FAQs

How much maintenance is required?
All FlexiCAM machines are designed so that the user can do the maintenance by themselves. On-site service calls by FlexiCAM technicians are generally not required. During the installation and training on the machine, the user is also trained in the maintenance as well as the troubleshooting of the machine. The use of digital AC Servo motors makes it easy to replace components. Re-tuning the system is not required in the event an amplifier or motor needs to be replaced. In contrast to brushed DC motors, it is not necessary to change the brushes on a regular basis. The AC Servo motors used by FlexiCAM are maintenance-free over their whole lifetime. All machines come with complete electronic schematics. All the components are labeled. For easy diagnostics there are several LEDs available. Usually, most electricians are able to troubleshoot and replace defective components in the control system. Most parts are industry standard and available almost everywhere. In case of a defective part, you can always call our hotline and speak to our technical support for advice and recommendations.

How long does it take until an employee is able to work with the machine / software?
After 3 or 4 hours of training, employees will have the basic understandings of the control and maintenance of the machine. The training for a CAM program such as ProfileLab or EnRoute requires a minimum of 4 to 5 hours. A few weeks of using the software will be required to get comfortable and familiar with the program. The use of other programs depends on the employee's knowledge of computers in general as well as graphic design software. Simple signmaking programs can be trained within 1-2 days. 2 to 4 weeks of practice is recommended after the training to get used to the new equipment and software before starting production. Complex CAM packages require a few weeks of training and several months of practice.

How much does the installation / training cost?
In contrast to many of our competitors, we (or our distributors) usually quote the machines with shipping, installation and on-site training. There should be no additional (hidden) costs for the client. The client however, is required to provide an adequate fork-lift (long forks, sufficient capacity) for unloading the machine from the truck to the place of the final installation. In addition, our client must arrange beforehand, the power connection of the systems or the vacuum. If necessary, an electrician should be consulted. The training includes how to use the machine, how to maintain, as well as a troubleshooting section. After several weeks of usage, it may be a good idea to schedule one of our technicians to make an on-site service call to show you some advanced tips or to answer questions that came up while working with the machine. Please check our price list for details and pricing on additional training and on-site support calls.

What are the main advantages of FlexiCAM machines?
The advantages include:

- Solid system design for vibration free work
- AC Servo Motors
- High precision planetary gear boxes or preloaded ball screws on X and Y axis
- Dual X axis drive system *
- High speeds and accelerations
- Software compatibility with all major signmaking and CAM programs
- Network connection (Ethernet, TCP/IP)
- Remote Access via Internet
- High quality components
- Modular systems with a large selection of spindles, vacuum tables and other options
- Made in Germany

* except the Viper1. Proven Designs
When FlexiCAM first set out in designing a line of routers, we focused on designing something that would be expandable over time by adding options and accessories to the basic system. As we continue to add more industry leading technology to our systems, we are able to keep the same proven drive systems, and mechanical structures, so you are not purchasing a product that is new to the market and is still going through it’s growing pains. Through our extensively field tried and tested designs you can be assured that you are purchasing a product that was designed and tested in the computer, and now has many years of proving itself in the field. All major components such as Servo drive mechanisms, drive assemblies, and mechanical assemblies have many years of service behind them. Before any new line of machines is released our products are extensively tested at the factory and at beta sites around the world, before the go ahead for production is given by the management in Germany.

2. Handheld Keypad
When working with larger machines it isn't always convenient to have your controls fixed at the home position of the machine, especially when your machine is more than 5' long. Our keypad allows you to walk around the machine with controls in hand, for setting origin positions, park positions, material height, and having an emergency stop switch always at hand, in case of that forgotten screwdriver sitting on the table. The keypad has a backlit LCD for ease of viewing, and

is designed in a simple to use format starting. The operator goes through the functions on the left hand side of the controller and once he comes to the bottom key you are ready to start running a job. The keypad can display any language you choose, in case you have an operator that might be comfortable in a language other than English. Updates such as changing the language on the controller can be done remotely from our office without a visit by a technician.

