

# Dependable, Powerful, Intuitive CNC Solutions

## **FLASHCUT CNC**

CONTROL MADE SIMPLE



**CNC CONTROLS**



**CAD/CAM/CNC SOFTWARE**



**CNC RETROFITS**



**PLASMA**



**WATERJET**



**OXYFUEL**



**LASER**



**ROUTER/MILLING**



**LATHE**



**3D PRINTING**



**KNIFE CUTTING**



**GENERAL AUTOMATION**

Innovative, robust and user-friendly  
CNC solutions give you a competitive edge



### ROBUST CNC CONTROLS

Since 1996, FlashCut CNC has skillfully developed robust, Windows-based CNC solutions for a wide range of machine tool and robotic applications. Whether your business requires plasma, waterjet, oxyfuel, laser, mill, router, lathe, 3D printer, hotwire, knife-cutting or a custom application, FlashCut CNC has a comprehensive product line and the engineering expertise to customize our world-renowned controls for your unique application needs.

### INDUSTRY LEADING OEM PARTNERSHIPS

Our team of engineers works directly with our OEM partners to develop powerful and economical CNC solutions tailored toward a given application. These partnerships provide leading-edge advancements that help position our OEM's as leaders in their industry.

### ROCK SOLID SUPPORT

FlashCut CNC offers the most responsive and knowledgeable customer service support in the industry. We are always available to meet your needs by phone, e-mail or live web conferencing.

### FLASHCUT CNC COMMUNITY

FlashCut CNC is at the heart of a community of engineers, machinists, business leaders, and educators worldwide. We are also strong supporters of our local high schools, colleges and charitable organizations through our leading edge internship program and annual awareness and fundraising events.

Control solutions engineered  
to fit your needs



FlashCut CNC has a full engineering and development staff ready to assist you in customizing our software and controls for your unique application...and ready to support you and your customers for years to come.

Retrofits

Plasma

Laser

Waterjet

Oxy-Fuel

Knife Cutting

Mills

Routers

Lathes

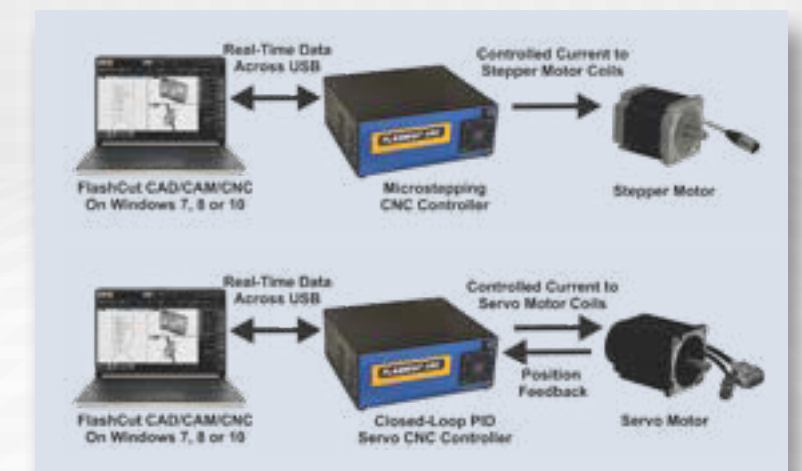
Lab Automation

Hot Wire

Factory Automation

## Windows CNC - the right way

Our Windows-based software is easy, intuitive and customizable to each unique application. FlashCut CNC is the only Windows CNC solution offering a dedicated CNC electronic controller ensuring smooth and uninterrupted motion using 64-bit Windows 7, 8 or 10 with a USB connection on either a laptop or desktop.



## Your partner in custom CNC controls

### Configurable Multi Axis Controllers

All of our controllers are designed and built in the USA to give you seamless plug-and-play operation from any laptop or PC. They all include up to 5 or 6 axes of motion, 8 inputs and 8 outputs. We also offer optional I/O expansion with more digital I/O and analog inputs and outputs. Many other optional accessories are available.



### Compact Series Microstepper

Precision motion at your desktop for controlling any small multi-axis stepper motor driven machine. Built in the USA to the highest quality standards.

- 5A and 42VDC of power for up to 5 axes
- Affordable, compact unit for coordinated control of up to five motors
- Quiet bi-polar microstepping technology
- Adjustable current
- Plugs into any PC with a USB port
- Perfect for running small CNC machines and general automation

### Pro-Series and Sub-Panel Microstepper

Affordable, precise, powerful coordinated motion for controlling virtually any stepper motor driven machine. Engineered and built in the USA for true plug-and-play operation.



