High-Tonnage Automatic Hot Press With 100-Ton Capacity, 10.9 Mpa Pressure, And 7-Inch Touchscreen Pid Temperature And Pressure Control

Item Number: XP46

Introduction

Explore the high-tonnage automatic hot press, a robust solution for advanced materials processing with 100-ton capacity and 10.9 MPa maximum pressure, complete with 7-inch touchscreen PID dual-loop temperature and pressure control, suitable for ceramics, polymers, and composite molding.

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Application	Description	Key Benefit
Advanced Ceramics & Powder Metallurgy	High-pressure hot pressing of ceramic powders (e.g., alumina, zirconia) and sintered hard alloy powders (e.g., tungsten carbide, silicon carbide) to achieve near-net shape densification. The process is conducted under vacuum or inert atmosphere using specially designed molds, with precise temperature ramps to avoid grain growth.	Achieves ultra-high density (>99% theoretical) and uniform microstructure, reducing post-sintering shrinkage and improving mechanical properties such as hardness and fracture toughness.
High-Density Composite Laminates	Stacking and curing of carbon fiber, aramid fiber, or glass fiber prepregs under high pressure and temperature for aerospace and automotive components. The even pressure distribution eliminates air entrapment and ensures consistent resin flow across multiple layers.	Ensures void-free consolidation and optimal interlayer adhesion, resulting in superior strength-to-weight ratio and fatigue resistance critical for structural applications.
High-Performance Polymer Molding	Compression molding of difficult-to-process materials such as ultra-high molecular weight polyethylene (UHMWPE), polytetrafluoroethylene (PTFE), and perfluoroalkoxy (PFA) that require high pressure to initiate melt flow and fill intricate cavities. The dual-zone heating allows controlled cooling to minimize warpage.	Enables full-filled, stress-free parts with excellent surface finish and dimensional accuracy, often matching or surpassing injection molding quality for thick parts.
Semiconductor & Electronic Packaging	Precision lamination of advanced electronic substrates, copper-clad laminates (CCL), and multilayer ceramic capacitors (MLCC) under controlled pressure and heat. The parallel platens and accurate pressure control prevent misalignment and thickness variation, essential for high-frequency and high-density interconnect applications.	Delivers uniform pressure distribution across large areas, critical for preventing delamination and ensuring electrical reliability in multilayer structures.
Battery Electrode Calendering	Densification of electrode films (cathode and anode) for lithium-ion and solid-state batteries, improving energy density and electrical contact. The high tonnage and flat platens produce electrodes with consistent porosity and thickness, directly influencing battery capacity and rate performance.	High tonnage and even pressure enhance electrode density uniformity, boosting battery performance, cycle life, and reducing internal resistance.
Material Testing & Sample Preparation	Fabrication of test specimens such as tensile bars, discs, and pellets from powders or granular materials according to ASTM/ISO standards. The programmable cycles guarantee repeatable sample density, essential for comparative studies and quality assurance.	Produces consistent, standardized samples with controlled porosity, essential for reproducible material characterization and regulatory compliance.

Parameter	Specification	Remarks
Model	XP46	—
Pressure Control Method	PID programmable automatic control	Electric hydraulic drive, supports automatic pressure holding and replenishment
Maximum Clamping Force	100 T (metric tons)	Adjustable range: 0–100 T
Maximum Surface Pressure	≤10.9 MPa (approx. 109 bar)	Calculated based on 100 T over 300×300 mm area
Platen Size	300 × 300 mm	Dual heated platens with built-in water cooling channels
Daylight Opening	150 mm	—

Parameter	Specification	Remarks
Piston Stroke	50 mm	—
Temperature Range	0–300 °C	Control accuracy: ±1 °C
Heating Power	4800 W (2 × 2400 W)	Independent dual-zone control
System Controller	7-inch color touchscreen	Real-time pressure/temperature curves display, multi-step program storage
Cooling Method	Circulating water cooling	External chiller recommended to protect hydraulic seals and speed cooling
Power Supply	Single-phase AC 220 V, 50 Hz	Operating current ~28 A; requires circuit breaker ≥32 A
Certification	CE Certified	Complies with European electrical and mechanical safety standards
Approximate Dimensions (W×D×H)	850 × 650 × 1450 mm	—
Approximate Weight	~800 kg	Varies with final configuration and counterweight