

Semi-Gantry Crane Selection Matrix

A Comprehensive Engineering Reference for Industrial Workspace & Capacity Planning

1. TECHNICAL OVERVIEW & SPATIAL LOGIC

The semi-gantry crane represents a highly efficient engineering compromise between standard overhead bridge cranes and full gantry systems. Featuring a distinctive asymmetrical structure—where one end carriage travels on the elevated runway beam of the factory workshop, and the opposite end carriage runs on the ground-level rail—this configuration optimizes floor space while significantly mitigating building structural loads.

By utilizing existing building columns on one side, facilities can avoid the capital expenditure of constructing a complete secondary runway infrastructure. This makes it an ideal solution for multi-tiered logistics where localized, high-frequency lifting operations must occur beneath a larger, facility-wide overhead crane layer.

2. INDUSTRY-SPECIFIC SELECTION MATRIX

The following dataset outlines standard configurations based on typical industrial use-cases. Custom adjustments can be engineered for specific span, clearance, or environment constraints.

INDUSTRY SEGMENT	RECOMMENDED MODEL	CAPACITY RANGE	ISO DUTY CLASS	CORE TECHNICAL CONFIGURATION
Machinery & Assembly	BMH Type (Single Girder)	3 Ton - 20 Ton	A3 / A4	Low-headroom wire rope hoist, variable frequency drive (VFD) for cross/long travel, polyurethane bumpers.
Steel Fabrication	BME Type (Double Girder)	10 Ton - 50 Ton	A5 / A6	Heavy-duty open winch trolley, reinforced boxed legs, electronic anti-sway control, heavy-wear rail sweeps.
Logistics & Warehousing	BMH Type (Light Duty)	1 Ton - 10 Ton	A3	High-speed hoist lifting, compact limit switches, optional wireless remote with smart interlocking parameters.
Tooling & Maintenance	Precision Precision-Type	2 Ton - 15 Ton	A4	Dual-speed micro-hoisting mechanisms, exact inching control systems, anti-collision sensors for localized safety.

INDUSTRY SEGMENT	RECOMMENDED MODEL	CAPACITY RANGE	ISO DUTY CLASS	CORE TECHNICAL CONFIGURATION
New Energy & High-Tech	Custom Intelligent Type	5 Ton - 30 Ton	A5	PLC-automated positioning, target tracking integration, synchronous multi-hook operation, cleanroom-compatible enclosures.

Engineering Note on Duty Cycles (ISO / FEM)

Selecting the proper Duty Class (A3 to A6) is critical to preventing premature gear, motor, and structural fatigue. For continuous multi-shift production environments like steel processing yards, an A5 or A6 configuration is mandatory, even if actual load weights fall well below nominal capacity thresholds.

3. PRE-PURCHASE TECHNICAL CHECKLIST (SITE SURVEY DATA)

Before moving forward with final structural design or commercial quotation, ensure your engineering team has verified and quantified the following parameters:

Span Requirement (S)	Distance between the center lines of the upper overhead rail and the ground rail. Critical for deflection engineering.
Lifting Height (H)	Distance from the ground to the highest hook position. Must factor in total height of the load plus rigging gear.
Upper Runway Load Capacity	Structural verification that the existing factory corbel/column can safely handle the additional dynamic wheel loads.
Ground Rail Civil Conditions	Foundation concrete depth assessment. Standard installations require embedded anchor plates and specialized grouting for rail sizes (e.g., P24, P38).
Clearance Obstructions	Verification of localized pipelines, HVAC ducting, or overlapping crane paths that may impede upper end-carriage travel.

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