- Sub-panel version perfect for adding into your own control cabinet
- 8 Amps and 70VDC of power for up to 5 axes
- Digital anti-resonance technology with inertia matching for smooth, precise motion
- Easily runs NEMA 17, 23, 34, 42 and 56 stepper motors with precision and power
- Perfect for running medium and large CNC machines or factory floor automation

### Compact Step-Servo Controller

- Provides pulse and direction commands and bus power to common motors with integrated controls such as ClearPath® and StepSERVO®
- Advanced filtering and power boost of pulse and direction signals to 12 VDC or 24VDC for greater noise immunity along motor cable lengths
- Up to 5 axes of integrated control



### Pro-Series and Sub-Panel Servo

Provides precise, powerful coordinated motion for controlling virtually any machine. Advanced digital servo can be tuned to run almost any servo motor.



- Available in 12.5A continuous, 25A peak current
- Advanced digital servo technology for quick, smooth, precise motion
- Easily runs NEMA 23, 34, 42, and 56 Servo motors with precision, power and speed
- Perfect for running medium and large CNC machines or general automation



### Titanium Servo or Microstepper

All-in-one ergonomic industrial CNC control console with sealed steel construction



- Industrial 19.5" Capacitive Touch Screen, NEMA 4 waterproof keyboard/mouse
- Advanced microstepping or 25A peak digital PID servo for up to 5 axes of motion control or 6 axes with one master/slave pair
- Pedestal mounting with bottom access to all connections reducing exposed cabling on machine
- Hinged top access for easy maintenance
- Integrated E-Stop and Reset buttons and optional external control switches for over 10 functions including: Cycle Start, Feed Hold, Jogging Joy Stick, File Load and Output Line Control

From Fortune 500 companies to machine shops to the best educational institutions in the world, FlashCut CNC has provided tens of thousands of customers world-wide with powerful, affordable and easy to use CNC controls.

Product									
Technology	Bipolar Microstepping	Bipolar Microstepping with Advanced Anti-Resonance and Inertia Matching Technology			Conditioned Pulse and Direction Signals	Sinusoidal or Trapezoidal PID Servo			
Maximum # of Axes	5	5	6 (with one master/slave pair)			5	6 (with one master/slave pair)		
Phase Current Range	0.5 – 5	1.0 – 8.0			N/A	12.5A Continuous 25A Peak			
Bus Voltage [VDC]	42	70			Up to 80 VDC	90			
Step Resolution	1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128, 1/256	Full, 1/2, 1/10, 1/25, 1/64, 1/100			N/A	N/A			
General Purpose I/O (Standard)	(8) Optically Isolated Inputs 0-5V, 0- 12V or 0-24V, (8) Outputs 0-5V								
General Purpose I/O with Mini-I/O Board	(8) Optically Isolated Inputs 0-5V, 0-12V or 0-24V, (2) Inputs 0-5V, (10) Outputs 0-5V, (1) Analog Input, (1) Analog Output, (1) PWM Output								
General Purpose I/O with Classic I/O Board	(32) Optically Isolated Inputs 0-5V, 0-12V or 0-24V, (32) Outputs 0-5V, (2) Analog Inputs 0-10V, (2) Analog Outputs 0-10V, (1) Spindle Encoder Input - Differential or Single Ended								
Input Voltage [VAC]	NEMA 17, 23				All Sizes				3 Phase 200 – 480 VAC
Commonly used with these size motors	NEMA 17, 23, 34, 42, 56 Metric 50-120mm				NEMA 17, 23, 34, 42, 56 Metric 50-120mm				Metric 50-120mm



General Automation

Robotic controls for any application that requires coordinated motion with precision I/O. Plug-n-play operation for lab and factory automation.



Knife

Integrated CAD/CAM/CNC Easily make layered signs or boxes of any size and shape. Make creases and cuts in the same G-Code.



3D Printing

Easily build three-dimensional objects with our advanced control of 3D printing technologies like FDM and liquid deposition. Advanced timing algorithms to control the flow, height and speed of the dispensed material allow you to make intricate, accurate parts.



Turning

Very easy to use CNC support for precision lathe cutting, facing, turning, threading and winding applications. Tool change and gang tooling are supported.



Mill/Router

Go from design to toolpath to cutting intricate, accurate parts with full 3, 4 and 5 axis simultaneous interpolated motion. Automatic tool change for carousel and linear tool racks is supported. Create parts and 3D toolpaths easily with CAD tools, DXF import, shape library, conversational programming and embedded CAM.



Laser

Advanced laser control automatically adjusts the laser power level with feedrate including acceleration and deceleration. Easily import or draw precision parts and create toolpaths instantly with lead-ins and kerf compensation.



