Embracing Industry 4.0: How CHMAC is Redefining Precision in the Next Generation of CNC Press Brakes

Haian, Jiangsu Jun 14, 2026 (Issuewire.com**)** - The dawn of Industry 4.0 has fundamentally transformed the landscape of global manufacturing, shifting the focus from simple mass production to highly intelligent, interconnected, and precise fabrication. In this rapidly evolving ecosystem, the demand for sophisticated sheet metal processing has skyrocketed, positioning the Top Rated Press Brake Factory in China as a pivotal player in the international supply chain. A Press Brake is not merely a tool for bending metal; it is a high-precision instrument that determines the structural integrity and aesthetic quality of products ranging from communication cabinets to aerospace components. Modern factories now require equipment that offers not just force, but intelligent synchronization and adaptive control to meet the rigorous standards of the "Future Factory."

1. Structural Integrity and Advanced Simulation Technology

The foundation of any high-performance CNC press brake lies in its physical architecture. CHMAC has integrated state-of-the-art engineering practices to ensure that their equipment remains stable under extreme pressure. Utilizing the CAE software SOLIDWORKS, the engineering team performs rigorous Finite Element Analysis (FEA) and Stress Analysis on the machine frames. This methodology allows for the analysis of linear static construction, stress, and potential deformation long before a machine ever

hits the assembly floor.

By simulating highly complex loading and transient modeling, the company ensures that the "Next Generation" of press brakes can handle complicated structures without compromising on accuracy. This scientific approach to frame design minimizes vibration and structural fatigue, providing a reliable platform for the synchronized hydraulic cylinders to operate with surgical precision. This structural robustness is a primary reason why the brand has successfully gained EU CE certification and ISO9001 quality management status.

2. Intelligent Synchronization and Control Systems

Precision in modern bending is dictated by the synergy between hydraulic power and electronic control. The PAS Series CNC Press Brake exemplifies this technological harmony. At the heart of the system is a sophisticated CNC Control Unit that manages multiple axes—standard configurations include Y1, Y2, X, and R, with the capability to expand up to 6+1 axes for highly complex geometries.

The control system features a 15-inch full-color LCD widescreen display, providing operators with a high-resolution 2D graphic programming interface. This allows for real-time bending simulation, where the operator can visualize the bending effect before the actual metal is touched. Furthermore, the "One-key recovery" function for machine parameters ensures that downtime is minimized, while optional industrial cloud connectivity bridges the gap between individual machines and factory-wide management systems, a core requirement for Industry 4.0 integration.

3. High-Performance Components and Technical Specifications

To maintain a competitive edge, the internal components of a press brake must be sourced from world-class providers. The technical prowess of these machines is supported by several key integrated technologies:

- **Hydraulic Excellence:**The system utilizes Hengli Hydraulic Servo Proportional Valves, known for high dynamic performance and stability. Paired with Sunny Hydraulic Gear Pumps, the machines operate with minimal noise and a long service lifetime, even under high-pressure conditions.
- **Precision Measurement:**GIVI optical linear scales provide feedback to the CNC unit, ensuring that the ram positioning is accurate to within microns.
- **Backgauge Accuracy:**The BGA-X backgauge system utilizes Hiwin ball screws and linear guides. With a mechanical accuracy of ±0.01 mm and an X-axis speed of 600 mm/s, the positioning of the sheet metal is both rapid and incredibly consistent.

The technical specifications of the PAS series cater to a wide range of industrial needs. For instance, models like the PA-11032 offer a bending force of 1100 KN and a bending length of 3200 mm, while larger industrial units like the PA-32071 can reach a staggering 3200 KN of force with a 7100 mm

bending length. These parameters allow manufacturers in fields such as building curtain walls, upscale hotel interiors, and electrical cabinets to select a machine perfectly tailored to their specific material thicknesses and lengths.

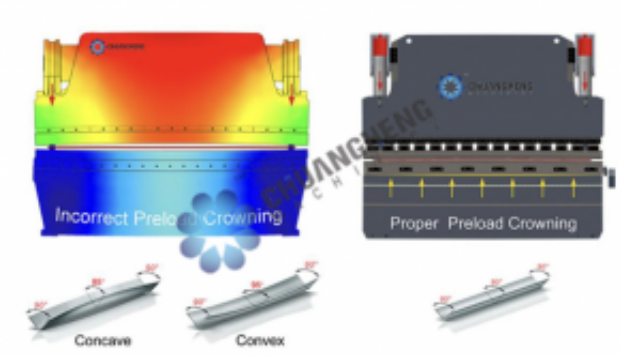
4. Safety, Efficiency, and Environmental Stewardship

As manufacturing moves toward a more sustainable future, energy efficiency has become a non-negotiable metric. CHMAC has addressed this by introducing the Hybrid Servo ECO Function as an optional feature. This innovative drive system allows for precise control of the ram movement using a minimal amount of oil and energy, reducing the environmental footprint of the factory while simultaneously lowering operational costs.

Safety is also paramount in the Industry 4.0 era. The integration of Italy DSP Laser Protection offers a multi-beam receiver system that protects the front, center, and rear areas of the bending zone. With a response time of just 5 ms, this system ensures operator safety without sacrificing the high-speed approaching and returning speeds (up to 180 mm/s) that modern production schedules demand. Furthermore, the inclusion of an automatic crowning system enables the machine to offset possible deformations automatically during the bending process, ensuring that the bending angle remains constant along the entire length of the workpiece.

By focusing on personalized sheet metal solutions and providing key technical support, the company continues to create value for a global clientele. Whether it is through the use of robotic arms for automated production lines or high-speed electric servo machines for smaller parts, the transition to intelligent manufacturing is being led by those who prioritize precision, compatibility, and environmental protection.

For more information on high-end sheet metal equipment and intelligent manufacturing solutions, please visit the official website: https://www.chjxkj.cn/



Media Contact

JIANGSU CHUANGHENG MACHINERY TECHNOLOGY CO.,LTD

*********@chjxkj.cn

Source : JIANGSU CHUANGHENG MACHINERY TECHNOLOGY CO.,LTD

See on IssueWire