



## INDUSTRIES OVERVIEW

### WAREHOUSING & DISTRIBUTION

Interroll helps Warehouses and Distribution Centers save up to 50% space and energy.







## MANUFACTURING PLANTS

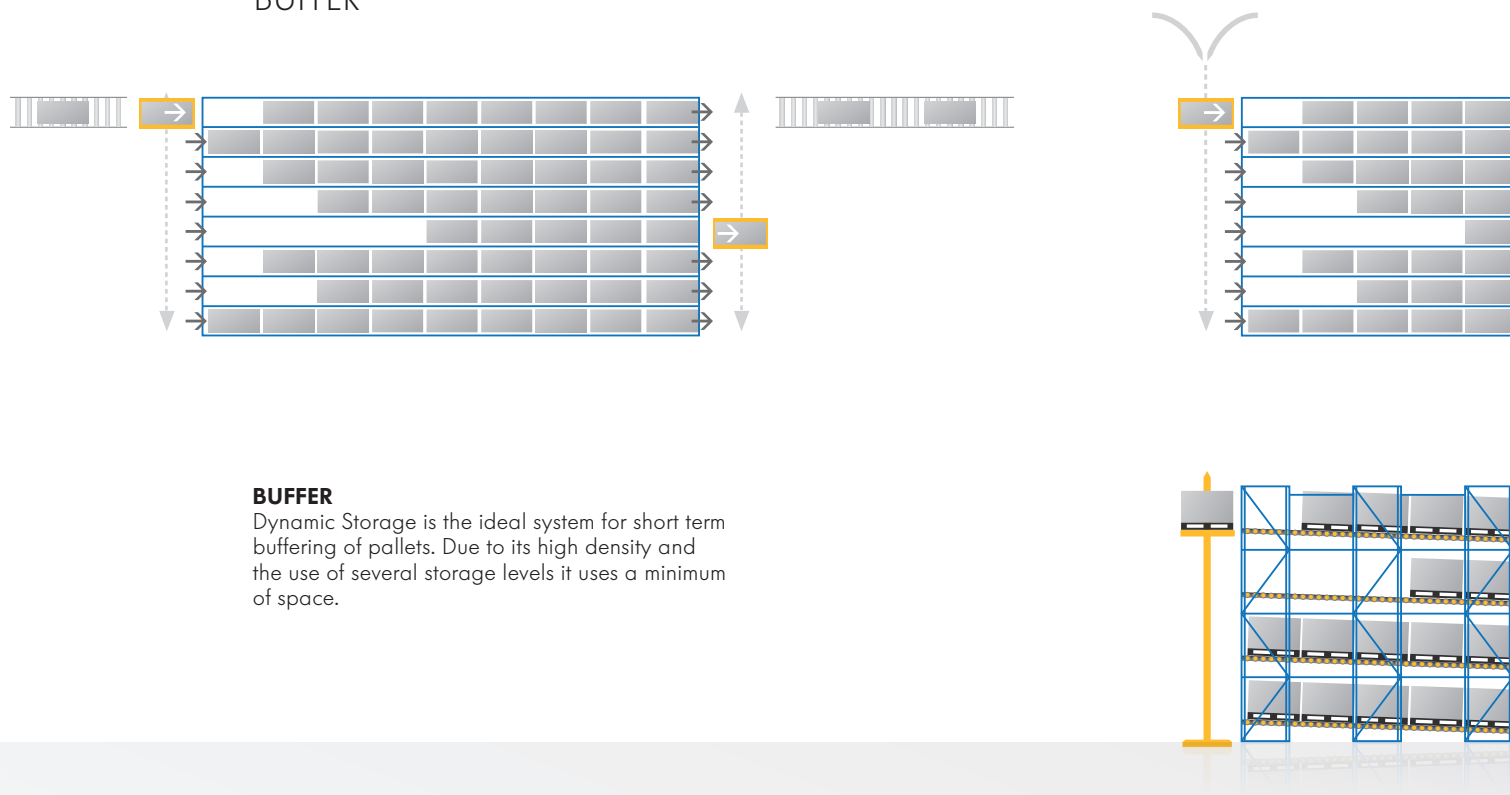
Conveying and storing goods in an efficient and effective manner is key to increasing productivity for any manufacturing plant, and this is exactly what Interroll Dynamic Storage does best.



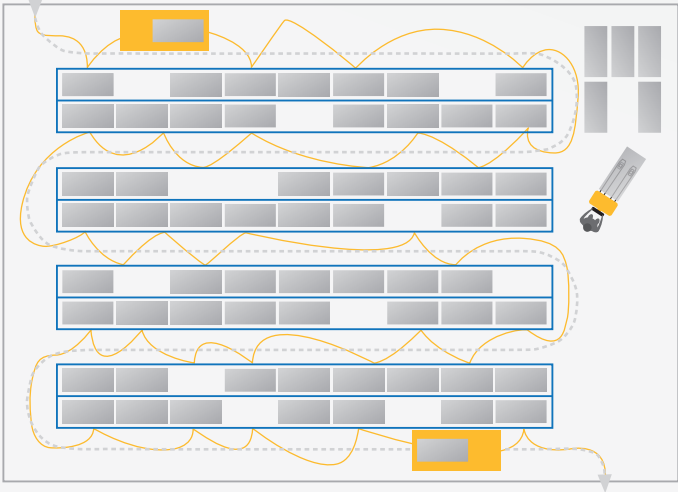


# OPTIMIZED SPACE UTILIZATION

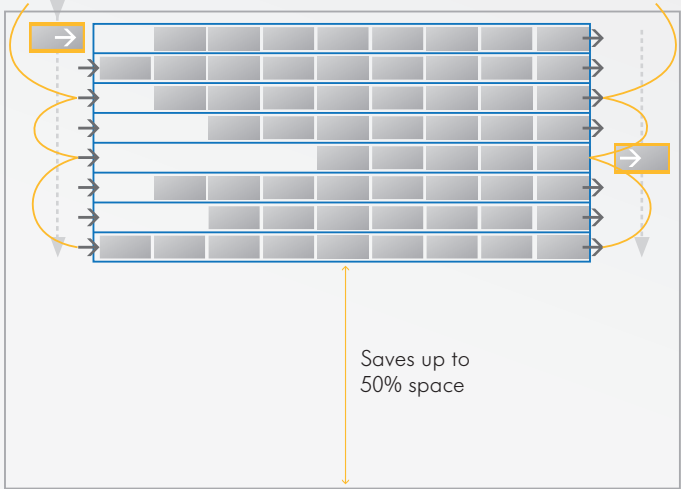
## BUFFER



**BUFFER**  
Dynamic Storage is the ideal system for short term buffering of pallets. Due to its high density and the use of several storage levels it uses a minimum of space.

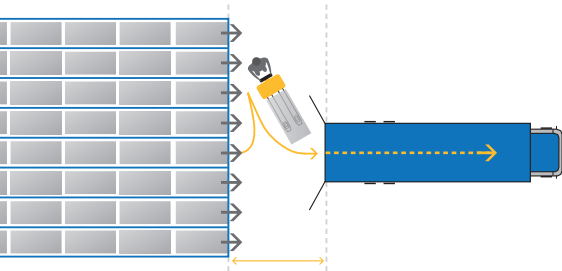


CONVENTIONAL DISTRIBUTION CENTER



COMPACT FIFO DESIGN

## DISPATCH



### DISPATCH

For fast loading of trucks, Interroll Dynamic Storage can be used as a multi-level dispatch point. Each channel contains one complete truck load. The channels are automatically loaded by a stacker crane with mixed pallets for each delivery. The loading of the trucks is normally carried out by a forklift truck.

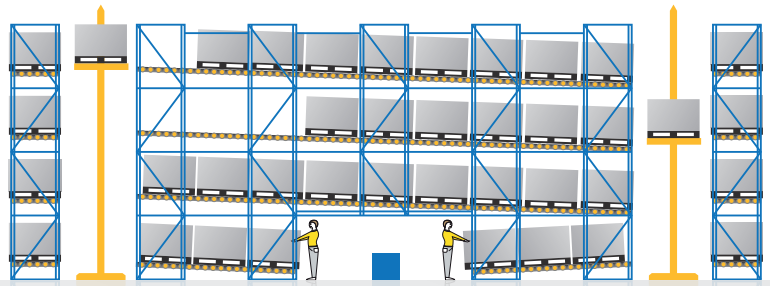
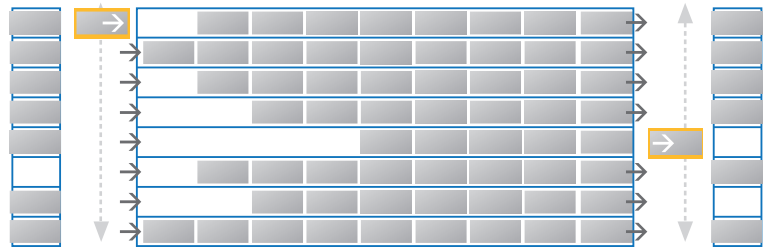
Interroll Dynamic Storage solutions save up to 50% space and reduce travel distances up to 80% with compact, high-density FIFO solutions using separate input and output aisles.

Interroll Dynamic Storage systems are space saving and compact – there are no intermediate aisles, only one input

and one output aisle. All products are available by the shortest route in gravity lanes.

