## PlasmaCAM's New Genesis Model

PlasmaCAM is excited to announce the release of a revolutionary new plasma cutting machine model, called Genesis<sup>™</sup> (because it is so different from any previous model, and because our machines help people create such innovative new things). The machine cuts a 4ft by 4ft area and is controlled by an updated version of the industry-leading DesignEdge<sup>®</sup> software.





As an introductory offer (and to not disrupt orders currently in process), the first batch of Genesis machines is priced the same as the older model DHC2 (which has not changed in years, despite inflation). These machines will sell out quickly, before we can fully ramp up production, so call PlasmaCAM today at (719) 676-2700 to order your machine at this discounted price, while you still can!

## Partial List of Improvements

- Wireless connection (rather than by parallel port). Provides much wider computer compatibly, since wifi hardware is common and inexpensive to add to any PC (including laptops). No more cable between computer and machine to damage, trip over, or cause electrical/grounding problems and communication errors.
- **Low-profile, integrated rails** (rather than separate rails mounted above the material). Material can now easily be loaded from the sides of the frame.
- Large Z-axis travel and clearance. Z-axis travel is now 6 inches, and the carriage can clear material and objects up to 6 inches high. Z-axis rollers and tracks are reversed, making the holder no longer protrude below the carriage (and catch on material) when lowered. The gantry can be mounted at 3 different heights to optimize your application.
- **Better machine torch/tool holder**. Optimized for machine torch (rather than hand torch). Can still hold a hand torch with an optional bracket. Fits other large tools (such as full-sized routers) with no height limitations and less offset problems.
- **Hypertherm plasma cutter control**. The new controller communicates with Hypertherm plasma cutters, allowing you to set the cutter parameters (such as current, pressure, and consumable type—which can be stored in different configurations), manage consumable life, and get error messages directly from the computer.
- Easier to install attachments. The pipe cutting attachment is much faster and easier to install (without disassembling the machine). The engraving attachment installs in place of the machine torch (without removing the holder), and it connects to the controller and works on any line voltage (no longer requiring a separate power cord and 115 VAC). The routing attachment is even a little easier to install (no loose nuts). The controller is designed to accommodate other possible future attachments.
- **Simple grate slats**. Full-contact strips last much longer than the old grate points, and you can easily cut your own slats to replace them. They can also be removed easily if needed for routing or to accommodate custom fixtures.
- Water table option. An optional water table is available for purchase that fits in the frame. (We still recommend setting up a downdraft system instead if possible.)
- **Convenient clamp surfaces**. The front and back of the machine have long, rimmed edges that allow easy clamping of the material when needed.
- All stainless steel tracks with better bearings (rather than cam rollers on painted surfaces). Smoother, more precise motion with greatly increased wear life.
- All identical brushless servo motors (rather than brushed motors and a stepper motor). Higher reliability, with no more brush wear causing motor/controller failure, or Z-axis that jams and loses position. All motors and wiring harnesses can be swapped for easier maintenance and troubleshooting.
- **Direct rack & pinion drive** (without pulley belt reduction). Zero backlash, higher dynamic precision, less moving parts to wear, troubleshoot and replace.

- More rigid construction. Larger profile frame pieces with integrated rails greatly reduce the movement and vibration of the machine (when bolted to the floor). The gantry tube is also larger for less flexing, the carriage design is more rigid, and all moving parts are held in position more firmly than before. This provides more accurate, better quality cuts, and it also allows higher acceleration and heavier loading (like when routing) without components coming off their tracks.
- **Higher performance motion**. The new servo motors are smaller and more powerful than the previous ones, able to accelerate the machine to 1000 inch/min at over 2G. The performance of the Z-axis is greatly improved (compared to the old stepper motor design that was limited to 104 inch/min and 0.05G).
- **Better height control**. Initial height sensing is now adjustable and can detect low contact resistance (to better differentiate water or nozzle spatter from true contact). Stall mode can now detect adjustable force and respond with performance comparable to contact sensing (whereas older models jammed with full force for a set time). The range of motion under arc voltage feedback can now be limited.
- **Improved controller**. Case is much better sealed to keep plasma dust out. Low EMI design can now run on a GFI receptacle and won't cause occasional computer glitches (screen distortion, phantom mouse movements and keystrokes). No voltage selector switch (auto switches internally) with better line voltage control (to eliminate the tendency to use a step-down transformer for 230VAC). Better short-circuit protection prevents damage. New diagnostics check motor resistance, inductance, friction and torque as well as controller temperature, supply voltages, and more.
- No control panel (ironically, an improvement). Was a common point of failure due to button and rotating knob wear. New, higher performance jog/shuttle control with your keyboard and mouse, and other control panel functions can now be done more easily from the software. A wireless game controller can be configured as a portable control panel. The control arm attaches to either back corner of the machine, making loading easier.
- **Improved wiring**. There are fewer connectors, none where cables flex, and no limit switches (all points of failure on older models). More flexible, lower capacitance, better grounded cabling is used in shorter lengths between motors and the controller, increasing reliability and greatly reducing EMI.
- Active force balance. If you push one end of the gantry, the other end moves with it as if connected by an invisible drive shaft. If you push the Z-axis up or down, it feels weightless and stays in place, even when holding a heavy tool. (These features allow the machine to be moved around while protecting the gantry, material, and cutter from damage.)
- **Expandable Size**. We plan to offer an upgrade in the future that will expand the machine to cut a 4ft by 8ft area. You can start with a smaller machine and change it to a larger one later at a reasonable cost.

We want to thank our customers for providing all the valuable feedback that ultimately let to these significant improvements!

## Photos of Various Components



optional water table



movable stops for positioning material



easy clamping of material to frame



larger rollers on stainless steel tracks





larger rollers on stainless steel tracks



adjustable gantry clearance



identical motors on all axes



sealed wireless controller



optional hand torch holder



standard machine torch



optional engraving attachment



optional routing attachment



example custom setup of a large router



optional pipe cutting attachment



## Preliminary Performance Comparison

These drawings of approximately 2-inch-wide squares were made by the indicated machines holding a pencil and moving at 1000 inch/min, with 1G of acceleration. (The positioning accuracy of the model DHC2 is normally good, but at high speed and acceleration, you can clearly see how superior the new Genesis model is.)

