

# Four-Way Shuttle Racking System

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A dense-storage racking structure for palletized or tote goods, with running rails in both directions connecting directly to the working aisles. Omnidirectional shuttle cars store and retrieve goods without secondary handling, and can switch aisles freely — raising throughput and space utilization far beyond conventional forklift racking. Every system is custom-engineered: the racking is designed to FEM 10.2.19 together with the shuttle supplier’s interface data, so steel and robots work as one system.

## System composition

|                          |                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| Racking structure        | Cold-roll-formed upright frames, beams and bracing; rails in both longitudinal and transverse directions        |
| Shuttle cars & lifts     | Supplied/integrated by the shuttle OEM — racking interfaces engineered jointly from supplier interface drawings |
| Conveyor & WCS interface | Infeed/outfeed conveyor positions and control-system clearances reserved per project layout                     |
| Installation             | JISE factory crews, incl. overseas installation, leveling and rail alignment verification                       |

# Racking specification

|                   |                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------|
| Storage unit      | Pallet (800×1200 / 1000×1200 / 48"×40") or tote — lane geometry custom to unit load                                     |
| System height     | Project-engineered; high-bay installations up to 32 m delivered                                                         |
| Lane depth        | Deep-lane, project-specific (no fixed maximum)                                                                          |
| Rail tolerances   | Rail straightness and lane tolerances to FEM 10.2.19 (shuttle-racking design code)                                      |
| Steel             | Baosteel feedstock, cold-roll-formed profiles; grade selected per project calculation                                   |
| Surface finish    | Electrostatic powder coating 60–80 μm, adhesion GB/T 9286 Grade 0, salt spray >500 h; galvanized options for cold store |
| Temperature range | Ambient, chilled and deep-freeze installations delivered                                                                |
| Unit load         | Engineered per project; certified capacity documentation issued with each project                                       |

# Design codes & verification

|                          |                                                                                                                     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------|
| Design basis             | FEM 10.2.19 · FEM 10.2.02 / EN 15512 · AS 4084:2023 · RMI/ANSI MH16.1 as applicable to market                       |
| Independent verification | AS 4084 capacity tables and test procedures independently verified (series 24111305) — see Quality & certifications |
| Project documentation    | FEA reports stamped and available in the official language of the project location                                  |

# Typical applications

- Food & beverage
- Dairy
- Cold storage
- Chemical
- Tobacco
- FMCG
- E-commerce
- Manufacturing

# Reference installations

|                                                                           |                                                         |
|---------------------------------------------------------------------------|---------------------------------------------------------|
| <b>Thailand — 32 m high-bay</b><br>24,000+ pallet positions, ambient FMCG | <b>Mexico — 25 m system</b><br>56,000+ pallet positions |
| <b>Mexico — pilot system</b><br>2,372 pallet positions, phased entry      | <b>Brazil — FMCG</b><br>25,000 pallet positions         |

Unit loads, bay loads, beam sections and lane geometry are calculated per project and certified in project documentation — JISE does not publish generic load tables. Values above describe the delivered-system envelope, not a quotation.