A conventional system needs twice as much space and more aisles, meaning 7 or 8 times greater distance for the operators to travel. Consequently, more forklift truck drivers are needed,

## ORDER PICKING TUNNEL



### ORDER PICKING TUNNEL

There are no replenishment trucks in the picking aisle, enabling operators to work in a safe environment. The tunnel allows quick order picking from both sides of the aisle. Reserve pallets are always available just behind the pallet being picked from. Stacker cranes will automatically supply pallets to the picking tunnel. Buffer pallets can be stored in single racks on the outer edges to increase utilization of Dynamic Storage lanes.

and retrieval and dispatch take longer. Therefore, customers can benefit from our fast and most cost-effective distribution systems for assorted products. This allows them to reduce operational costs and save money.



## FAST & SAFE OPERATIONS

### FIFO CONCEPT

- FIFO = First-In First-Out  
(the first pallet loaded will be the first pallet available at the unloading side).
- Ideal for perishable goods.
- For fast mover products.



### LIFO CONCEPT

- LIFO = Last-In First-Out  
(the last pallet loaded will be the first pallet available in the front).
- Increase storage density close to a wall or on a mezzanine.
- High occupancy rate 80% - 95%.
- One batch per delivery.

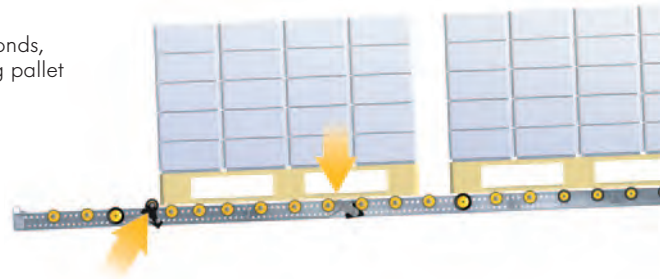


**STEP 1**

20 seconds delay  
when pallet is lifted

**STEP 2**

After 20 seconds,  
the following pallet  
is released

**NEW SAFETY SEPARATOR WITH  
TIME PLUS FUNCTIONALITY**

On lifting the first pallet to remove from the order picking face, there is a 20 second delay before the separation device releases the next pallet in line. This gives the forklift truck driver all the necessary time to unload the pallet safely before the second pallet is released. As a result of the pedal-less system, there is no longer pallet lift up height restriction for the truck driver, which is especially crucial and useful, for the forklift truck driver, when working at high levels with restricted visibility.



## REDUCED ENERGY CONSUMPTION



The decision to build a new warehouse or retrofit an existing one is influenced by several factors: floor space requirement, investment costs, as well as operating costs.

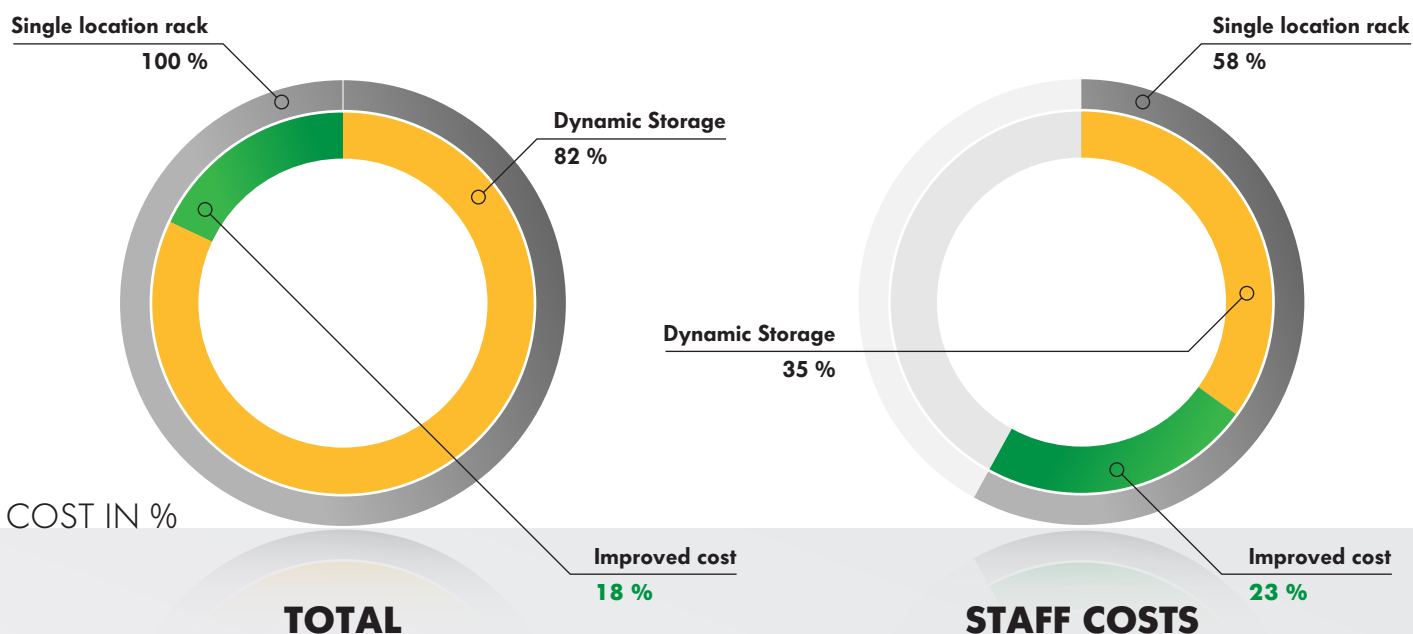
A study on Warehouse Systems by the Universities of Leibniz, Germany and Nanjing, China, compared traditional single location racking to Dynamic Storage systems.

After running several simulations, taking into account all different kinds of factors and variables such as the temperature of the warehouse, the dimensions and weight of the load units being stored and staff costs, the results were clear and unmistakable: Dynamic Storage systems are much more energy-efficient and help to reduce your energy bill significantly.





TOTAL IMPROVED COST,  
REACH TRUCK, 5000 LUS, 150 LUS/H,  
NORMAL TEMPERATURE.



First of all, gravity is used in Dynamic Storage systems to transport the load units: there is no need for drive motors nor control and regulation work. This clearly reduces the need for energy.

What's more, the shorter distances traveled when operating a Dynamic Storage system reduce the need for floor transport vehicles and staff, not to mention shorter distances mean less gas / electricity consumption and less wear and tear of

the vehicles, which all translates into major savings.

On top of that, less energy is required to heat or cool a warehouse due to the smaller structural volume of Dynamic Storage systems, whilst retaining the same capacity.

In cold stores, and especially in refrigerated warehouses, this constitutes a significant benefit in terms of cost.



## PRODUCT PORTFOLIO

### PALLET FLOW



**YOU'VE GOT THE PALLET,  
WE'VE GOT THE SOLUTION.**

#### INTERROLL PALLET ROLLER FLOW PF 1120 / 2120

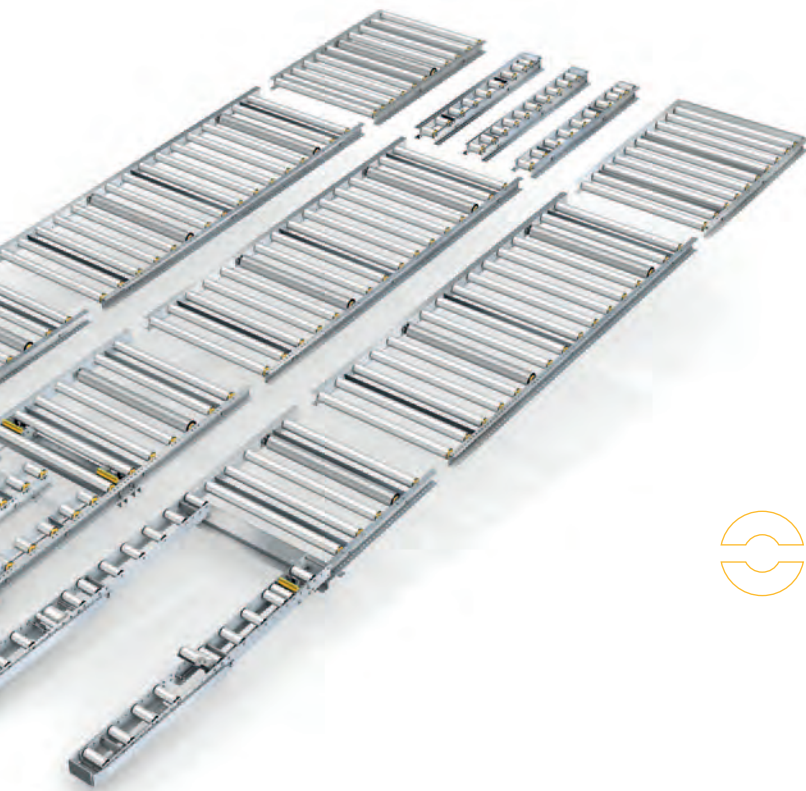
##### **Main features**

- Dynamic Storage modules for lanes of up to 41 pallet positions.
- Integrated safety separators and speed controllers.
- Solutions for both FIFO (First-In-First-Out) and LIFO (Last-In-First-Out) applications.
- Solutions also for special pallets and crates.

For LIFO applications, Interroll developed its LIFO Speed Controller, which operates without resistance during the storage process and only transfers its brake force to the pallets to be unloaded.

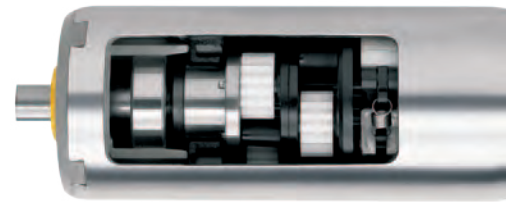
##### **This means**

- Enhanced safety.
- Greatly improved stock turn and significantly longer service life than with standard controllers.
- Standard controllers can be easily replaced by LIFO Speed Controllers in existing storage systems.



