# Short description of our Waterjet Cutting Systems

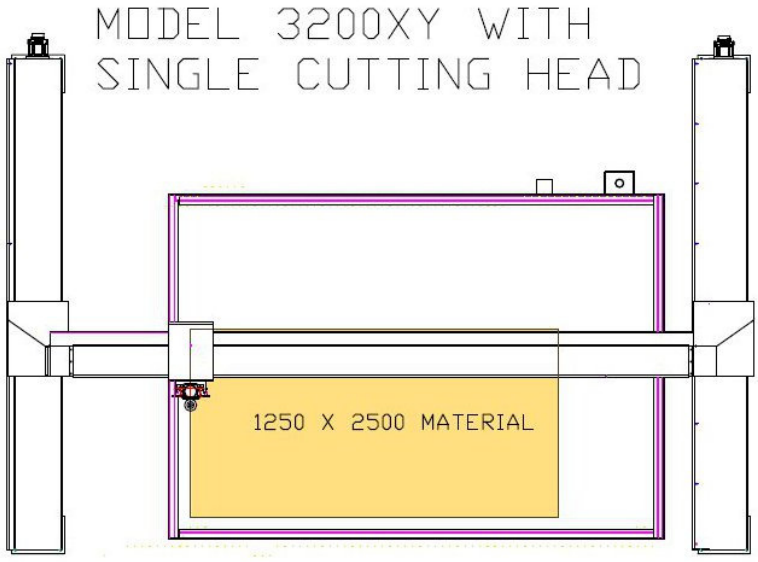
GT Machine Components distributes Europe-wide a quality line of waterjet cutting systems and ancillary equipment designed and engineered by CEJet,LLC, (USA). The systems were designed with the ability to be easily configured to fit many different applications. By configuring to fit the user's needs productivity of the equipment is optimized, thus yielding large profits for the user.

The following is a brief description of available systems and some of the configurations that can be made with them. Please review the following system information and the sample configurations. We will then be available to work with you to configure a system which will maximize your productivity and be easy to use. Note that prices herein are estimates to give you an approximate price for a system. Your particular configuration will be quoted to you at the actual sales price.



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First we look at the Mid-Rail designs. Beginning with a single cutting head model 3200XY Mid-Rail cutting system, (system A). With this system, you will be able to process any size part up to 3 x 2 meters. This is a basic machine and would allow you to begin waterjet cutting. The Mid-Rail is available in sizes starting at 1.25x1.25 meter through 6x6 meters. The systems can be configured in increments of one meter per axis such as a Model 5200XY. The 5200XY would have a five meter X-Axis and a two meter Y-Axis.



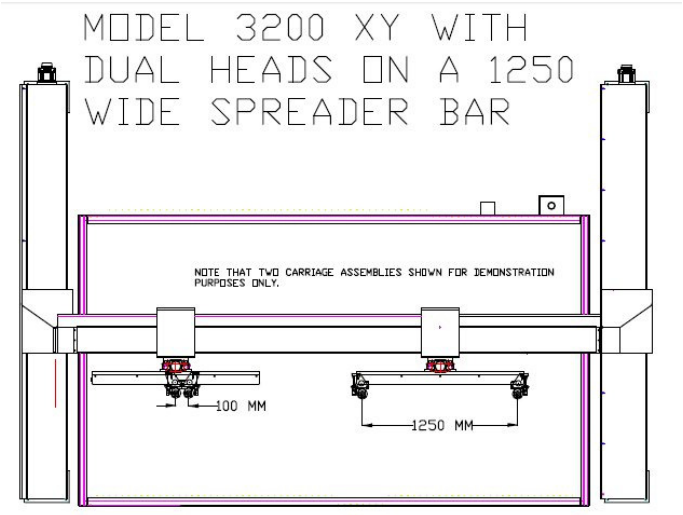



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The MID-RAIL XY systems are designed to enable the customer to operate with abrasivejet and/or plain waterjet cutting. By designing rigidity, strength and accuracy into the system we are able to offer a machine which is a perfect fit for long run production applications and equally at home in short run cutting jobs.

By adding multiple nozzles, the user is able to double, triple and even quadruple the productivity of the system. For example, if you use three heads instead of one your output will increase three times while your operating costs will be forty percent less compared to operating three separate systems.

The second and third Mid-Rail system configurations both are designed for high productivity, reliability and ease of operation. Both configurations employ a Nozzle Spreader Bar. The Spreader Bar carries two cutting heads which doubles the hourly output of the system compared to the basic single nozzle System "A" above. Adding the second cutting head with a 1250 mm spreader bar we create system “B”.






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The Spreader Bar permits the operator to position the two nozzles from 100 to 1250 mm apart. Either nozzle can be positioned at the cross carriage center line and process material up to the table size. Such as on a 3 X 2 meter table either nozzle can cut parts up to 3 x 2 meters in size.