Oxyfuel

All of the gas and ignition controls are at your fingertips from preheat to pierce to XY cutting. Precision gas control makes sharp, accurate cuts. Cut charts for leading brands of oxyfuel torches takes the guesswork out of kerfs and feedrates.



Waterjet

Go from design to toolpath to full CNC control for waterjet including advanced cornering, pump and abrasive controls. Pre-pierce at low pressure for delicate materials such as glass and marble. Advanced cutting formula automatically calculates feedrates and kerf for given material properties.



Plasma

Design and cut precision parts within minutes. Fully integrated Stingray® torch height control, integrated cut charts and direct communications with the plasma, and automated vent zones are just a few reasons that make FlashCut the world leader in plasma controls.



# Stingray™ integrated torch height control



FlashCut's Stingray Integrated THC reads the plasma voltage as feedback to adjust the Z axis height thousands of times a second. This system maintains a precise distance between the plasma torch and the workpiece while cutting any XY pattern at any speed, resulting in smooth edges, sharp details and higher precision. The system can inherently handle warped, bent or corrugated sheet.



## Features:

- Real-time visualization of plasma voltage, height and position parameters in the CNC software interface
- Precision voltage sampling ensures tracking at the optimal height on every cut, day after day
- Cut wizard automatically sets THC parameters based on material, thickness and consumables
- Automatic kerf crossing detection prevents unwanted diving during THC operation
- RS-485 Communications with Hypertherm Powermax® units for real time amperage and pressure control
- RS-422 with Hypertherm HPR and Kjellberg SmartFocus and Hi-Focus for optimized gas mixing
- Support for multiple plate sensing technologies such as ohmic, mechanical switch and servo pressure sensing

The Stingray THC system can be added to any new controller or it can be retrofitted to all existing Compact, Pro-Series or Titanium controllers using FlashCut's unique technology. The THC kit can be configured using any of the following components for plug- and-play operation with your plasma controller:

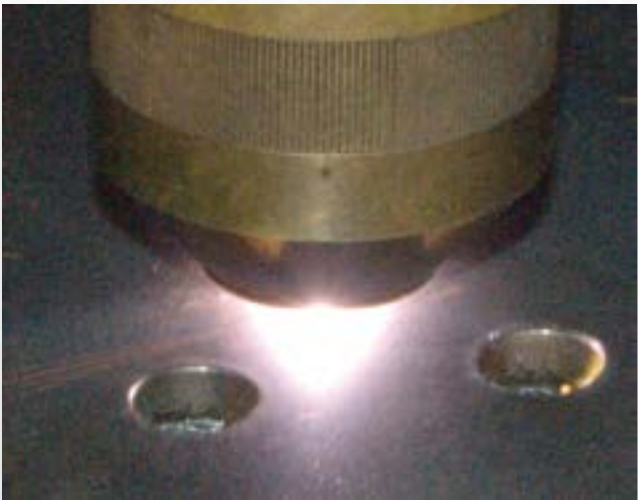
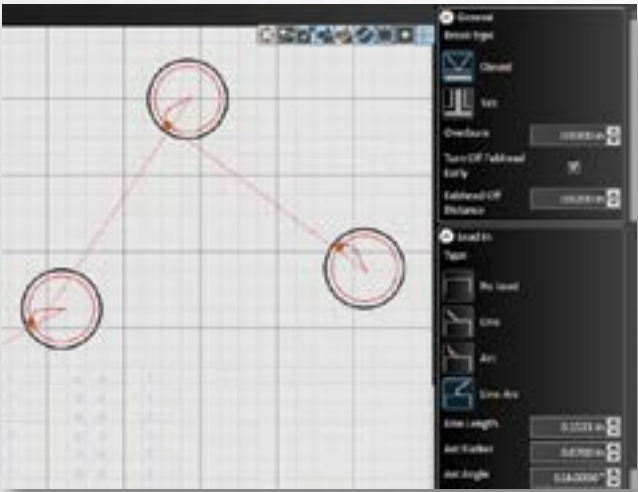
- Mechanical lifter with torch holder and magnetic breakaway
- Voltage isolation box and cables
- Stepper or servo drive and motor
- Optional ohmic disconnect and hardened cables for hi-def plasma



# Smart360™ hole cutting technology for air and hi-def plasma

FlashCut's exclusive Smart360™ hole cutting technology produces excellent quality holes and cutouts:

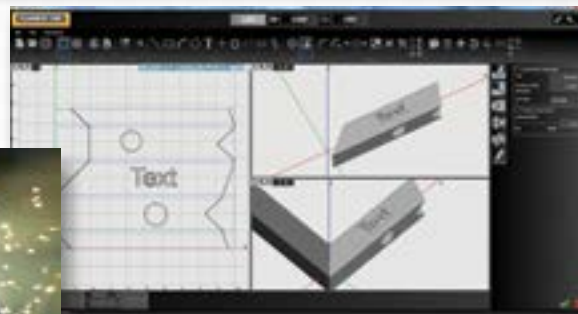
- Works with all plasma systems cutting mild steel including air plasmas and high definition plasmas
- Auto-recognition of small holes utilizes lower feedrates and temporarily turns off THC to prevent diving
- Auto-calculation of kerf vs. federate creates high accuracy holes
- Early torch turn-off prevents extraneous marks at the end of hole
- Line-arc lead-in reduces mark at beginning of hole and ensures a uniform feedrate along the entire cutout
- Can be used to increase the accuracy of small cutouts in addition to round holes



## Pipe & tube cutting CAD/CAM/CNC

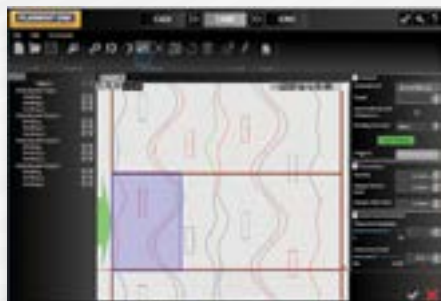
### Easily draw accurate pipe features in CAD

- Round, square and rectangular pipe support
- Pipe shape wizard makes perfect cuts for mating pipes of any diameter with a multitude of joints at any angle and any size including T joints, end caps, miter joints, Y joints and through pipes
- Pipe sizing wizard automatically sets OD and thickness of standard pipe sizes
- 3D solid model of pipe joints includes disassembly to preview what both sides of the joint will look like
- Flattened view allows for easy design of custom patterns of any shape including slots and text
- "Ghost 2D views" show feature wrapping with no interruption
- Fully rotatable solid model view



### Tailor toolpaths and nest in a snap with CAM

- Easily nest multiples of the same or different parts, minimizing pipe or tube scrap
- Toolpath automatically generated in CAM using parameters and cut charts from cutting head
- Simple graphical manipulation of lead ins and lead outs
- Embedded cut charts precisely set feedrates, cut heights, pierce times, kerf compensation and target voltages for any size pipe
- Fully rotatable solid model view



### Cut accurate parts with confidence in CNC

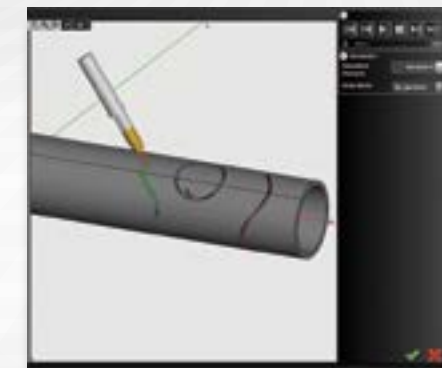
- G-Code automatically generated
- Full 3D visualization of rotary toolpath in CNC module while pipe is being cut
- Flat sheet option for cutting unwrapped pipes and tubes
- No-Cut zones account for chuck, fixture and roller locations – preventing roller burning or jamming
- Stingray® Torch Height Control ensures clean cuts regardless of the accuracy of the stock pipe
- Advanced interpolated XYZA motion for smooth cuts around corners of square and rectangular tubes



## Precision bevel cutting for round pipe



- Easily adds bevels to each cut to make welding and pipe fitting a snap
- Integrated cut charts include tailored bevel angles and kerf for different sized pipes and wall thickness.
- Create a perfect fit between branches and headers
- Works with air and hi-def plasma machines



# Support for Hypertherm®, Kjellberg® and Thermal Dynamics® hi-def plasmas

Now you can use FlashCut's intuitive, powerful and integrated CAD/CAM/CNC interface to control hi-definition plasma's from Hypertherm, Kjellberg and Thermal Dynamics. This includes full auto-gas control for the Hypertherm HPR along with the Kjellberg SmartFocus and Hi Focus units. The new interface has been engineered to give you seamless access to all of their auto-gas controls, commands and messages, so you can cut precision parts with high definition plasma quickly and easily.