#### **SPEED CONTROLLERS.**

Invisibly integrated into the roller to regulate the speed of passing pallets of various weights up to 1,250 kg. The heavier the weight, the greater the braking effect.



### THE MOST IMPORTANT FUNCTIONAL ELEMENTS OF THE INTERROLL DYNAMIC STORAGE SYSTEM

The wide variety of products manufactured and distributed each day makes it impossible to use the same packaging and carriers.

For example, there are double pallets side by side or front to back, lengthways and cross way transport, Euro pallets, beverage industry pallets, half pallets and skeleton containers etc.

The turnover of goods determines the order picking logistics which then determine storage, transport and unloading techniques. We build the ideal modules and components for all situations.



#### **PROVEN CONVEYOR ROLLERS.**

Sealed against dust and equipped with high quality ball bearings, these rollers guarantee a long life for your Interroll Dynamic Storage system.



## CART PUSH BACK



INTERROLL  
CART PUSH BACK  
PF 2440 / 2430

**VERSATILE AND ROBUST SOLUTION  
FOR LIFO APPLICATIONS.**

### **Main features**

- Slide-in carts to handle a diverse range of storage containers and load carriers: pallet movements are operator assisted using gravity.
- Designed for the efficient deep-storage of two to six pallets in Last-In-First-Out applications.
- More storage levels – ultra-flat cart design.
- No forklift activity in rack storage lane.
- Can also be used for buffer purposes, i.e. for the interim storage of goods later to be transferred to dynamic FIFO-based systems.



INTERROLL  
CARTON WHEEL FLOW  
CF 1211 / 1212 / 1213 / 1510

**Main features**

- Multilevel beds with ergonomic features including drop-out trays/carton tilt.
- High capacity rollers made from high density polyethylene.
- Can be easily integrated in existing installations, e.g. pallet lanes.
- A variety of options obtainable.
- Wheel track solution available.
- Can be comfortably combined with conveyor solutions.

Interroll offers global solutions for order processing, picking and conveying (e.g. Interroll Intelliveyor).

**PICK KING IN ANY INDUSTRY.**



## CARTON FLOW

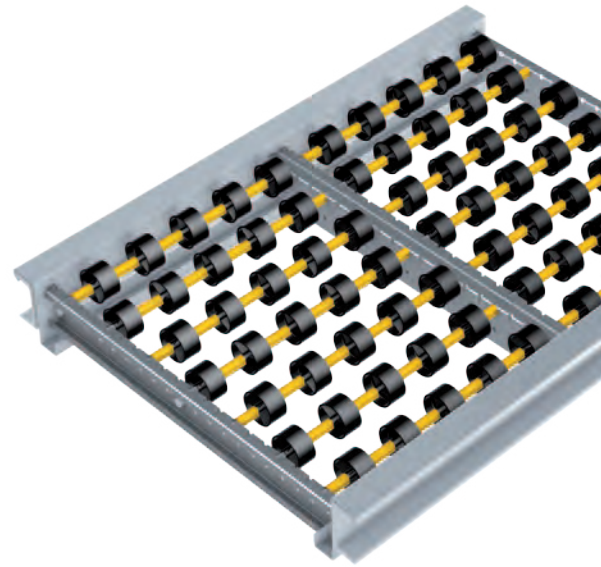
**FIFO LIGHT.  
FOR TOTES,  
TRAYS AND  
CARTONS.**



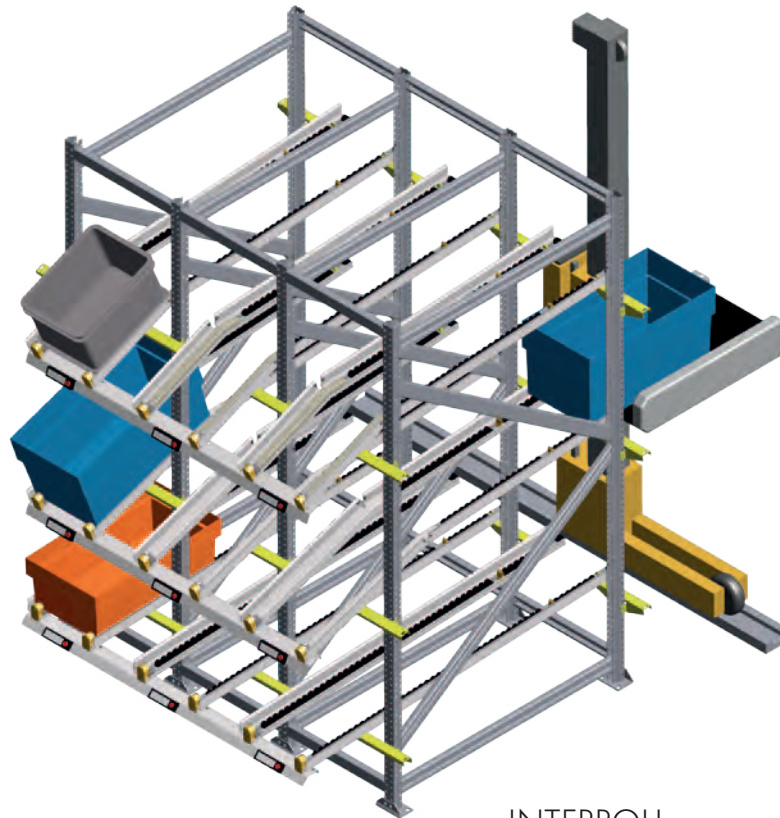
INTERROLL  
CARTON ROLLER FLOW  
CF 1120

### **Main features**

- Designed for loads in the medium weight category.
- Equipped with a continuous row of aluminum rollers in sturdy side profiles.
- Retrofitting: conventional racking can be transformed into a state-of-the-art Dynamic Storage system – in a few simple steps.



**THE SPECIALIST  
FOR VARYING  
TOTES' WIDTHS.**



INTERROLL  
CARTON VERSI FLOW  
CF 1300

## Main features

- Designed for loads in the low to medium weight category.
- Equipped with polycarbonate wheels, separated by spacers.
- High density storage with up to 90% space utilization.
- Light weight lanes: ideal for retrofitting in existing selective racking.
- A variety of wheel pitches available.

INTERROLL  
MINI LOAD SYSTEM

## Interroll developed a new Mini-Load System

- Only one design suitable to all box type.
- Load capacity up to 45Kg.
- Easy and fast cleaning process (no tools).
- Ergonomic design (« smooth » end stop + Drop-out Tray 10° and 20°).
- Back stop integrated into the tracks.
- Re-feeding device integrated into the tracks (to maintain box at loading position to re-feed it into the storage with stacker crane (forks necessary)).
- Wide temperature range (up to -28°C).
- Suitable to all racking design (retro fitting).
- Compatible with all stacker crane loading methods (driven belt or roller & forks).
- Compatible with Pick to Light systems.

