



VOLUME  
LAGERSYSTEME  
GMBH



# Performance Meets Versatility

## Volume DIVE Container ASRS



# Challenges in the warehouse

Overheated labor market, personnel shortage



Lot sizes go down, number of orders go up



Rapidly changing product preferences



Shortage of warehouse spaces close to big cities



High volatility of markets, planning difficulties



## Our solution - VOLUME DIVE



Volume DIVE is fully automated robotics based cube storage system for containers



Ultracompact, smallest footprint on the market



Extremely space efficient, possible height 2,5 – 14 m



Flexible throughput 50 - 2000 totes/h



Unmatched scalability and fast installation thanks to modular design





## Our solution - VOLUME DIVE



High responsiveness, no time lost on digging, as stacks are only 3 to 5 bins high



AI optimized container locations



ABC product structure is not required



Robots work with standard euro totes, customers don't need to invest in new plastic bins



**Unmatched flexibility**, totes are discharged directly on the conveyors all over the perimeter of the warehouse

# THE SNAPPER



Characteristics of typical system:



Max. weight **per container:**

DIVE S: 25 kg

DIVE M: 35 kg



Standard Euro-Bins:

DIVE S: 400 x 300 x H mm

DIVE M: 400 x 600 x H mm



Driving speed of SNAPPER 3 m/s



Scalable throughput over 1000 b/h

# THE SPEED RACK

Characteristics of typical system:



Module dimensions:

DIVE S: 2,4 x 1,7 x 1,7 m

DIVE M: 4,5 x 3,1 x 2,3 m

DIVE S: 48 bins per module

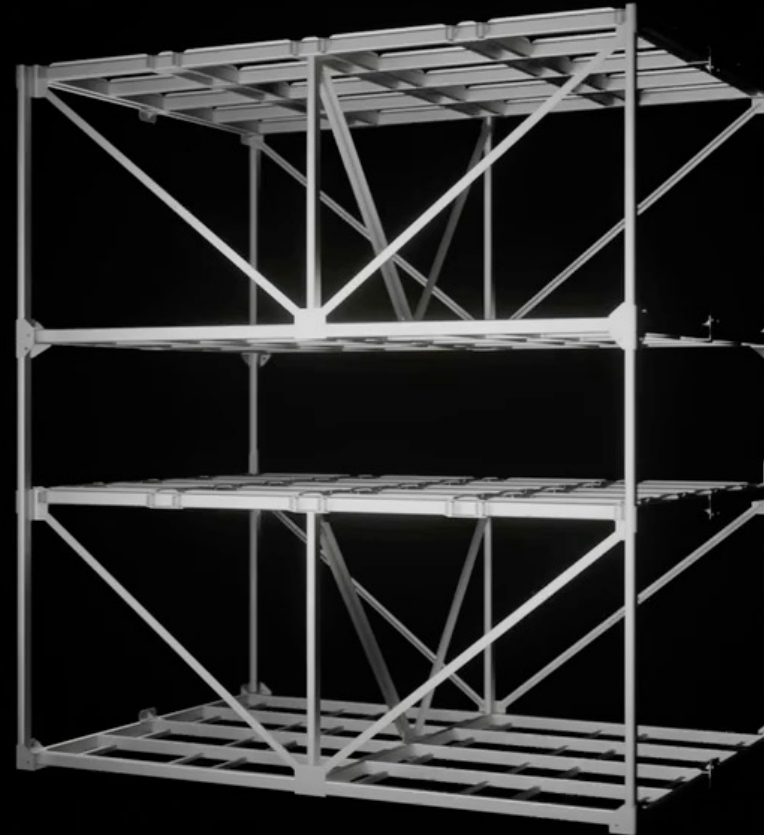
DIVE M: 180 bins per module



Prefabricated modules delivered to customer site



Fast installation thanks to simple connection of modules



# DIVE vs Miniloads

## Footprint

DIVE: smallest footprint among considered ASRS for industrial buildings 12m high

Miniloads: require 1,5m aisle for every 4 bins (double deep storage)

## Performance:

DIVE: over 40 presentations/h (double cycle) per Snapper

Miniloads: up to 200 dc/h per stacker crane, however rarely more than 10 units per system due to space requirements

