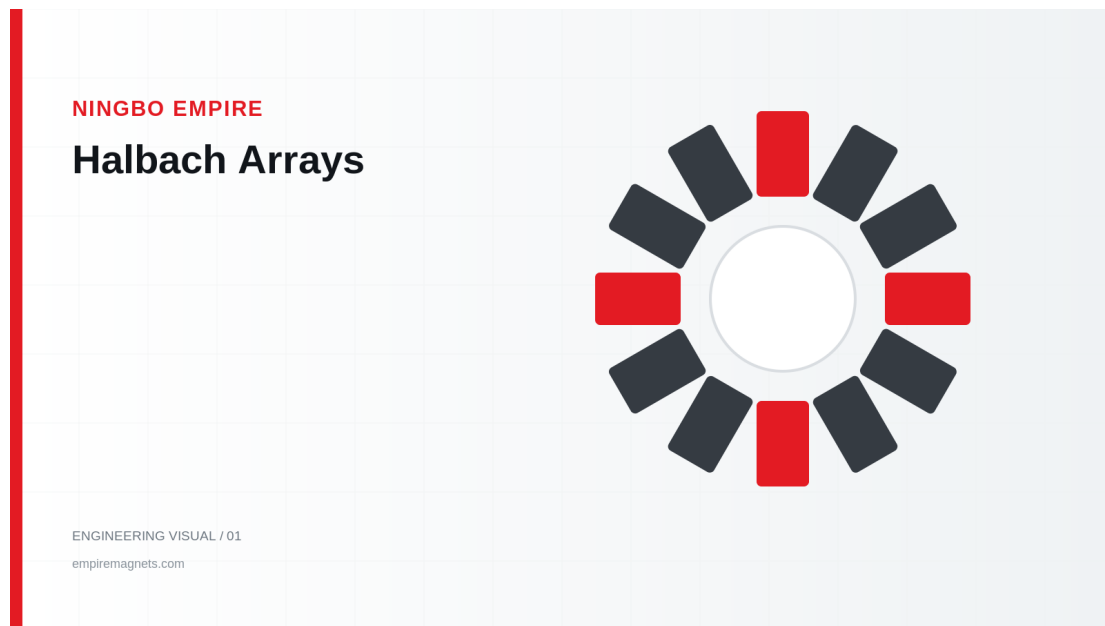




TECHNICAL BROCHURE

Halbach Arrays

Linear and cylindrical Halbach arrays engineered around target field, geometry and orientation.



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Technical Data 1

Configuration	Geometry	Design objective	Common application
Linear Halbach	Straight segmented array with rotating magnetization vectors	Concentrate field on working face	Maglev, separators, linear motors
Cylindrical Halbach	Ring/cylinder with rotating vector sequence	High internal or external field	Motor rotors, analytical instruments
Dipole / multipole	Field-shaping around a useful aperture	Uniform field region	Sensors, research equipment
4-sided / box array	Flux concentrated into central region	Compact high-field zone	Measurement / laboratory systems

Technical Data 2

Application / Architecture	Typical Configuration	Engineering Focus
Linear array	Successive segments rotated in magnetization direction	One-sided field, gap control, modular assembly
Cylindrical Halbach	Ring / cylindrical segmentation	Center field, segment angle, retention
Dipole / two-sided	Yoke-free field region	Uniformity and working volume
Four-sided array	Square / rectangular flux concentrator	Field concentration and assembly forces

Technical Data 3

Parameter	Capability / Options	Notes
Configuration	Linear, cylindrical, dipole, 4-sided	Selected from target field / envelope
Magnet material	NdFeB N42-N52 class, SmCo where temperature requires	Grade selection tied to field and thermal margin
Segment count	4 minimum practical; 8-16 common	More segments improve field approximation but increase cost
Angular orientation	Project controlled; +/-1 deg class matters	Orientation error directly affects field quality
Segment position	+/-0.05 mm class typical target	Air gaps and radial position influence performance
Validation	Hall-probe scan / field mapping vs target	Measurement geometry defined before build

Technical Data 4

RFQ / DFM input	What to provide
Target field	Strength, uniformity, field-free side requirement
Geometry	Linear/cylindrical, envelope, working gap / bore
Temperature	Continuous / peak temperature
Mechanical environment	Vibration, shock, retention / housing constraints
Volume	Prototype and annual demand

Engineering note

Values are reference specifications unless explicitly stated as guaranteed on a quotation or approved drawing. Final grade, geometry, tolerance, coating, magnetization, operating temperature and validation requirements must be confirmed for the actual application.