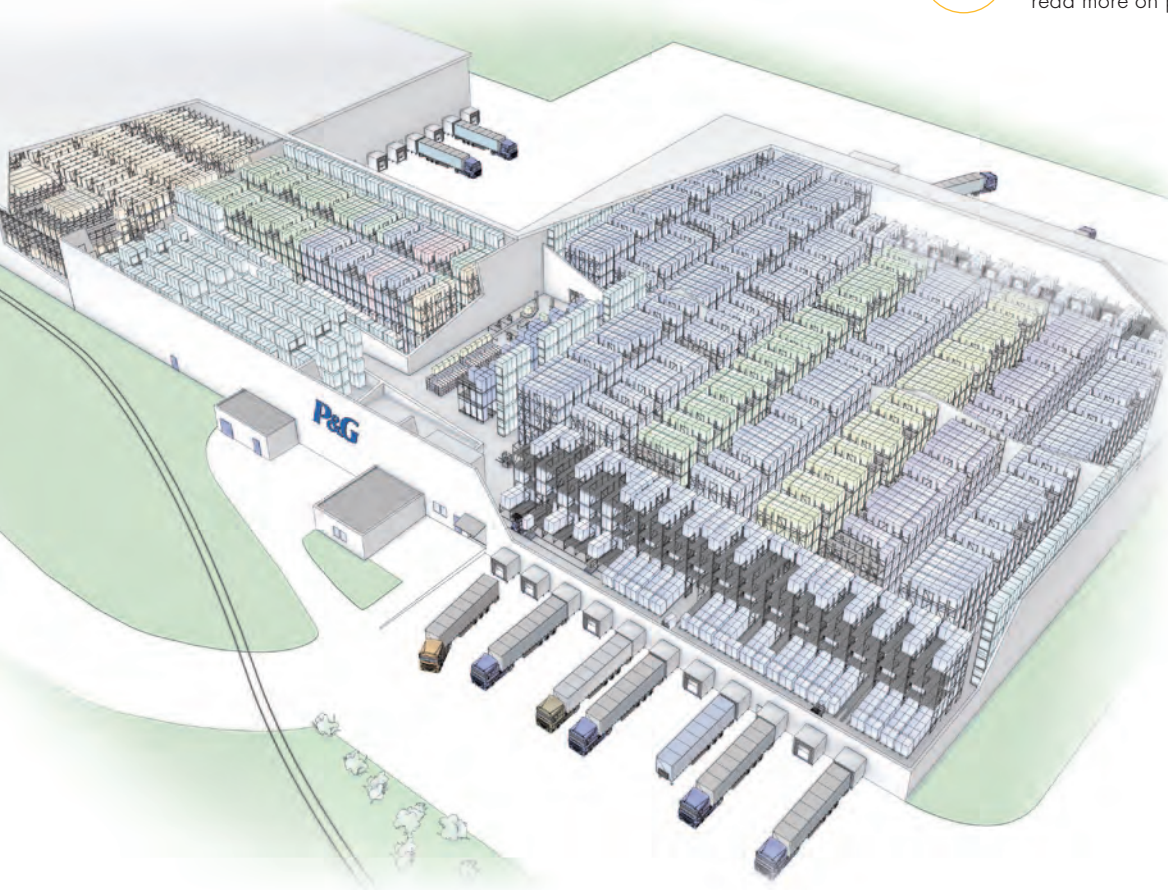


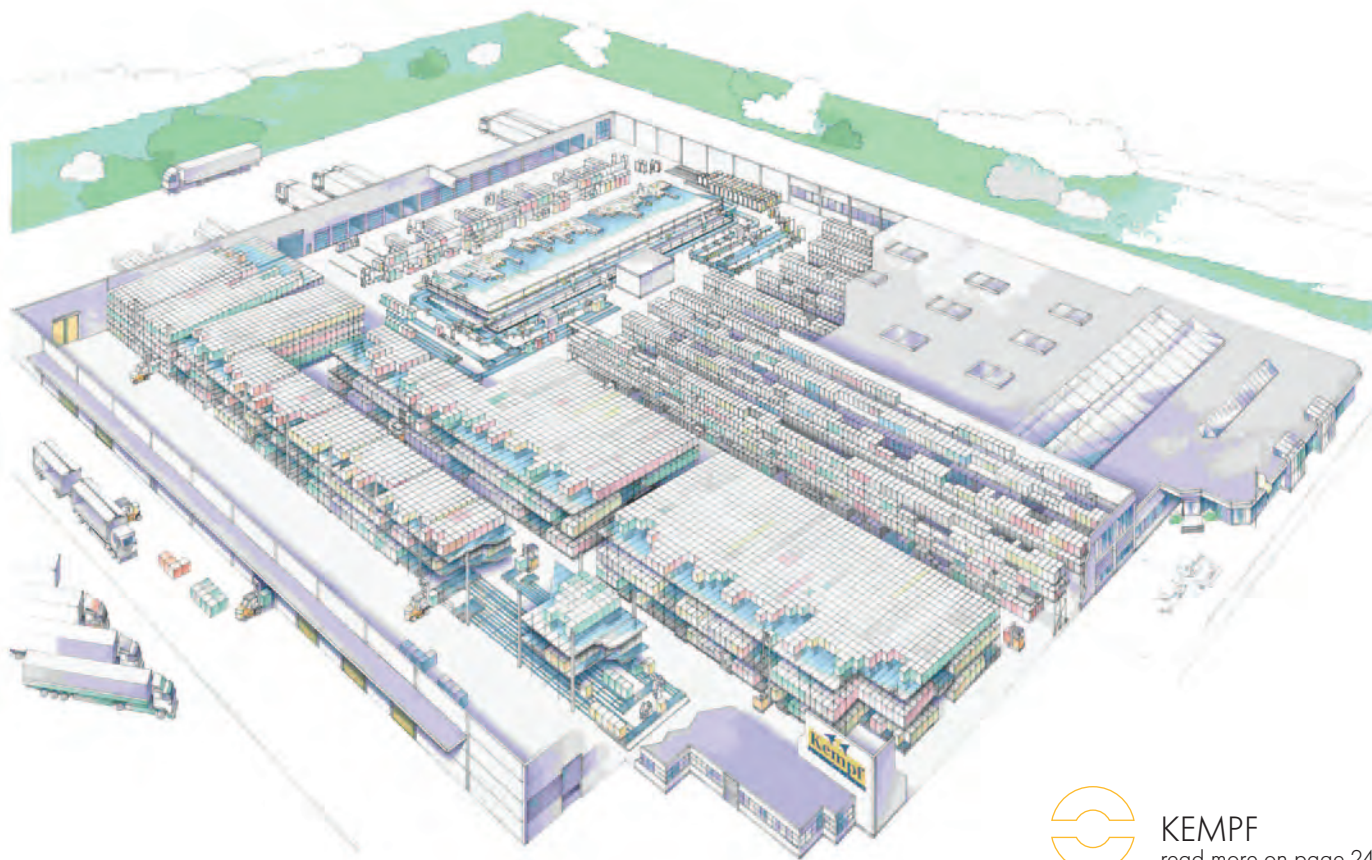


## BEST PRACTICES

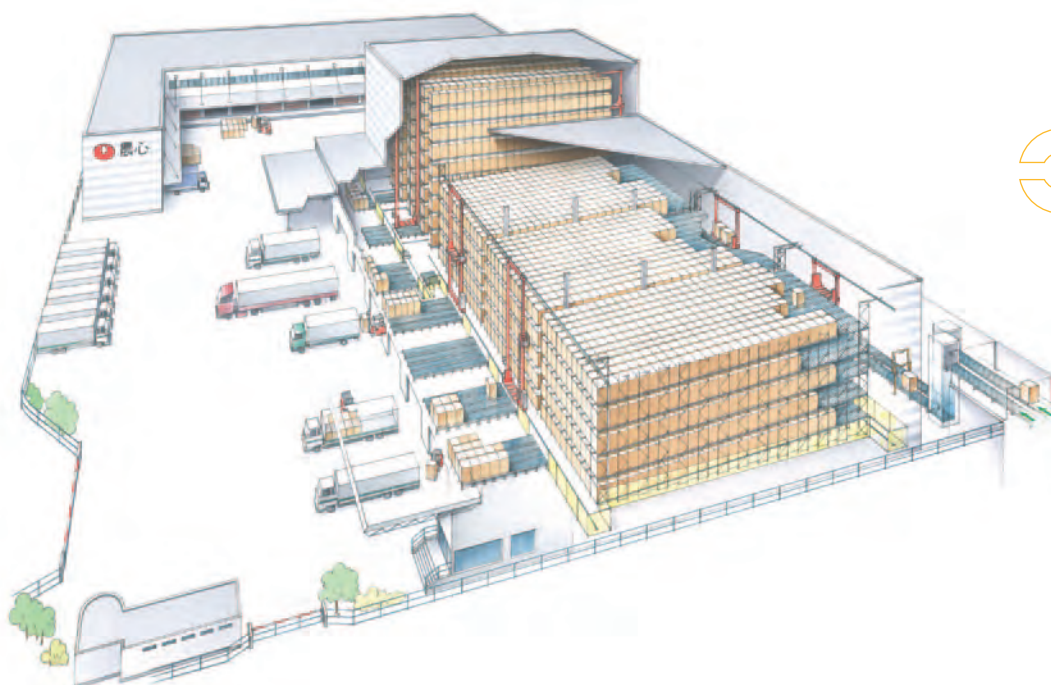


PROCTER & GAMBLE  
read more on page 22-23





**KEMPF**  
read more on page 24



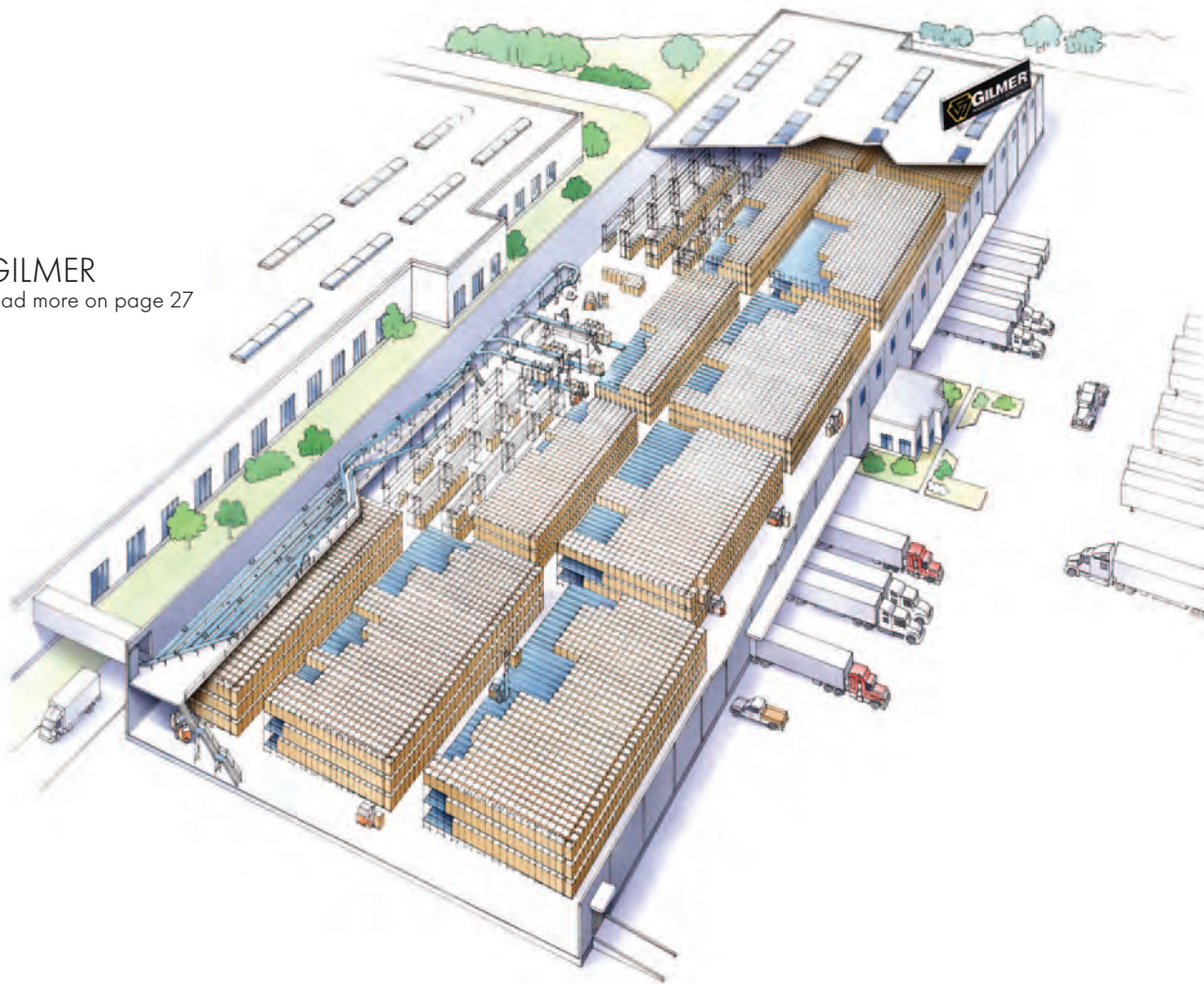
**NONGSHIM**  
read more on page 25



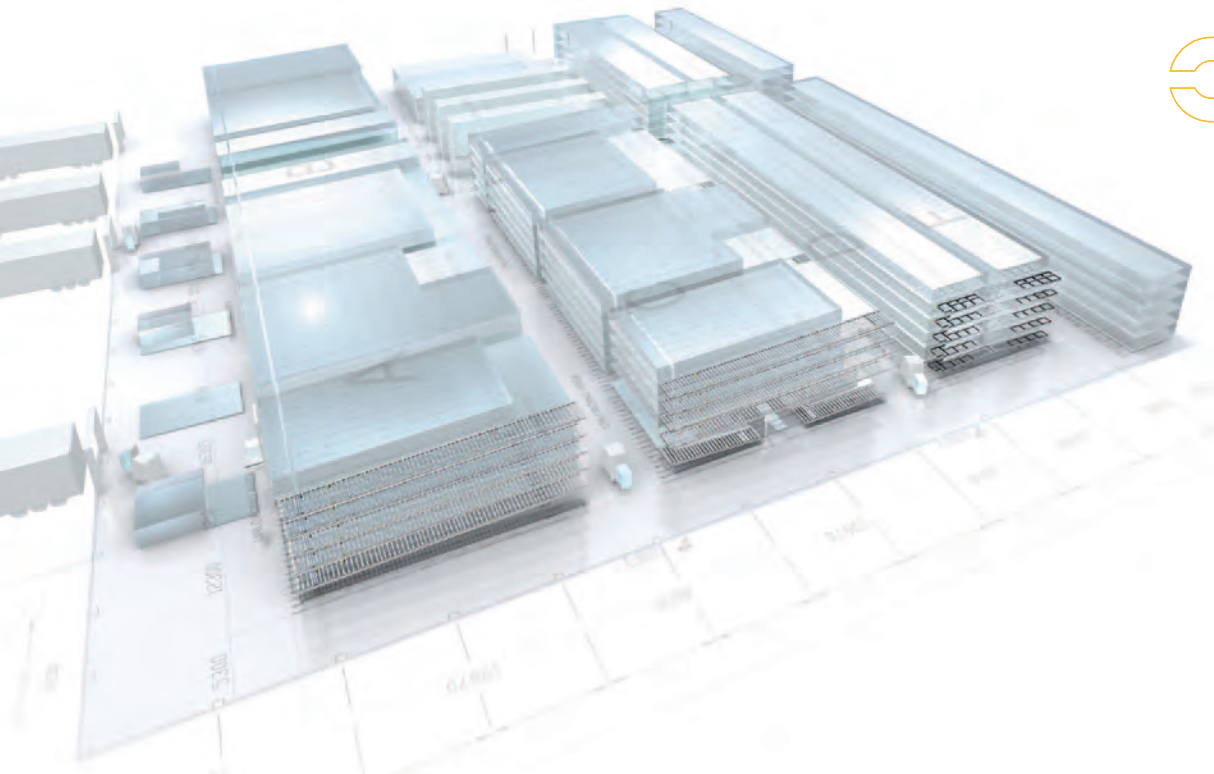
BEST PRACTICES



GILMER  
read more on page 27

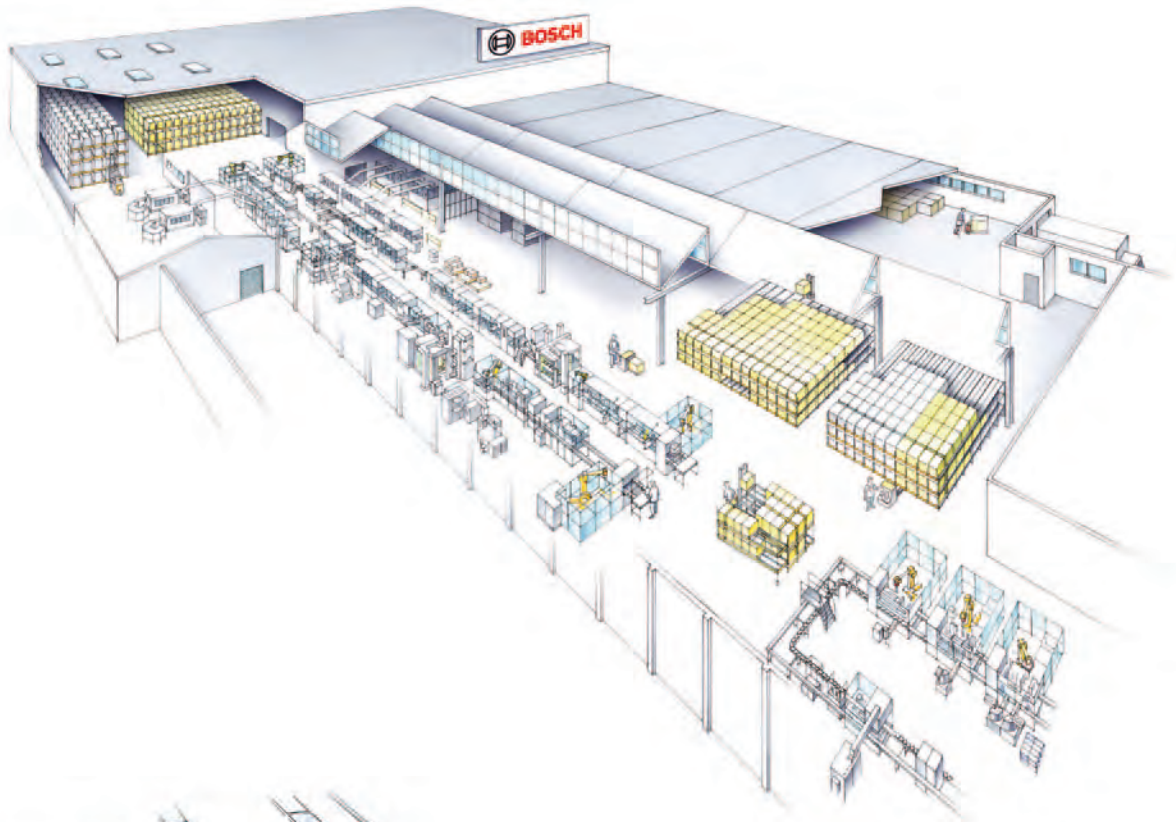


RED BULL  
read more on page 33