## Scalability:

DIVE: modular design allows scale storage capacity and performance; low requirements to concrete slab

Miniloads: extension is difficult due to the size of machines and construction works

## Serviceability:

Dive: 60 cm access to robots in each level (horizontal access on platform)

Miniloads: open access for service

## Energy efficiency:

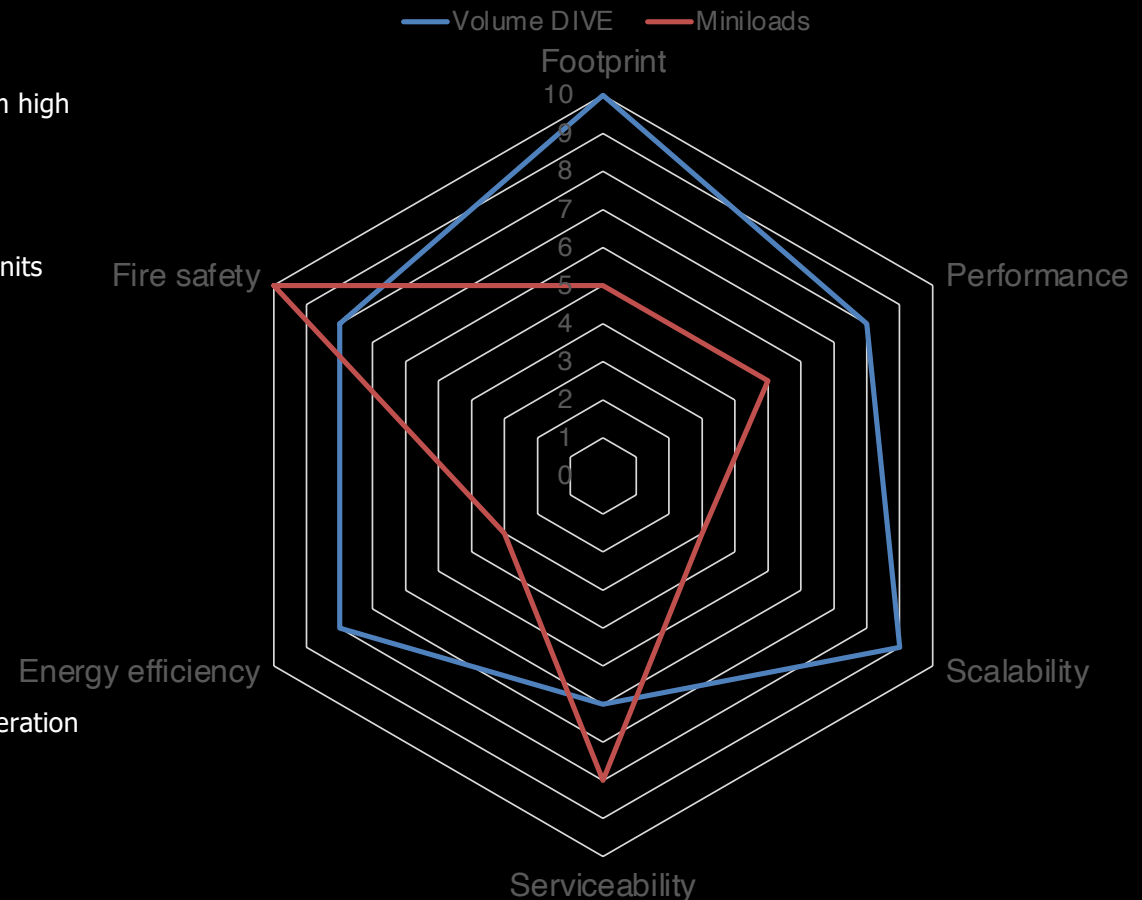
Dive: highly energy efficient thanks to lightweight robots with energy recuperation system

Miniloads: low energy efficiency due to high weight of stacker cranes

## Fire Safety:

Dive: possibility to install sprinklers in every level

Miniloads: proven fire safety concepts



# DIVE vs Single-Level Shuttle

## Footprint:

DIVE: smallest footprint among considered ASRS for industrial buildings 12m high  
Shuttle: requires 1m space for shuttle every 4 bins (double deep storage)

