

COLD STORAGE

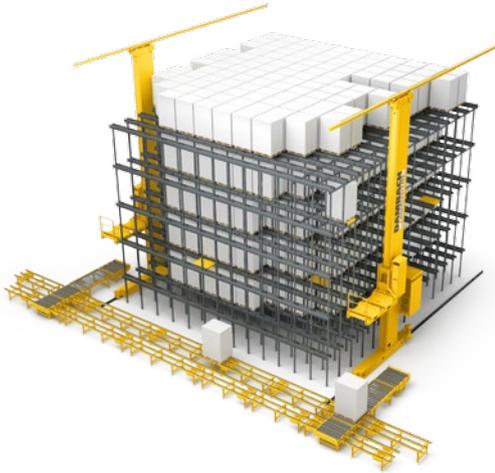
A custom solution
for every challenge.

DAMBACH
LAGERSYSTEME

EXPERIENCE IN FIGURES

Cold store owners who use DAMBACH warehouse systems can count on more than 40 years of experience.

- More than 300 cold storage projects completed worldwide
- Oldest cold store system in operation for 25 years
- Cold storage applications down to $-30\text{ }^{\circ}\text{C}$
- Extensive experience in the foodstuffs industry
- Highest automated cold store in Europe
- Highest and largest cold store in China
- Largest foodstuffs warehouse in the United Arab Emirates



Pioneering role in multi-deep storage: DAMBACH Compact Shuttle

- Storage positions up to 30 deep
- 24/7 operations
- Loading times as short as 8 seconds
- Load-carrying capacities of up to 1500 kg
- Load pickup/set down in just 2 seconds



REQUIREMENTS

Dealing with arctic temperatures down to $-30\text{ }^{\circ}\text{C}$ in cold stores is a serious business. Materials-handling and warehousing technology and service personnel must work under extreme conditions.

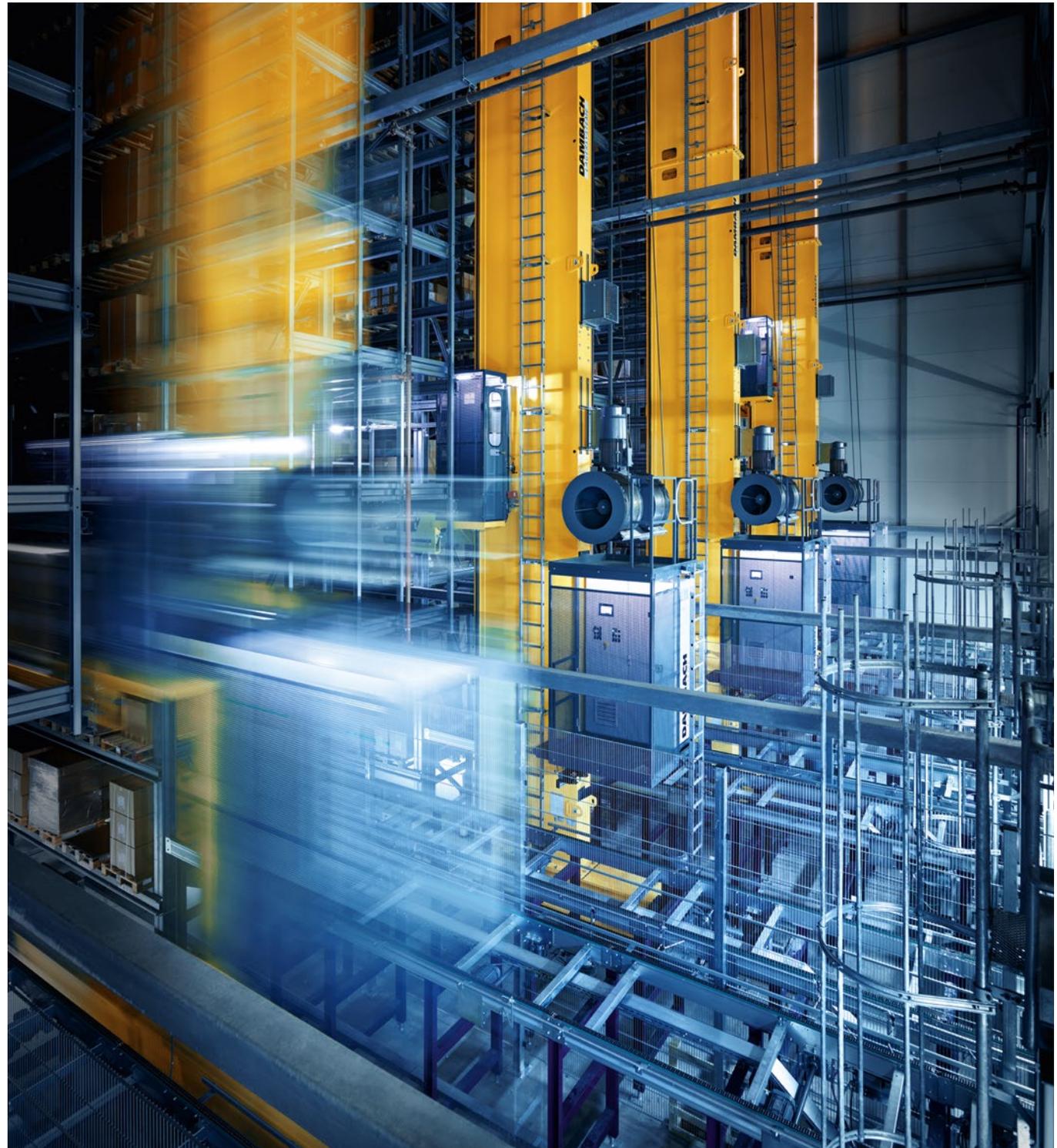
Many factors have to be considered in cold storage projects. Energy consumption is a critical issue; a high space utilisation ratio is needed to optimise the energy balance. Further aspects are high throughput rates coupled with dependable availability plus the use of foodstuffs-compliant materials that are reliable at subzero temperatures. And the harsh working conditions call for easily serviced and ergonomic product solutions.