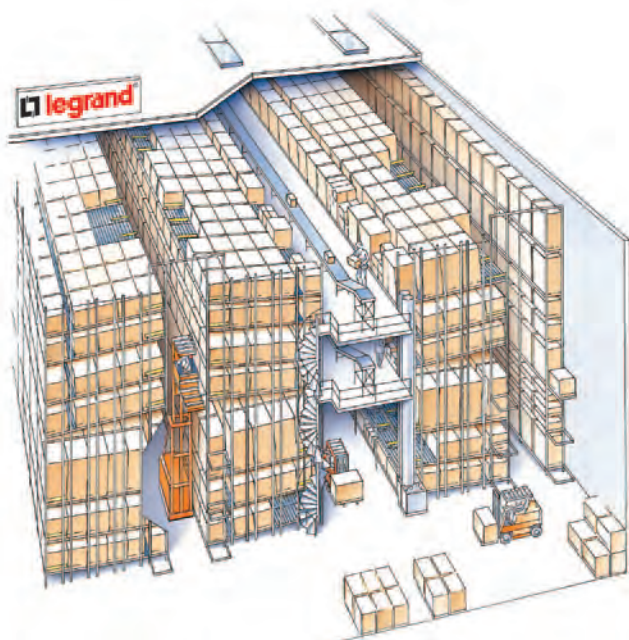




**BOSCH**  
read more on page 26



**LEGRAND**  
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# CUSTOMER SUCCESS STORIES





## PROCTER & GAMBLE

The compact, space-saving and energy-efficient storage blocks store single-item goods on a first in, first out basis in gravity-fed flow lanes with a channel depth of six euro-pallets.

The total capacity of the P&G Distribution Center in Crailsheim, Germany, went from 20.000 to 27.000 pallet places.