## Performance:

DIVE: over 40 presentations/h (double cycle) per Snapper  
Shuttle: unmatched performance up to 50 dc/h per shuttle unit, but due to the high number of shuttle units this system has highest investment costs

## Scalability:

DIVE: modular design allows scale storage capacity and performance; low requirements to concrete slab  
Shuttle: extension requires construction works and handling of bulky steel profiles in the warehouse

## Serviceability:

Dive: 60 cm access to robots in each level (horizontal access on platform)  
Shuttle: relatively simple access for service

## Energy efficiency:

Dive: highly energy efficient thanks to lightweight robots with energy recuperation system  
Shuttle: highest energy efficiency due to simple and light design

## Fire Safety:

Dive: possibility to install sprinklers in every level  
Shuttle: have proven fire safety concepts





# DIVE vs Other Cube systems



## Footprint

**DIVE:** smallest footprint for 12m high industrial buildings  
**Other Systems:** max height 7.5m



## Performance

**DIVE:** over 40 presentations/h (double cycle) per Snapper  
**Other Systems:** 30 presentations/h per robot



## Scalability

**DIVE:** modular design; low slab requirements  
**Other Systems:** expandable with construction work; high floor flatness needed



## Serviceability

**DIVE:** 60 cm access on each level  
**Other Systems:** simple but limited stack access



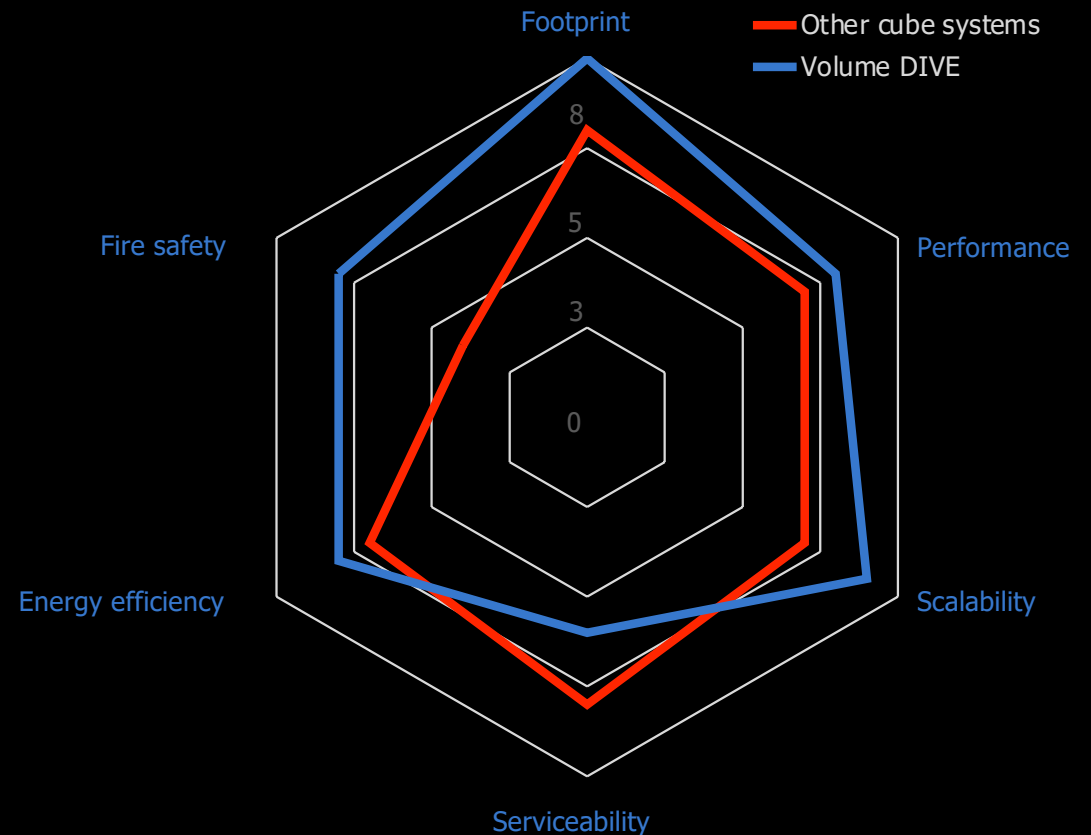
## Energy efficiency

**DIVE:** lightweight robots with energy recuperation  
**Other Systems:** good, but reduced by digging

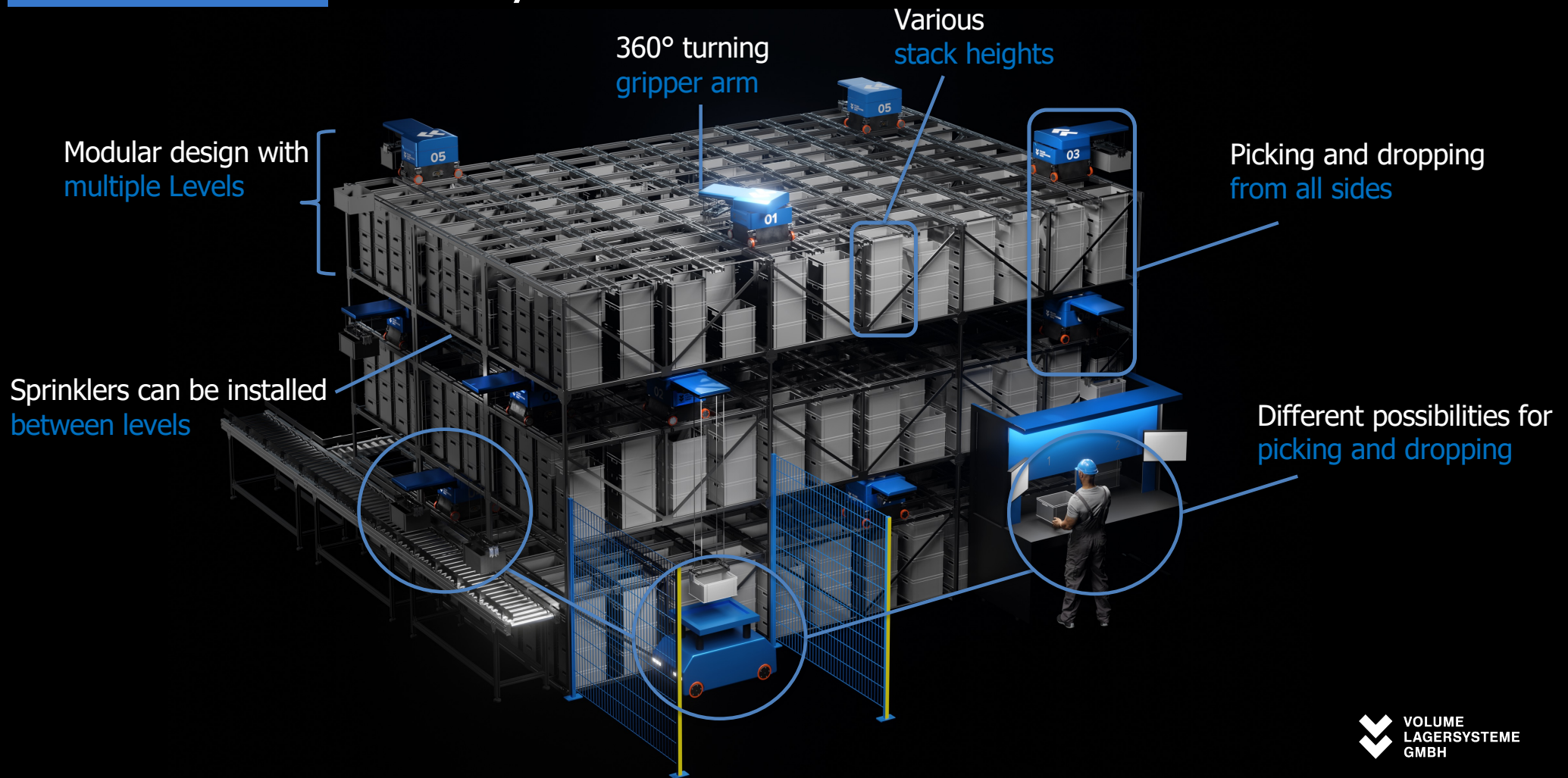


## Fire safety

**DIVE:** sprinklers possible on every level  
**Other Systems:** inefficient sprinklers due to stack height



# Volume DIVE flexibility redefined





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