SOLUTIONS

DAMBACH rail-guided stacker cranes, materials-handling technology and load-handling equipment, such as the Compact Shuttle, form a perfectly tuned ensemble. That guarantees smooth materials flows between high bay warehouse and apron. Our aim is always to cooperate with our partners to devise lasting and efficient concepts that will also stand up to the rigours of cold store conditions.

DAMBACH cold storage expertise

- Optimum exploitation of material behaviour
- Foodstuffs-compliant lubricants fit for subzero temperatures
- Certified electrics and sensors
- Minimised approach dimensions
- Multi-deep storage
- Heights up to 49 m
- Smart interfaces between rail-guided stacker cranes and materials-handling systems
- Heated components
- Maximum ease of servicing



Benefits of DAMBACH rail-guided stacker cranes

- All DAMBACH rail-guided stacker cranes are available in single- or twin-mast versions
- Load-handling equipment developed and manufactured by us
- Rail-guided stacker cranes for multi-deep storage in conjunction with DAMBACH Compact Shuttles
- Flexible operations across different temperature zones
- No-buffers end-of-aisle protection
- Maximum use of storage space
- Various drive concepts

RAIL-GUIDED STACKER CRANES

DAMBACH rail-guided stacker cranes are based on a modular system. We can therefore design and build bespoke solutions and respond fast and flexibly to customers' requests. For example, performance can be upgraded at a later date by retrofitting additional drives. Rail-guided stacker cranes therefore take on a key role when it comes to efficiency and performance in cold stores.

The MONO series is aisle-bound and combines ideal space utilisation with high performance for loads of any kind.

The rail-guided stacker cranes of the MULTI series are curve-going and can reach any aisle directly via points. That means high availability. And what's more, during maintenance work, one MULTI unit can take over the work of another. That's functional redundancy.

The compact design of the MINI-LOAD series for small loads guarantees maximum space utilisation even at great heights – perfect for cold stores up to 27 m high. Our units can work in automated small-parts warehouses handling containers or boxes equally well.



MATERIALS-HANDLING

The DAMBACH materials-handling catalogue contains many different components designed to achieve precisely coordinated interfaces with rail-guided stacker cranes. This variable, all-embracing range is suitable for the extreme conditions of cold stores and so guarantees fast and effective materials flows from the warehouse itself to the apron.