3. Stand Alone Controller vs. Base Mounted Controller
While some manufacturers choose to bolt their controllers onto the base of the machine, we have chosen to configure our system so that you can position the controller where you like. We have chosen to do this to help improve the reliability of the machines. By making sure that our electronics and the connections going into them are not connected to the base we ensure that none of the vibration from cutting, chips from cut materials, or coolant is in a close proximity to your controller.

4. Standard Ethernet Connection
All systems that ship out of our factory use Ethernet as a standard way of transferring files. The accuracy of the data getting transferred from the computer to the controller is vital as you want to make sure that a 10”x10” square comes out as a 10”x10” square as the communication media doesn't have error checking AND error correction. Ethernet is also very resistant to EMF, electrical fields that can be created by things such as welders, which can cause serious problems to serial connections. Your machine is shipped with everything for you an Ethernet cable, as well as a patch cable, and a network card for your PC in the case where you don't currently have one. Our technicians will install and configure your Ethernet connection specifically for your shop. Ethernet can also be used up to 100m in distance and can be even further with relays. If you network has more than one computer, we do not limit you to getting files from only one computer. Our system easily allows you to choose which computer to collect files from to run. Data transfer is also done at much higher speeds with Ethernet which allows a large 3D job to be transferred in seconds rather than hours over a serial communications link.

5. Digitally spaced Multihead systems
On our Stealth or XL series of machines you are able to have 3 individually controlled heads. You can configure the spacing between the heads by entering the spacing at the controller. Each spindle can also use its own tool changer. When you don't want to use one head, you can tell the machine to move the unwanted heads to their park position, off of the active working area of the table, allowing the one remaining head to be able to cut the entire work surface.

6. Proximity Restart Function
This feature allows you to jog to any part of the job that is currently running, press a restore button on the keypad and continue to run the job from that point. This is priceless if you are running a large 3D job and are close to completion when you break a bit. Although many software packages allow you to output selected parts of a job file in 2D a lot don't allow you to output a portion of the surfacing information, requiring you to rerun the entire 3D surfacing tool path without the proximity restart.

7. Closed Loop Controller
A closed loop Servo controller adds the benefit of having complete co-ordination between all axes as all encoder signals, are read and the position corrected for at the controller. In a step direction controlled Servo system, each axis closes its own loop between the motor and amplifier. This means that all the axes aren't always coordinated together, meaning that you can't configure the Servos to their maximum performance. On Servo controlled systems, the controller realizes if something is jamming the system and creates a following error message stopping the machine and prompting you on how you would like to proceed. When a Stepper controller is used and the system stalls because of foreign object or broken bit or material inconsistencies, there is no feedback sent to a Stepper controller to tell it that something is not working correctly.

8. Fast 3D motion without extra charge
Standard with our Servo systems is an advanced tool pathing system that allows you to cut your jobs smoothly and quickly. With the use of the Servo drive on all axis and the benefit of having a true closed loop Servo system you are going to be able to produce the smoothest fastest cuts possible, which means short job times and no cleanup required of the finished part

9. Planetary Gearboxes
All of our larger format CNC routers come with planetary gear boxes. And our Viper series is directly coupled to the ball screw for a very stiff, highly accurate system. You need your drive system to be as stiff as possible to obtain the best edge quality on cuts and to have the best accuracy while cutting.

10. Very High Speeds and Very High Acceleration
This is one of the most important things to look for in a production type router. The Stealth and XL series of machines have feed rates as high as 2400ipm and rapids as high as 3500ipm. Our feed rates and rapid speeds are based on moves in a single axis rather than vector speed (moving from an X/Y position to another X/Y position). High cutting speeds in 3D are based on the high accelerations, as 3D cutting usually requires lots of acceleration and decelerations, because of the rapid changes in Z height. On jobs where multiple parts are cut out traverse time can account for a

significant portion of job time.