- Full support of Hypertherm HPR systems, including auto-gas control
- Full support of Kjellberg Smart Focus and HiFocus plasma systems including auto-gas control
- Support for Thermal Dynamics Ultra-Cut and Auto-Cut hi-definition plasmas
- RS-422 connection provides seamless communication between the FlashCut interface and plasma system
- Auto-gas control for mixing the plasma and shield gases for HPR, Smart Focus and HiFocus Plasmas
- GUI control of amperage and pressure
- Separate amperage settings for ramping and full speed cutting
- Seamlessly change from marking to cutting settings on the fly
- Integrated cut charts for HPR, Smart Focus and HiFocus families
- Precision height control using FlashCut's Stingray® THC
- Ohmic disconnect circuitry protects system from noise and voltage spikes
- Compatible with FlashCut Pro-Series and Titanium Controllers
- Real-time diagnostics shows torch status and history of error messages and important parameters



## Seamless integration with leading laser manufacturers



- Microsecond laser control couples machine motion with laser cutting and marking with the highest precision
- Easily change the laser function into a visible red light beam for positioning on the workpiece
- Laser power dynamically changes with feedrate when accelerating or decelerating to maintain sharp detail in corners
- Accurately adjust the position of the focal lens to maximize cut quality for a given gas mixture and material thickness
- Add separate controls for cut height, pierce height and safe height
- Programmable alarms for different states and conditions of the laser machine. LED Colors and descriptions can be changed
- Monitor discreet inputs from the laser head and power supply for status, errors and alarms such as collision sensing, height sensing states and errors, head positioning and power supply status
- Stingray Capacitive Height Sensing automatically gives you precision control of the cut height while cutting



## Precision waterjet stream control

- Go from design to toolpath to full CNC control for waterjet including advanced cornering, pump and abrasive controls
- Advanced piercing techniques like wiggle and circular reduce piercing time
- Process sequencing lets you use different pressures for piercing and cutting
- Pre-pierce at low pressure for delicate materials such as glass and marble
- Advanced cutting formula automatically calculates feedrates and kerf for given material properties



## Powerful Oxy Fuel integration

- All of the gas and ignition controls are at your fingertips from preheat to pierce to XY cutting
- Real-time adjustable preheat times allow you to vary your process as the workpiece heats and cools
- Precision gas control makes sharp, accurate cuts
- Cut charts for leading brands of oxyfuel torches takes the guesswork out of kerfs and feedrates





## Knife Cutting

- Easily make layered signs or boxes of any size and shape.
- Go from design to toolpath to cutting intricate, accurate parts
- Make creases and cuts in the same G-Code
- Makes smooth contours while automatically lifting knife on sharp corners



## Router & Mill



- Go from design to toolpath to cutting intricate, accurate signs and parts
- Design signs and 2.5D parts with powerful CAD tools, DXF import, image import and shape library
- Integrated CAM automatically creates toolpaths for 2D profiling, 2.5D cutting and 3D sculpting
- Precision CNC Router control with full 3, 4 and 5 axis simultaneous interpolated motion
- Automatic tool change support for linear and carousel tool racks



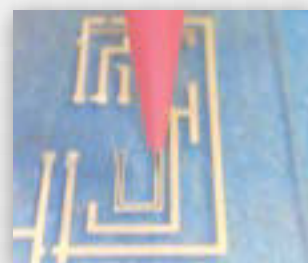
## Lathe



- Easily create smooth turned parts in FlashCut CNC
- DXF import of turned contour designed in any CAD program
- Advanced threading routine creates any sized thread, straight or tapered
- Tool change support for ganged tools
- Spindle speed control compatible with almost every VFD



## 3D Printing

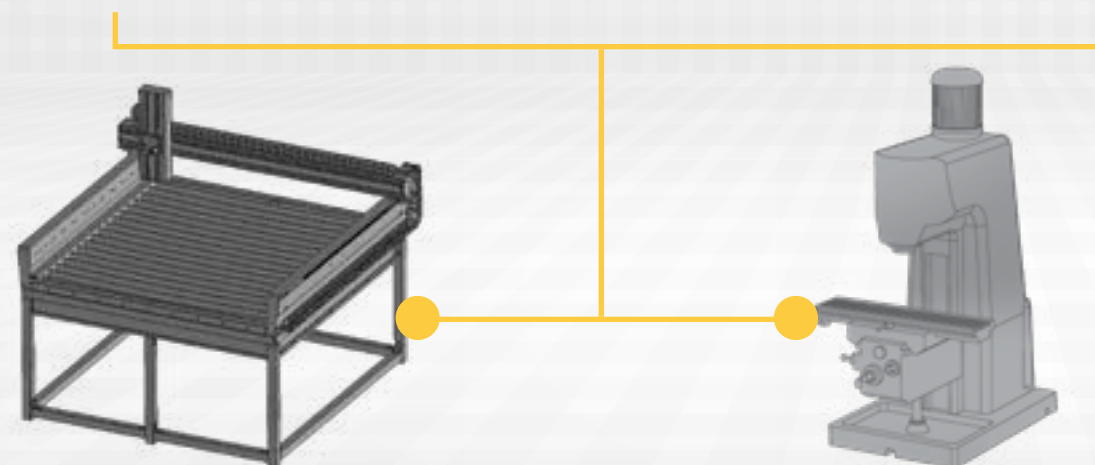


- Easily build three-dimensional objects with our advanced control of 3D printing technologies like FDM and liquid deposition
- Advanced timing algorithms to control the flow, height and speed of the dispensed material allow you to make intricate, accurate parts
- Support for multiple heads for multi-material parts such as circuit boards