Figure 1 shows the side view of the cross beam, cross carriage and Spreader Bar assembly. The individual cutting head carriages are mounted on a V-way which has proven to be accurate and long lasting in the abrasive environment even close to the cutting heads. The carriages are manually moved to the desired locations and locked in place with a hand operated brake. Each carriage is equipped with a manual high pressure water shut-off or isolation valve. This allows the operator or maintenance personnel to isolate the individual cutting heads from the high pressure water source at each head.

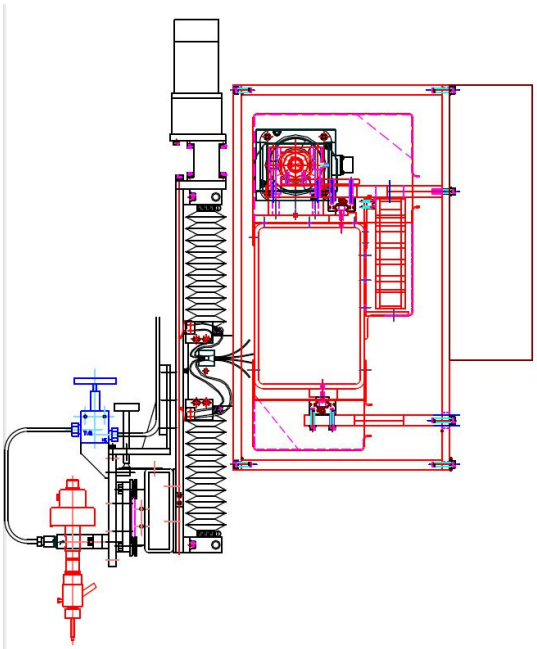


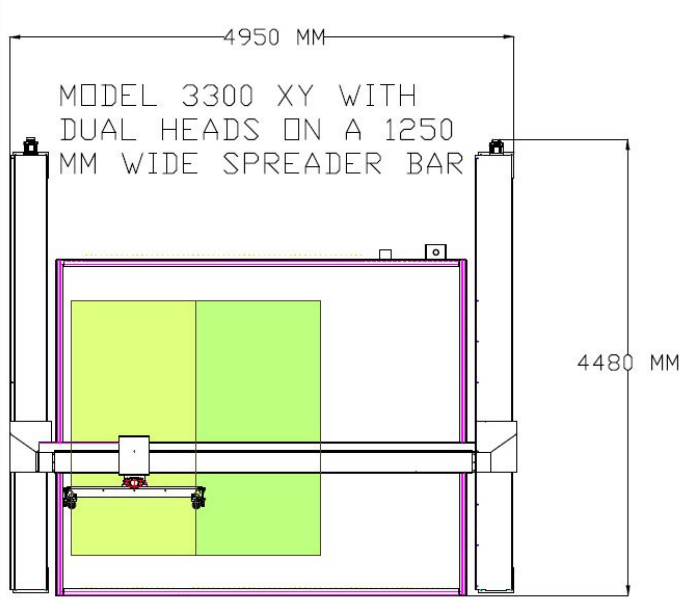
FIGURE 1



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Positioning of the cutting heads at 1250 mm distance enables the system to process two pieces of 1250 wide material simultaneously. Through put of the machine is doubled with only a 40% increase in operating cost. System “B” can simultaneously process two pieces of material each 1250 wide and up to 2000 mm long The configuration which is best for you is dependent upon the product size mix as applied to each system and the resultant benefits.

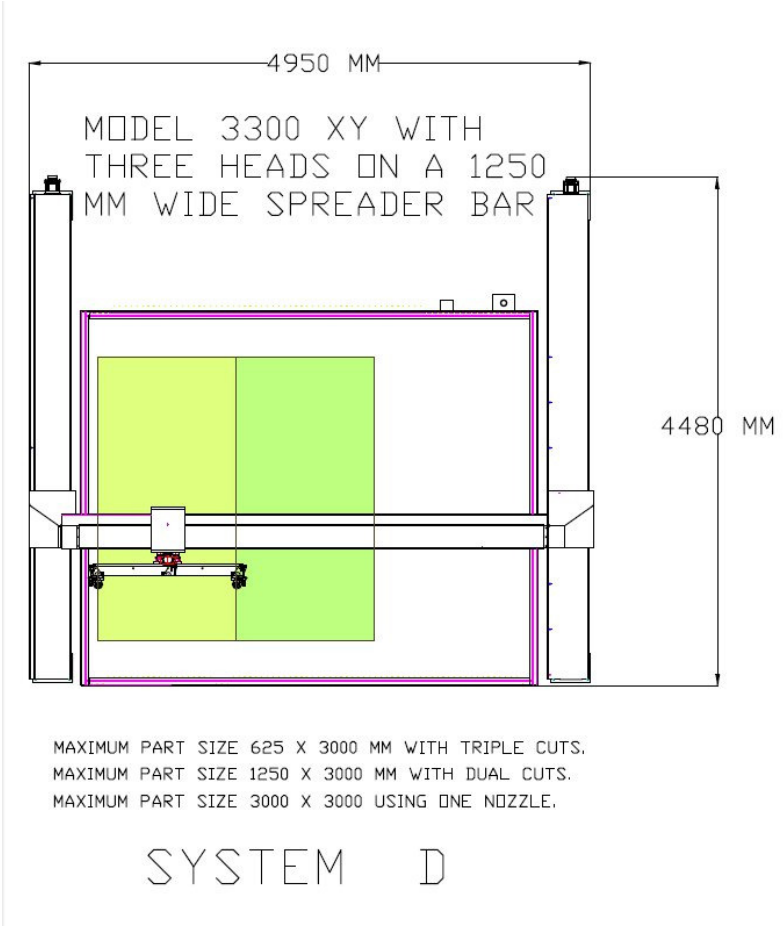
System “C”, shown in Figure 4 uses a MODEL 3300XY Mid-Rail as the machine platform. The CEJet Mid-Rail systems are designed and manufactured to employ up to four heads mounted on the spreader bar. System “C” can concurrently process two 1250mmx 3000mm pieces of material. This configuration with the MODEL 3300XY enables each head to process part size up to three meters by three meters.