11. 10,000 Encoder Counts per turn
Through testing we have found a direct translation into the edge quality of cuts in relation to the amount of encoder resolution per turn. Stepper drive systems are driven in 1/10 micro step mode to create the smoothest cut possible from the step motors with 2000 micro steps per revolution. Both of these numbers (10000,2000) are before gearing, which is very important to note, as one full revolution of the pinion is then multiplied by the gearing. With this amount of resolution we are also able to run smooth motion at low speeds as the distance between each step or count is very very small.

12. Brushless AC Servo Motors
Brushless AC Servo Motors vs. DC brushed, vs. Micro Steppers
Most new motion controlled applications today are choosing AC brushless motors, which is an AC synchronous motor. It is more reliable (no brushes), smaller, more efficient, and has better resolution/accuracy. It is more costly, but the differential between AC and DC is worthwhile when you are looking to have high accelerations and decelerations, creating shorter overall job time. Our AC Servos use digital amplifiers for ease of programming, display of the load on the motors in realtime, and smooth motion. We use only the highest quality name brand manufactured motors and amplifiers in our systems

13. Dual X axis drive
Driving the gantry on both sides allows for very fast accelerations as compared to single side drive or center drive, as you have double the motor torque available. With the gantry having dual side drive, you can be assured that while the machine is running that the gantry is square to the table as it automatically calibrates each time the machine is turned on.

14. Large pitch rack and pinion
Large pitch of the racks and pinion means that you are going to have longer life in the racks as there is going to be less wear from the larger teeth, plus the teeth are more resistant against dirt and chips.

15. Short Chip to Chip time when changing tools
Our systems have a very short tool change time due to a few key features that we have added. When the machine needs to change tools we need the spindle to decelerate very quickly so that we can remove the tool as quickly as possible, we achieve this by adding a break resistor to the system. The brake resistor allows a place for all the energy that gets generated during deceleration to be removed too. The spindle is also accelerating and decelerating while moving to the position to start cutting or to the tool changer. Our very high speeds and acceleration negates any advantage of having a turret tool changer over a bar style tool changer.

Service

16. Remote administration through Network, Modem or Internet
With our Advances Remote Support program you can get the industry’s best remote support possible with wireless video and 2 way voice communications done through the internet.

17. 36 Month warranty
All systems ship out of our factory with a warranty on all parts of the machine for one year. We are so confident in the reliability and quality of our products that on the Stealth and XL series of machines you will receive a 36 month extended warranty if you decide to purchase a maintenance contract from FlexiCAM. With this contract you are ensured of an up to date controller, as during our yearly visit to your site, we upgrade the controller so that you are running the same control system that we are shipping from the factory. All parts are stocked in our regional offices to insure that you can have any part needed the next day.

Construction

18. Heavy Single Piece Frame
By not using a bolt together base frame we ensure that you have the most rigid system possible. Larger machine tools go one step further by creating their bases out of cast steel but for a moving gantry system, this is a bit of overkill. The next best thing is a welded steel frame, constructed from thick tubing to dampen vibration from the machine moving and from cutting. By reducing the vibration you will increase tool life, increase edge quality and allow the machine to be run faster.

19. Inductive and thermally stress relieved
Our welded base structure as well as our gantry and side supports are all thermally as well as inductively stressed relieved. Thermally stress relieving the machine ensures that your machine is accurate all year round and doesn't change after machining has taken place. Inductively stress relieving the welds will ensure that all welds are done accurately. For you to ensure the most accurate system possible, you want to have a machine that has both type of stress relief done to it.

20. Individually mounted rails and racks
Individual mounted rails and racks for easy replacement although this cost more for double the machining operations; we feel that this is worthwhile to ensure serviceability of our machines.