## We have a solution for any machine

The FlashCut CNC Retrofit Kits are low cost and easy to install with unrivalled CNC performance. Your machine will run better and be easier to use with FlashCut CNC Controls. Our retrofits combine the latest technology using our robust and powerful Stepper or Servo Controls and Motors. With our kits you can bring life back to your machine and make it a smarter version of the dependable workhorse it once was.

Whether you are designing a new machine, replacing antiquated controls or converting a manual machine to CNC, our sales and engineering team will work closely with you to configure the perfect CNC Retrofit Kit for your application. The Retrofit Kits consist of our world-renowned software, USB signal generator, drive electronics, motors and accessories for unrivaled performance and simplicity.



## Retrofits for all shapes and sizes

Breathe new life into your existing cutting table. Whether it is a plasma, waterjet, laser, oxyfuel, router, mill or lathe, FlashCut CNC retrofits are simple and powerful. In most cases you will be up and running within a day with the latest and greatest integrated FlashCut CAD/CAM/CNC and application specific features like Stingray torch height control, Smart360 or advanced cornering technology. Retrofits save you time and money with more productivity and less maintenance. The cost of a retrofit in most cases is a more economical solution than buying a new table.



**We have successfully upgraded thousands of machines all over the world. Here are just a few examples:**



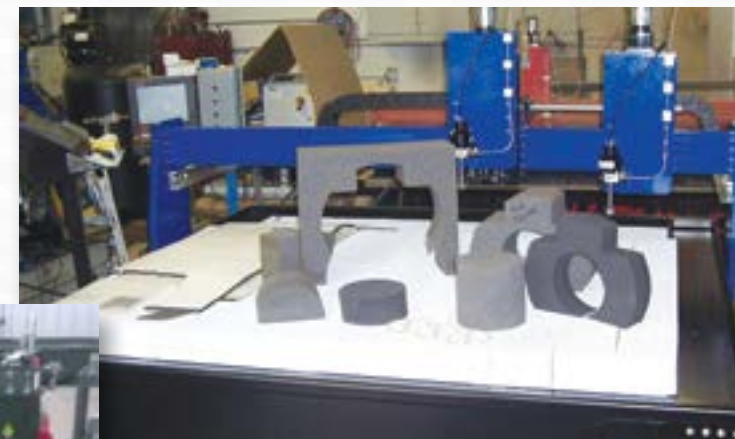
**Plasma and Oxy Fuel tables**  
from C&G®, Messer®, Koike®, Lockformer®, MultiCAM®, Torchmate®, Vicon®, EZ-Cut®, Baileigh® and Dynatorch®



Whether their CNC machine was brand new or older, these machine owners saw the value of a FlashCut upgrade to replace the software and controls originally supplied by Burney®, MultiCam®, Promotion®, I CNC® and Hypertherm® to name a few.



**Waterjet tables**  
from Omax®, Flow®, Calypso® and Jet-Edge®



**Router tables**  
from Thermwood®, Laguna®, Precix®, MultiCam®, Techno® and Shop Saber®

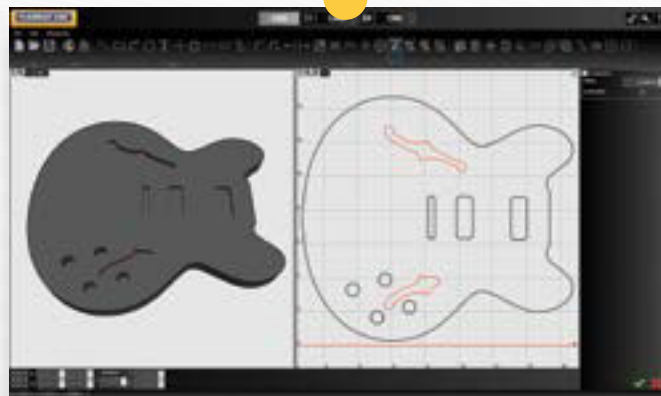


**Milling machines**  
from Bridgeport®, Acer®, Grizzly® and General®



## Design parts, generate toolpaths and 3D cut using one intuitive interface

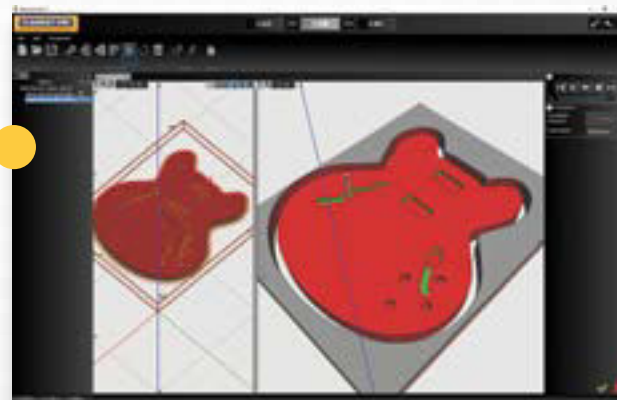
### Introducing the world's easiest 2.5D CAD