### IN A NUTSHELL

DC REMAINED OPERATIONAL  
DURING RETROFIT PROJECT

FIFO SOLUTION LED TO A  
35% CAPACITY INCREASE –  
FROM 20,000 TO  
27,000 PALLET PLACES

FULLY OPTIMIZED FLOW  
OF GOOD

Procter & Gamble has retrofitted its distribution center for household tissues and hygiene products for the German, Austria and Switzerland in Crailsheim near Stuttgart, Germany, with new Dynamic Storage technology from Interroll.

In order to accelerate the flow of goods and to significantly increase the stock levels from the current levels of 35% of capacity, the existing pallet shelves and drive-in racking were replaced with space and energy saving FIFO Dynamic Storage technology from Interroll.

To optimize the flow of goods, the pallets are also dynamically stored in the dispatch areas. The Interroll Dynamic Storage modules in the gravity lanes are on a 4% incline, utilizing gravity to allow the pallets to roll from the loading to the unloading side - high precision and energy efficiency guaranteed. The full-width rollers and the speed controllers developed by Interroll guarantee gentle transport with the flow speed optimized at all times.

"The new system allows P&G to make considerably better use of its existing goods distribution center and react quicker to the needs of the market," explains Matthias Schmitt, Head of the Procter & Gamble Distribution Centre.



## IN A NUTSHELL

FAST RETURN ON INVESTMENT (ROI)

GREATLY SIMPLIFIED MONITORING  
OF EXPIRY DATES AND  
INVENTORY CONTROL

TIME SAVINGS FROM THE UNINTER-  
RUPTED PROVISION OF GOODS

HIGHER TURNOVER RATE

ERROR RATE REDUCED TO LESS  
THAN 0.5%

UP TO 300 PICKS PER PERSON,  
PER HOUR



## KEMPF

### FRESH IN – FRESH OUT EXAMPLE: BEVERAGE DISTRIBUTION CENTRES

Thirst is a somewhat variable need, as the beverage industry knows only too well. What is required is a logistical solution that can buffer production overflows without a hitch and also react flexibly to peak demands – without neglecting the fresh in, fresh out principle, the cost-saving potential, error reduction and time factor so crucial to order picking of fast moving goods. Beverage distribution company Kempf in Balingen, Germany, once again opted for Dynamic Storage technology from Interroll. They knew from experience that they could rely on Interroll to cope with the large daily volumes of goods they have to move. The high proportion of fast-moving consumer goods in their total

sales tells a very clear tale, where just 160 of a total of 1,500 items make up 80% of the volume on daily throughput of 1,500 pallets.

Following ultra-quiet, speed-controlled input, special safety separators ensure smooth uploading of the pallets at the entry point and hazard-free unloading by forklift at the other end. A manual cable control then lifts the stopper to release the next pallet for uninterrupted order picking.

Other Dynamic Storage modules drive the sorting plant for empty bottles, with consignment-specific provisioning of sorted batches totaling 120,000 crates a day.

The Dynamic Storage warehouse is 27 pallets deep, yet safely accommodates pallets weighing up to 1,000 kg via entry guides from different stock levels.





This Dynamic Storage solution was a tailor-made system that really tickles the taste buds.



## IN A NUTSHELL

5,040 PALLET POSITIONS  
IN 80 LANES

LANE DEPTH OF 28 PALLETS  
OR 33 METERS

AUTOMATIC INPUT OF 200 DOUBLE  
PALLETS PER HOUR

AUTOMATIC UNLOADING

TWO SPEED CONTROLLERS  
PER PALLET POSITION

FULLY LOADED PALLETS WEIGHING  
UP TO 600 KG

OVERSIZED PACKAGE CAPABILITY  
VERY HIGH THROUGHPUT

## NONGSHIM

### FIFO STYLE DELICACIES – EXAMPLE: ASIAN SPECIALTIES

Shrimp crackers and instant noodles, honey twist snacks and Chapagetti. Culinary delights such as these are regularly supplied by South Korean food company Nongshim to Asian food lovers in 80 countries around the globe. A firm focus on quality and a no-compromise approach to service is the philosophy of this market leader and its 5,000 employees, along with the age-old adage “reap what you sow”. It’s a far-sighted philosophy – and one that also applies to Dynamic Storage technology. Indeed, it was for good reason that Nongshim opted for the quality of an Interroll Dynamic Storage system at the interface

between extremely high inward and outward stock movements. It gives them maximum product availability thanks to the FIFO principle of ensuring first in, first out product freshness as well as full control over high-volume turnover rates, coupled with best possible use of available space. This is invaluable to a company that does most of its business in one of the most densely populated countries in the world. A number of exceptional technical features make this Dynamic Storage solution stand out from the rest. To ensure the pallets travel safely through the extra-long lanes, two speed controllers are installed per pallet position.





Interroll's tailor-made solution for the Bosch plant.



## IN A NUTSHELL

TAILOR MADE FIFO SOLUTION  
ADAPTED TO THE SPECIAL  
NEEDS OF THE CUSTOMER

SMOOTH INTEGRATION INTO  
THE EXISTING PROCESS

## BOSCH

### A DRIVING FORCE – EXAMPLE: AUTOMOTIVE COMPONENTS

For generations the name Bosch has stood for innovation and pioneering spirit – particularly in the automotive industry, where Bosch is legendary. And the company certainly hasn't lost any of its spark.

Hildesheim, Germany, is the place where Bosch electric motors for ZF steering systems are manufactured. The Bosch Production System (BPS) provided the basis for the design and implementation of a system aimed at achieving streamlined production, optimum materials handling and the shortest possible throughput times. The solution: three Interroll Dynamic Storage systems, two of which are installed upstream of stator production and final assembly.

The third acts as a buffer or reserve to control production, so that stator production only occurs when there is a gap in the buffer. Thus, stator production is governed entirely by final assembly and managed via the buffer stock. This is further proof that Dynamic Storage – quite apart from its FIFO qualities – is more than capable of being incorporated into production processes that are usually the domain of automation systems. Owing to the degree of precision required during the assembly stages, Bosch engineers had a special pallet manufactured that had to run along the same dynamic flow lanes as standard pallets. By modifying the design of the roller positioning and speed controllers, Interroll managed to come up with yet another impressive, tailor-made solution.





## GPI

This GPI plant is the largest facility of its kind in North America.



### IN A NUTSHELL

25,000 PALLET POSITIONS

18,000 SPEED CONTROLLERS

1.5 MILLION ROLLERS

177 KM OF SIDE PROFILES

4-FOLD INCREASE IN HANDLING  
PERFORMANCE

### GEORGIA PACKS A PUNCH - EXAMPLE: PACKAGING INDUSTRY

When two giants of industry merge, the wedding planners certainly have their hands full. But a union of such dimensions is determined less by emotions than by tangible economic factors. It is a matter of analyzing the status quo, harnessing synergies and building new structures. The alliance between Riverwood and Graphic Packaging led to the creation of GPI – carton packaging specialist and preferred supplier of Coca-Cola – with a logistics center boasting 98,000 m<sup>2</sup> of state-of-the-art warehouse space.

Everything produced over a 24-hour period by way of packaging for beverages, foodstuffs and non-food items has to be dynamically stored, sorted, picked and provisioned for dispatch via 32 truck ramps that operate day and night. GPI is now ready to handle such gigantic volumes, with its flow storage space for 25,000 pallets, each weighing up to 1,500 kg, and pallet positions 23 deep, with the added option of loading and unloading two adjacent pallets simultaneously. GPI found that Interroll, with its Dynamic Storage and materials handling systems, rose to the challenge of meeting all requirements and vastly exceeding all expectations. What more could one ask?





## LEGRAND



### IN A NUTSHELL

70,000 STATIC AND 12,500  
DYNAMIC PALLET SPACES

DYNAMIC STORAGE LANES  
ON FOUR LEVELS CATERING  
FOR FIVE PALLETS EACH

SEPARATORS INCREASE PERFOR-  
MANCE AND SAFETY

This project of mas-  
sive proportions  
produced one of the  
largest distribution  
centres in Europe.

### HIGH- POWERED LOGISTICS – EXAMPLE: ELECTRICAL COMPONENTS

When you are juggling with 20,000 different electrical products and 20 manufacturing sites all over France, how on earth do you devise a cutting-edge supply structure geared to top-quality customer service? Legrand, the world's leading manufacturer of low-voltage electrical products, rose to the logistical challenge by centralizing all its activities into one mega-warehouse. All distribution and ordering work now happens in Verneuil en Halate, 20 km north of Paris.

Around 70,000 static and 12,500 dynamic pallet spaces were installed in four main buildings on a site measuring 2.5 km<sup>2</sup> – all superbly organized to send 80 trucks daily onto the nearby A1 motorway. Interroll's Dynamic Storage system comes into its own

in the strategically crucial order picking zones. In total, 29,060 static pallet spaces are available as reserves. The Dynamic Storage lanes for fast-moving goods on four levels each cater for five pallets. To ensure the empty pallets are quickly and safely removed with zero pressure accumulation, the safety separators are fitted with a foot pedal release for staff safety and convenience. For medium-turnover pallets that move from the holding store to the reserve area, Interroll installed special flow lanes in the order picking tunnels. These are two pallets deep and arranged on four levels. Some 57 pallets and 13,210 cartons daily are channeled in this way through the Dynamic Storage system to the order picking points. It's a long journey made up of small steps, with an efficiency rate second to none.





Interroll's solution helped Shirai Industrial Co. Ltd. Optimize their internal logistics operations.