Roller conveyors, chain conveyors, roller lift tables, turntables, vertical conveyors and transfer wagons ensure that pallets and mesh boxes are safely transported. Ease of servicing, with many identical parts and standard modules, is a decisive advantage, particularly for cold store applications. The pre-installed wiring is especially economical and durable.

Benefits of DAMBACH materials-handling

- Systems for distribution and production
- High throughput rates
- Speeds of up to 0.5 m/s
- Load-carrying capacities of up to 1500 kg
- Suitable for transporting the most diverse unit loads
- Modular design

LOAD-HANDLING

Load-handling equipment developed and manufactured by DAMBACH is conceived for optimum use with DAMBACH rail-guided stacker cranes and materials-handling systems. Irrespective of the loads, aisles or transfer points, DAMBACH has load-handling equipment to suit very diverse requirements. Telescopic forks with different cross-sections for single- and double-deep storage, fitted with one or two motors, ensure efficiency that meets customers' specifications. Chain conveyors with tilting units can be installed if necessary. Where special or closed loads have to be transported, swivel traverse forks ensure reliable handling.

All DAMBACH load-handling units are distinguished by their durability and compactness, which results in good space utilisation. Over the years, special lubricants and hardened guides have proved invaluable for cold store applications.

The DAMBACH Compact Shuttle is a pioneer in multi-deep storage – an ideal solution for rail-guided stacker cranes or materials-handling systems. Its 400 V three-phase motors and all-wheel traction ensure exceptional throughput rates. And with power supplied by highly efficient power caps, DAMBACH Compact Shuttles are perfect for low temperatures as power caps have a much longer life than regular batteries.

DAMBACH services

- 24/7 hotline and fault analysis
- Training for maintenance personnel
- Use of DAMBACH specialised personnel

CONTROL

The multi-stage DAMBACH control solutions are the convincing answer for every requirement – from pre-installed wiring to control hardware to integrated software. Pre-installation for rail-guided stacker cranes and materials-handling systems guarantees fast setup and commissioning times in cold stores.

Control systems from DAMBACH ensure economic and dependable warehouse systems. Ingenious energy management with energy recovery ensures an exemplary energy balance. In addition, the systematic use of power caps on the rail-guided stacker cranes as well results in a minimal infrastructure. Decentralised control concepts also minimise commissioning work, especially for materials-handling systems.

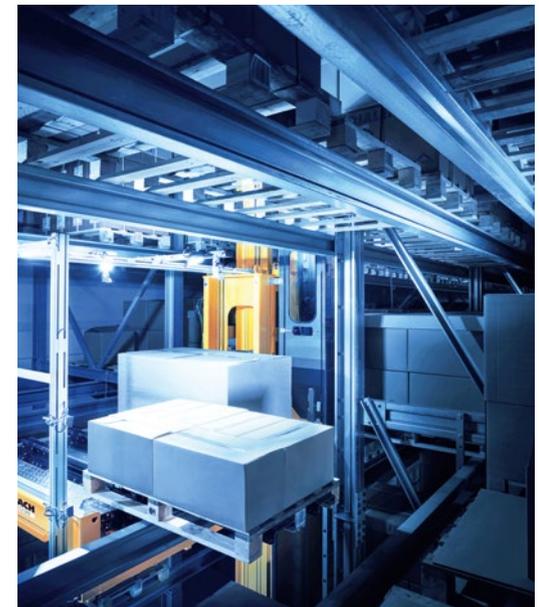
Remote diagnosis and remote servicing via a virtual private network (VPN) are possible for all systems. The use of the very latest visualisation options coupled with innovative camera systems and sensors allows comprehensive logging. And that relieves the workload on cold store operating and maintenance personnel.

MODERNISATION

Highly productive modernisation solutions for existing installations upgrade technology and control systems to state-of-the-art levels. The range of services covers the complete materials-flow strategies of small and midsize high bay warehouses with apron and order-picking. DAMBACH benefits here from current synergies across design and production.

For ambitious projects as well, such as changing over from a manual to an automated warehouse, or a general cold store overhaul, the experts at DAMBACH can devise solutions that are ideally tailored to the customer's specification. Moreover, DAMBACH can help when the manufacturers of existing systems have gone out of business or no longer provide support for warehousing technology.

So even with older facilities it is possible to benefit from state-of-the-art technology and innovative ideas. And hence increase the productivity of your warehouse.



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