- Create simple or complex shapes from lines/arcs/polylines/circles/ellipses/splines at any height or depth
- Shape library lets you to instantly draw and customize common shapes
- Easily create a pocket, profile or island from any feature or any True-Type® font
- Powerful import of DXF, CAD and image files at any depth or height
- Boolean operations allow you to weld, intersect or subtract any shape

### FlashCut's 3D CAM creates full toolpaths instantly

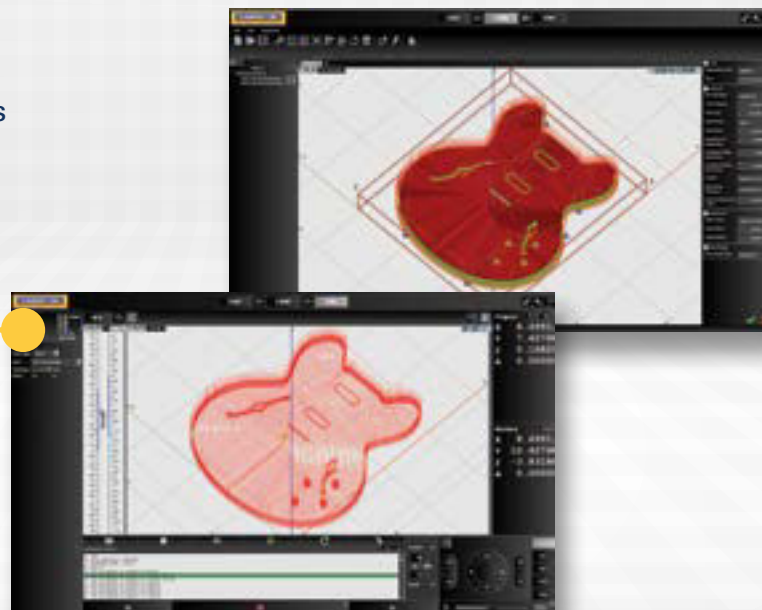
- Full 3D Simulation proves out your toolpath before you cut
- Support for multiple tools and multiple operations
- Create roughing, finishing and profiling operations in a one click
- State of the art algorithms for creating efficient toolpaths
- Ramped lead-ins
- True shape nesting of production parts
- Easily add and manipulate fixturing tabs



### Powerful CNC control and visualization

All of the features of FlashCut CNC's 2D controller plus

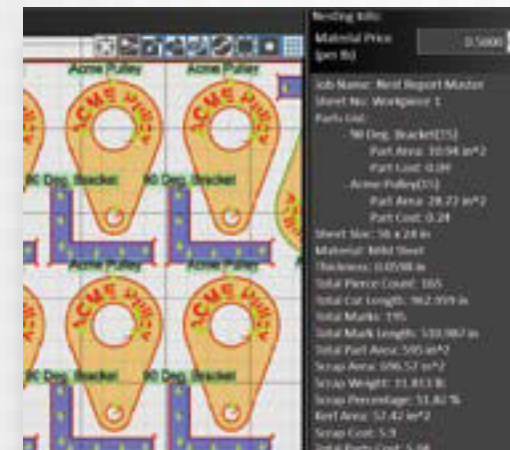
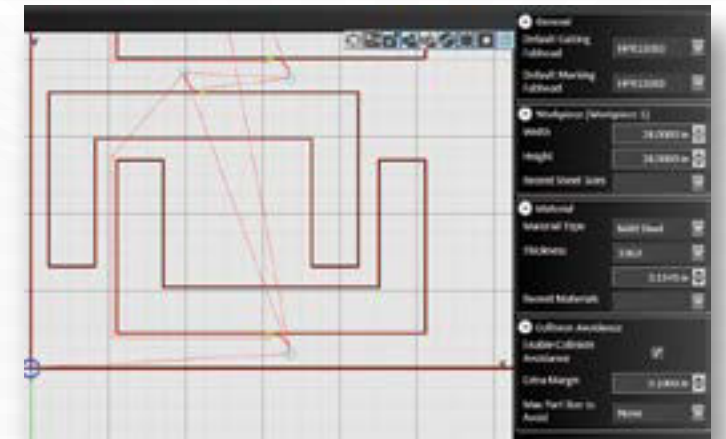
- Spindle speed control
- Tool change support
- 3D visualization while cutting