## IN A NUTSHELL

- OPTIMAL LOGISTICAL PROCESSES
- REDUCED OPERATING COSTS
- TRANSVERSE HANDLING OF PALLETS
- HIGH THROUGHPUT
- 1,560 PALLET SPACES
- HIGH RETURN ON INVESTMENT (ROI)

## SHIRAI INDUSTRIAL

Shirai Industrial Co. Ltd., a Tokyo-based manufacturer of household and office furniture, has managed to consolidate its hold on a market that has been stagnating for quite some time now. Shirai practices what it preaches: Simple, Natural, Basic. This motto also characterizes the dynamic pallet system from Interroll that has been installed in Shizuoka on the south coast of Honshu. Experienced office furniture manufacturer Okamura was a tower of strength when it came to implementing the system and also developing the revamp of the Shirai distribution and storage system. The main reasons Shirai and Okamura decided on a Interroll Dynamic Storage solution with a total capacity of 1,560 pallet spaces was to improve the efficien-

cy and organization of their logistics. Distribution rather than storage, dynamic rather than static was the name of the game. The high throughput rates and compact, space-saving design were added bonuses – particularly in a country like Japan, where time and space are of the essence. This three-tier Dynamic Storage system has two 78-lane channels, each with 9 to 11 pallet spaces on three levels. The remarkable feature is that these lanes were designed for transverse pallet transport – a relatively common configuration in the furniture industry, but one that requires a great deal of project experience.



## IN A NUTSHELL

STEEL-CONTAINER STORAGE

CIRCULATION OF PARTS BETWEEN  
WAREHOUSE/ ASSEMBLY LINE/  
HEAT TREATMENT/ WAREHOUSE/  
ASSEMBLY LINE

STORAGE AND PROVISIONING OF  
212 INDIVIDUAL COMPONENTS

240 LANES SUITABLE FOR 3 TO  
13 STEEL CONTAINERS

REINFORCED SIDE PROFILES

MANUAL UNLOCKING SYSTEM

SPECIAL TECHNICAL FEATURES

PSA Peugeot  
Citroën (informally  
PSA) is a French  
multinational  
manufacturer of  
automobiles and  
motorcycles.



## PSA

### ON THE MOVE – EXAMPLE: ELECTRONIC TRANSMISSIONS

Valenciennes – a university town in northern France with Merovingian roots and bastion of the French automotive industry – is where several Peugeot and Citroën vehicles are produced. However, the pioneering innovation of an electronically controlled mechanical transmission prompted the construction of an entirely new assembly facility, because the configuration of this transmission is fundamentally different from other systems. A logistics specification manual set out clear aims for the project; these included mass storage of all 212 components sorted by batch, and immediate access to each individual

component. Other requirements were for better management of materials handling and quality control, plus a guarantee that the parts stored first would also be the first to be installed, to prevent any oxidation occurring. After a thorough assessment of the various possibilities, a decision was made to opt for the FIFO configuration of Interroll Dynamic Storage. It was quite simply the only solution that would meet all the required parameters: trouble-free supply of assembly lines, simple transportation to heat treatment stations, relaying them back for further processing – a pulsating cycle, always in close proximity to the assembly lines and with a perfect transmission as the end result.





More than half of the 26,000 m<sup>2</sup> storage capacity was earmarked for provisioning and distribution of the “Yamahas”.



## IN A NUTSHELL

- FASTER ORDER PICKING TIMES
- SHORTER FORKLIFT TRIPS
- REDUCED HANDLING TIME
- REDUCED ERROR QUOTA
- FIFTEEN TIMES BETTER SPACE UTILIZATION
- FIFO
- REGIONAL AND GLOBAL PRESENCE
- HIGH STANDARD OF EXPERT ADVICE
- SUPERIOR AFTER-SALES SERVICE
- HIGH RETURN ON INVESTMENT (ROI)

## YAMAHA – KPN

### THAIMOBILE – EXAMPLE: SCOOTER DISTRIBUTION

Not far from Bangkok, two companies have sealed their neighborly relations by signing a business contract. One of them, Thai Yamaha Motor Co. Ltd., assembles motorized two-wheelers from supplied parts, while the other, KPN-ST-Logistics – a joint venture of the KPN Group and Singapore Technologies Pte. Ltd. – stores, picks and sends popular scooters to their loyal followers.

They also installed an Interroll Dynamic Storage system, which can currently cope with 5,500 bikes and easily be extended to house 10,000 such vehicles. The decision to opt for an Interroll FIFO system was clinched by some impressive technical features, excellent professional advice and first-class customer service. The fact that Interroll's Dynamic Storage modules were not in the least fazed by the special steel pallets required to lock down the bikes securely was what ultimately swayed the companies to choose this system.





## IN A NUTSHELL

TOTAL TURNOVER OF 100,000  
CONTAINERS

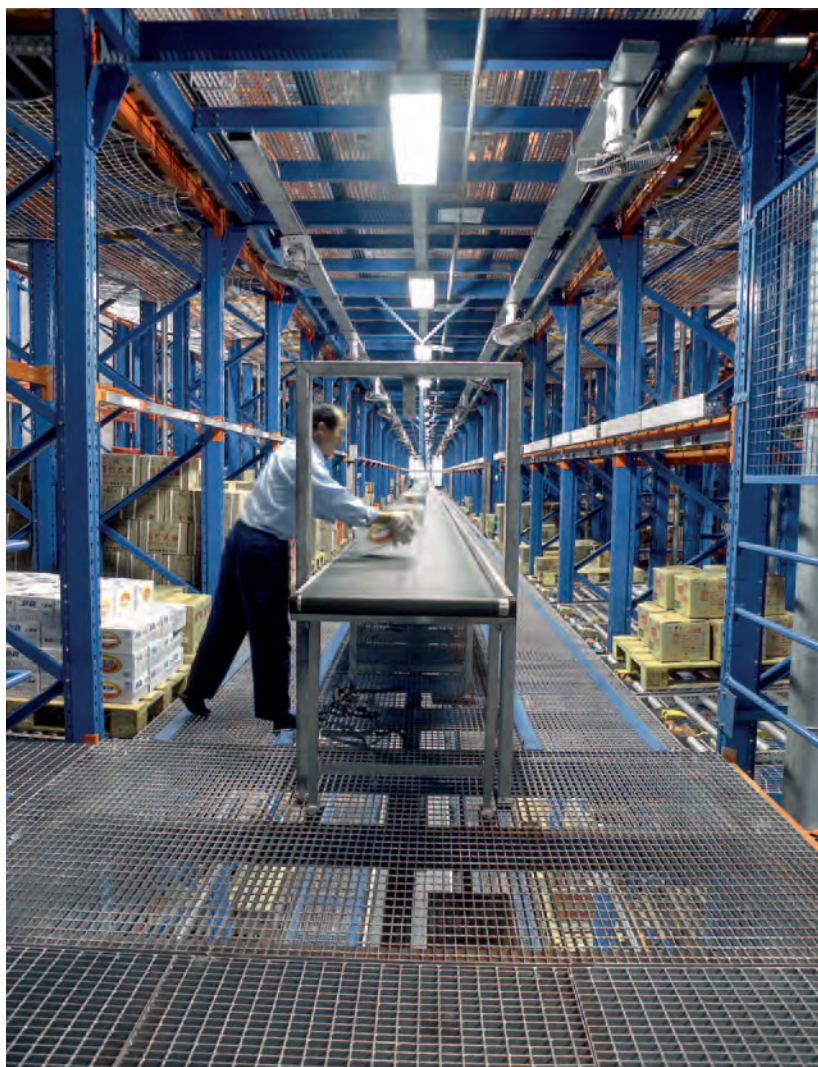
13,000 DIFFERENT PRODUCTS

6,600 BRANCHES

3,100 DYNAMIC STORAGE LANES

2,000 PALLETS DAILY WEIGHING  
UP TO 1,000 KG EACH

"JUST IN TIME" PROCESSING



## SHANGHAI HAIYAN DC

### THE ASIAN CONNECTION – EXAMPLE: SHANGHAI DISTRIBUTION CENTRE

Haiyan has several thousand employees distributing goods ranging from wines and spirits to milk powder and instant noodles, as well as around 200 cigarette brands.

The distribution work of 22 former regional centres was pooled into one central facility, with the aim of enhancing the efficiency of quality control, delivery structures, transport costs and warehouse organization. This has tripled the company's handling capacity of 30,000 to 100,000 containers per day. Now the DC supplies over 6,600 branches in the provinces and major cities of China. These include its own hypermarkets and those of other leading companies such

as Hualian, Carrefour and Wal-Mart. The burgeoning trend towards fast-growing hypermarkets is being nurtured by sophisticated Interroll Dynamic Storage technology for fast-moving consumer goods. In this case, it features two pallet spaces in each of the 3,100 flow storage lanes, all seamlessly integrated into the logistics of up to twelve-story static racks for slow-moving consumer goods. The Dynamic Storage system sends 2,000 pallets daily on a FIFO basis, speedily, safely and efficiently along triple-track rollers to order picking points, while outside at the loading ramps, trucks with their engines still running await their next consignment.

The new distribution center of Shanghai Haiyan Logistics Development Company Limited is considered the most progressive of its kind in the whole of China.





## RED BULL

The new DC located in the industrial estate of Bangsang, Prachinburi, near Bangkok.



