such as single and double deep forks, standard Satellites, and special Satellites for weights up to 16,000 pounds, Westfalia can **store almost any load**.

S/RMs are thoroughly tested on our test track before shipping to your warehouse to guarantee the highest quality standard. Controls options include Allen-Bradley and Siemens.



Step 1 – The Storage/Retrieval Machine (S/RM) moves on a crane rail within the aisle

Step 2 - ...and positions the vertical carriage (which supports and carries the Satellite® load carrying device) in front of a storage lane designated by the *Savanna.NET*® Warehouse Management System.

Step 3 – The Satellite® enters the lane to store or retrieve a load.

Step 4 - The Satellite® drives back to the S/RM with the load.

In all Westfalia **Storage/Retrieval Machines (S/RMs)** there are numerous technical components to ensure proper safety and reliability. Sturdy double mast construction, optional redundant drives, load shift plates, soft start and stop as well as fine positioning technology that is accurate to 1 mm, ensure quality and reliability.

We engineer our S/RMs for special requirements by fitting them with individual load handling devices such as telescopic forks, or Satellites, which are used for multiple deep applications.

Ranging from the smallest load sizes (totes) to platforms capable of handling a 16,000 pound self storage module, Westfalia is capable of handling all types of applications. Whether it be in an **ambient, refrigerated or frozen environment** our durable systems provide flexible solutions for some of the toughest warehousing challenges.

- Triple rail support of loads throughout system
- Designs for higher throughputs and full redundancy
- Wireless communication with WMS

CONVEYOR SYSTEMS - AN INTEGRAL PART OF YOUR AS/RS



Automated order accumulation



Automated AS/RS loading/unloading



Cranes and racks alone don't make an AS/RS. You need a well engineered, comprehensive delivery and put-away system. Westfalia's line of heavy duty conveying systems is designed to handle the demands typically encountered in 2- and 3-shift operations.

Westfalia's **air-chain conveyor** is the heart of our equipment line, providing zero pressure accumulation without the many drives or clutches common in competing designs. This proven method of pallet accumulation ensures an economical buffer between machinery, streamlining material flow and absorbing product surges.

Westfalia designs and manufactures all our conveyors in-house. Depending on the load carried, standardized or individually engineered conveyor systems are used. Built to last, our durable, powder-coated conveyors are available in both mild steel and stainless steel. Westfalia's conveyors are capable of handling almost any size pallet, including CHEP, GMA, and USPS. In order to guarantee a reliable flow of materials, squaring and profile check stations are integrated into the system.

- Flexible and easy system integration
- Rugged, reliable equipment
- Tested at our facility

WESTFALIA'S PEOPLE ARE COMMITTED TO YOUR SUCCESS



At Westfalia, we view ourselves as an **active partner** in your success at every stage of the project: design, manufacturing, installation, commissioning and maintenance service.

Working together and respecting our customers wishes allows us to build long term relationships. The qualifications and openness of our staff guarantee a great project experience.

Westfalia's **service programs** include a 24-hour/365-day hotline, preventative maintenance, inspection packages, individual spare part management and numerous options for scheduling plant maintenance.

Production



Assembly



From the moment you begin to consider a warehouse improvement or expansion, Westfalia is your reliable and innovative partner. Once a project comes to our attention, our **in-house team of mechanical, electrical and software engineers** begins scrutinizing your inventory data to find the best automated warehouse solution to fit your needs. At each step of the process you benefit from the years of logistical expertise of our staff.

Once a warehouse design is completed and approved, our **hands-on project management team** ensures smooth project implementation, coordinating the complex integration of automated system technologies, and communicating with you every step of the way to ensure your satisfaction.

- Experienced team of mechanical, electrical and software engineers
- 24/7/365 Service Plans
- Unsurpassed quality



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