## Advanced software features

### Collision avoidance

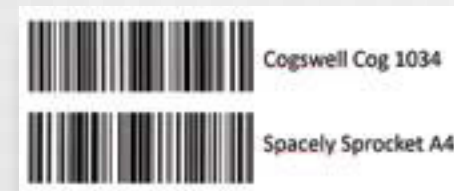
- Rapid moves take corners around parts already cut to avoid colliding with possible tip-ups
- Large parts that span slats and never tip can be ignored
- Avoids collisions that could damage or dislodge cutting head



### Nesting report

- Let's you estimate job cost easily and accurately.
- Counts pierces, cut length, mark length, part costs, scrap costs and more

### Advance G-code file management



- Process jobs in order in which they appear in production folder
- Choose jobs to run in folder and keep track of jobs already run
- Load jobs instantly on the shop floor with bar code reader

### Joystick pendant

- Joystick for 8 direction jogging and 24 programmable keys
- Easily programmed for commonly used functions such as Cycle Start, Feed Hold, Point Moves, Setting Zero, Feederate Override, Homing and Turning on and off any device
- Includes a clear, flexible cover to keep the dust and chips away



## Trusted OEM partner with quality throughout

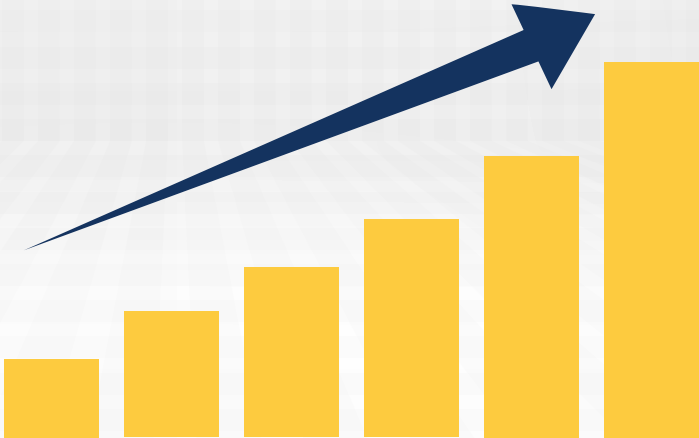


Whether you are launching a new product or upgrading controls on an existing product, our sales and engineering team will work closely with you to tailor the perfect CNC control package for your machine.

## Become #1 in your industry with a FlashCut partnership

FlashCut is an experienced partner for OEM’s and Distributors of all kinds. Our engineers and application specialists have a proven track record of tailoring our controls and accessories for our customers’ specific applications, making them clear leaders within their industry.

Because your success is our success, we provide you with the highest quality CAD/CAM/CNC controls and software. Whether you’re selling thousands, hundreds, or just a few systems, you’ll benefit from the quality of our intuitive user-interface and unparalleled CNC controls. Our experienced team of engineers provides prompt and knowledgeable support that is invaluable in today’s competitive marketplace. With decades of CNC control engineering experience, FlashCut CNC stands out as one of the most trusted names in the industry.



## FlashCut CNC is committed to technology education

The continued need to build a qualified workforce with the latest technology in school programs is very important to FlashCut CNC. These programs prepare students for technology and manufacturing careers which in turn will lead to a strong economy and a brighter future for everyone. Our controls, retrofits and machines can be found in over a hundred major universities and schools world-wide including MIT, Stanford, Illinois, Michigan, Ohio State, Alabama and Hong Kong. We are also an integral part of high schools, tech centers and tech museums. These institutions chose FlashCut CNC for its:

- Ease of use
- Windows compatibility
- Plug and play installation
- Rock-solid robustness
- Industry-leading customer support
- Educational discounts



We also sponsor technology, racing and robotics teams around the country. Call today to see how FlashCut CNC can streamline technology and engineering education in your school.



FlashCut is an integral part of education programs worldwide, like this student lab at The University of Alabama.



## FlashCut CNC community



FlashCut CNC is at the heart of a community of engineers, machinists, business leaders, and educators worldwide. We are also a strong supporter of our local high school by offering our annual “FlashCut CNC Future Engineer Scholarship” along with supporting charitable organizations through our annual awareness and fund raising events. Every year we choose a non profit organization for our annual “Bike to Work Day” event. Contact us today to see how you can get involved.



[www.flashcutcnc.com](http://www.flashcutcnc.com)

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