### IN A NUTSHELL

12,670 FIFO PALLET POSITIONS

16 PALLETS PER LANE

EACH LANE EQUIPPED WITH  
2 SAFETY SEPARATORS

To support its growing business in Thailand, Red Bull placed a repeat order for Interroll Dynamic Storage technology to be installed in a new local distribution center. The new DC would have to handle peak volumes most efficiently, reduce travel distances and the number of forklift trucks. In addition, the installation should be protected against damages through forklift truck operation and ensure a rapid return on investment.

The new installation provides a total of 12,670 pallet positions for FIFO (first in, first out) pallet flow storage and LIFO (last in, first out) cart pushback storage. The FIFO section has gravity lanes accommodating 16 pallets each and 2 safety separators for maximum pallet handling safety, with the first separator in the middle of the lane. The cart pushback section, using 4-deep and 5-deep lanes, makes maximum use of the space by providing two aisles for loading and unloading.





## IN A NUTSHELL

4,000M<sup>2</sup> FACILITY STORING 600KG EACH, CUSTOM DESIGNED PALLETS

12 LANES OF 10 PALLETS ON 5 LEVELS  
UP TO 160 PALLETS/DAY

STATE-OF-THE-ART INTERROLL SOLUTION EQUIPPED WITH A BRAND NEW PALLET SEPARATOR

PRB has a 4.000 m<sup>2</sup> warehouse fully equipped with Interroll Dynamic Storage solutions, including the new Safety Separator with Time Plus functionality.

## PRB

The third biggest company in its sector in France, PRB employs 350 people in France and manufactures façade renders, exterior-use paints, powder and paste tile adhesives, as well as exterior thermal insulation systems.

PRB has recently invested in an entirely automated machine that produces pots of paste adhesive for tiling at its La Mothe Achard (Vendée) site.

To meet growing demand, PRB has decided to invest in a storage system that enables the flow of pallets to be managed and sorted by production date. "The FIFO (first in first out) principle is essential," explains Jérôme Hucteau, the manager in charge of production in the southern sector.

In order to offer a solution adapted to PRB's products, Interroll at first conducted internal tests at its test center in La Roche-sur-Yon. Following test validation, a test lane was installed at PRB and trialed over a three-month period.



Interroll provided a state-of-the-art solution, equipped with a brand new pallet separator. This more robust separator also offers greater flexibility for the forklift truck operator when unloading the pallets. Following successful trials, PRB ordered 60 lanes with a 10 pallet deep capacity from Interroll. The Dynamic Storage unit holds 600 pallets (12 lanes of 10 pallets on 5 levels). The pots of paste adhesive are stored on 600kg pallets that have been designed specifically for PRB (Euro size 800mm x 1200mm). The pallets are loaded by forklift truck. The Dynamic Storage system was

installed close to production facilities. The film-wrapped ready pallets arrive straight from production, via an elevator. The pallets are then temporarily stored in Interroll's gravity lanes before being dispatched. Four listed products – those with the speediest rotation – pass through the dynamic unit. They remain in storage for 2 to 6 weeks. Thanks to the FIFO principle, the pots of adhesive are thus stored by production date – the first pallet loaded into the lane will be at the front and the first one available for dispatch. This facilitates stock management and eliminates the risk

of exceeding the expiry date. In busy periods, up to 160 pallets pass into the gravity lanes daily. On the unloading side, the new safety separator ensures that the pallet in front is separated from the accumulated line of pallets in the lane.

"The Interroll team has an extremely customer-focused approach. The team responded diligently to our needs. Interroll has succeeded in surrounding itself with a high-caliber assembly team," Jérôme Hucteau concludes.





**OEG**



## IN A NUTSHELL

OPTIMIZED PICKING PERFORMANCE  
THANKS TO THE INTERROLL  
CARTON FLOW SOLUTION

FAST PICKING ZONE WITH  
20 STATIONS

Interroll's Carton Wheel Flow system at OEG helped them increase their productivity by optimizing their picking performance dramatically.

As part of its expansion program, OEG extended its central warehouse at the company's headquarters in Hessisch Olfendorf, Germany, extending its picking warehouse here to handle 6,000 new products.

OEG has achieved its market success with catalogue orders and, above all, online orders. A few clicks of your mouse in the OEG online store sets in motion an exceptionally innovative and perfectly coordinated, paper-free picking system and smooth Europe-wide distribution. Orders placed before 20.00 will be dispatched the same day and delivered the following working day.

A new Carton Wheel Flow system from Interroll was used here. The solution now consists of a "fast picking zone": a two-story flow racking system with a total of 20 picking stations and associated filling sections.

"We endeavor to provide profit for our customers as well as our own employees by optimizing our picking performance and this has been achieved with the new warehouse incorporating Interroll Carton Wheel Flow. We are impressed by the entire concept."

Helge Möller, OEG Sales Director



The Hefame Distribution Center stores approx. 21,500 drugs produced by major pharmaceutical companies from around the globe.



## IN A NUTSHELL

68,000 ORDER LINES EACH DAY  
ARE HANDLED EASILY  
THROUGH OUR CARTON  
FLOW SOLUTION

TAILOR MADE SOLUTION ADAPTED  
TO THE CUSTOMER'S NEEDS

## HEFAME GROUP

The Hefame Group is Spain's second largest drugs distribution company with more than 60.000 m<sup>2</sup> of warehousing capacity.

A team of 75 staff order-pick an average of 68,000 order lines each day. Here, the Carton Flow solution was optimized and tested specifically in line with customer requirements.

"We are extremely satisfied with the new distribution center and the intralogistics solution provided by Interroll. It is tailored precisely to the items handled at our distribution center and has the added benefit of delivering maximum uptime," says Manel Martinez, Technical Manager at Hefame.





Delectable delicacies gently flow on the Interroll Pallet Flow system at Eti Gida.



## IN A NUTSHELL

FLOW STORAGE SOLUTION  
FOR 1,440 EURO PALLETS

HIGHLY EFFICIENT, ENERGY  
SAVING INSTALLATION

GREAT IMPROVEMENTS  
IN PRODUCTIVITY  
ACHIEVED



## ETI GIDA

### FULL DYNAMISM, ZERO ENERGY CONSUMPTION

When designing internal logistics the golden rule is: "As much automation as necessary, as little as possible". Turkish confectionery and biscuit manufacturer Eti Gida kept this principle in mind when designing dynamic process support systems for its new production and distribution centre in Eskisehir, Anatolia. The 6,500 m<sup>2</sup> distribution centre is the most recent of five factory warehouses used by Eti Gida to distribute its 300 varieties of chocolate and biscuit specialties all over Europe.

Forklift trucks take the palletised confectionery straight from the production area to interim storage in the distribution centre's static high-bay racking system. Initially, the picked order pallets were put together on staging zones in the goods-out area. "This resulted in a

lot of cross traffic, evasive manoeuvres and other disruptions that slowed down our processes and therefore impaired the throughput and efficiency of the warehouse as a whole," explains Halil Gürkan Arıkan, Head of Logistics at the Eti Gida distribution centre. In May 2011, a flow storage FIFO solution from Interroll was selected as the best solution to address these issues. The Interroll system, which features a compact flow racking system for 1,440 Euro pallets, was designed and installed within three months. It comprises 360 lanes each four pallets deep on four levels with 90 lanes side by side. The 360 lanes are gravity-driven flow storage lanes with a four per cent incline equipped with an Interroll pallet roller flow system. "This solution has allowed Eti Gida to improve warehouse dynamics

without having to invest in a sophisticated automation solution," says Interroll Sales Manager Bülent Caliskan. "Thanks to the high level of efficiency and minimal outlay for automation, the investment pays for itself after 18 to 36 months on average."

"The pallet roller flow system greatly simplifies pallet handling and has halved the loading times." Process reliability was also enhanced. Because the goods flow automatically from feed point to pick up side, there are no mix-ups or forgotten pallets in the goods-out zone. "A highly dynamic system – and without energy consumption," concludes Caliskan. "It's an efficient solution that is likely to appeal to users in a wide range of industry sectors."

## THOROUGHLY PROVEN QUALITY



### Pallet- or container-specific

The test zone in La Roche-sur-Yon facilitates the development of specific solutions adapted to customer's own containers (metal containers, special pallets, non-reusable pallets etc.). The test roller conveyors are fitted with measuring equipment (throughput speed, central deviation).

Interroll has its own test center covering an area of 800 m<sup>2</sup>.



INTERROLL TEST CENTER:  
OUR COMMITMENT  
TO CUSTOMERS'  
SATISFACTION AND SAFETY

All Interroll Pallet Flow systems are qualified at the Interroll test center in La Roche sur Yon, France.

This high-tech center, unique in this sector, allows it to conduct fatigue tests on Interroll solutions. Thanks to these tests, Interroll can guarantee the total performance and safety of its products.

With 50.000 test cycles, Interroll products are even certified to withstand all kinds of harsh conditions and still provide smooth and even pallet movement. You can thus enjoy a long life of the installation with the highest safety level.

This 800 sq. meter center has six test plants and a cold room operating at freezing conditions of -28°C run around the clock.

Meeting the deadlines set for development projects is a crucial element of the company's competitiveness. Thanks to Interroll's in-house test facilities, its customers worldwide can take advantage of its incomparable ability to react. Customers can always rely on the company's proven quality and market-leading knowledge and expertise – this is why all Interroll products carry a quality mark.

**ESEPROJECTS**  
Design, Supply & Install Services

Wensum Works, 150 Northumberland Street, Norwich, Norfolk, NR2 4EE  
Phone: +44 (0)1603 629956, Fax: +44 (0)1603 630113  
Email: sales@eseprojects.co.uk Web: www.eseprojects.co.uk