21. Z-Axis Ballscrew with Brake on Z-Axis
When choosing our Z-Axis drive system, we sized our gearing and motors to give us the best 3D performance possible without sacrificing safety. To do this we have added an electric brake to the Z-Axis. The electric brake has no moving parts and locks the Z-Drive in place magnetically when power is disabled to the motors or system. The system was also designed with a Ball Screw rather than a Lead Screw as lead screws wear quickly. A lead screw has a plastic nut that the screw runs in which wears over time, even when a Teflon coating is applied to the screw to reduce friction. Balls screws are about 98% efficient as compared to lead screws with a typical efficiency of 70%. As we have this extra torque and speed available ball screws can run faster as well as smoother.

22. Linear bearings with cover strip
To ensure that no contaminants get into the mounting holes for the rails, we use a cover strip on our linear rails. Without a cover strip or with plugs in the mounting holes, dirt and debris will build up under the caps and in the mounting holes around the bolts causing corrosion and a potential for damage to your bearing blocks. The cover strip coupled with our optimized vacuum pickup ensures long lasting rail and bearing systems.

23. Profiled linear bearings vs. linear bushings
Our machines are all constructed using linear guide ways for the bearing blocks to run on. This creates a very stiff system and large load capacity for the bearings used. Competitors using round linear bushings, with round rails suffer from not enough rigidity as the ball bearing usually only have 3% contact to the rail, and they are not held into any particular travel way which means that there is more
vibration.

Components

24. Wide range of proven AC driven spindle motors
As we are a European manufacturer of CNC equipment we are located in close proximity to all major Spindle motor manufacturers. If you have a preference to the spindle that you would like to use on your machine, we can accommodate your requests. We have supplied our machines with HSD, Elte, Colombo, FM Euro Spindle, Perske, Precise, Jaeger and many other spindles as requested by the customers. We can supply fan cooled, compressed air cooled, or water cooled depending on what duty load you want to apply to the spindle. We do not ship any of our CNC equipment with hand routers adapted to mount on CNC equipment.

25. Quiet Vacuum Pumps
Instead of using high displacement vacuums, our vacuums of choice are the maintenance free low pressure vacuum pumps, with a claw style or rotary vane style pumping mechanism. As well as operating quietly, these pumps create a large amount of vacuum pressure perfect for holding down smaller parts. By using pumps that are dry running (no oil reservoir) we eliminate the need for service on the pumps, increasing reliability.

26. Proven 10 position Automatic Tool Changer
We offer 2 styles of tool changers, one is a bar style with tool holders mounted across the back of the machine, the second is a carousel. As the bar style tool changer is so simple in design, and without having moving parts, this tool changer design is dependable and adaptable. The bar style tool changer is shipped standard with 10 position and can have up to 24 positions depending upon spindle purchased. With the bar style changer, there is plenty of room for aggregate tooling, such as longer side boring units and rotary saws.

27. Easy to program Servo drives and spindle inverters
All spindle invertors and Servo drives are stored inside the controller, and each has it's own digital interface to it, so that changes can be made to them if need be, without any special equipment or training. The digital display on the inverter also displays the amount of torque being applied to each axis, so you can see how close to the limit your machine is running.

28. Closed E-chain
Chosen specifically for CNC router applications, the type of E-Chain (cable carrier) used on FlexiCAM systems is resistant to cooling liquid and material chips. It is very hard to clean all of the chips out of an open cable carrier even when blowing compressed air into the housing, and chips that stay between cables quickly create damage and wear onto the cable jacket

29. High quality shielded E-chain cables and connectors
We use high quality cabling that is very immune to electromagnetic noise so that your machine can operate in any industrial environment.
The cables are also specifically designed to be used in E-chains so that cable jackets do not start to crack or wires start

to wear.

30. Gigabytes of Job Storage
If you want to run a large job multiple times or store your jobs locally so that you don't need a computer connected, this is a feature that you can't afford to be without. With at least 40 Gigabytes of storage you will have enough room to store years worth of files before having to delete any. The hard drive takes away the danger of your system crashing while transferring files from your computer to the router. There is nothing worse than your PC freezing up while you are half way through cutting a job and it hasn't been completely transferred.