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If we add a third head to the MODEL 3300XY, IT CAN CUT THREE PARTS SIMUTANEOUSLY. Each part can be a maximum of 625mm x 3000mm, (see system “D”). Operating costs for the three head cutting are only sixty percent of the cost associated with cutting the same parts on a system with only one cutting head. Therefore, orders containing multiple parts warrant the use of a multiple head system. So for orders containing large numbers of identical parts a multiple cutting head machine can reduce part manufacturing costs, increase productivity and increase the profit while allowing one to bid a lower price than competitors running single head machines.



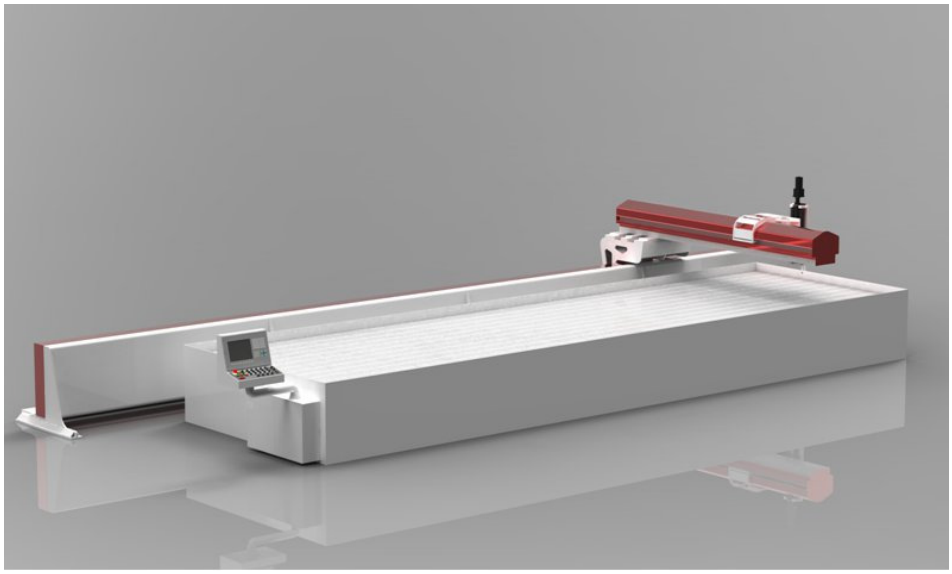



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Budgetary quotes for each of these four configurations is as follows. The quote includes only the CNC cutting system. The intensifier pump and other ancillary equipment quotes will be listed separately.

1. SYSTEM “A”: EUR 44.500,00
2. SYSTEM “B”: EUR 48.500,00
3. SYSTEM “C”: EUR 52.500,00
4. SYSTEM “D”: EUR 55.000,00

The second type machine is a cantilever beam design. This is a machine recommended for operations using a single nozzle normally employed for cutting short product runs as compared to the Mid-Rail with multiple nozzles being set to run large production orders. The system has all the capabilities of the Mid-rail single nozzle system. However, maximum speed is 250 inch per minute as compared to 500 inches per minute for the Mid-Rail design. But the maximum length of the X-Axis is only limited by the size of the building in which the system is to be installed. The Y-Axis is limited to a maximum of 3 meters.





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All of the CEJet, LLC systems share the following capabilities or features:

The joining of the cross beam to the side beams and the mounting of the side beams to their respective legs includes a centering device which is the key to easy machine setup and alignment. This beam coupling system used by the designers of the CEJet machines for many years, reduce alignment times from days to hours and even minutes. They also have proven effective in preventing damage to the machine from operator error causing impact to the cross beam.

The machine structure is engineered for long life and service to the customer. All welded structures are subjected to continuous harmonic vibratory stress relieving during the welding process. This processing produces a structure that is forever stable and will remain so during machining and then when placed into the manufacturing operation environment.

The drives for axes six meters and less in length are driven with ball screws. The standard ball screws are twenty five millimeters in diameter and have a 25 millimeter pitch. The drive train is a solid coupled system with no backlash in any coupling of the motor to the lead screw. This gives the machine a control positioning tolerance of +/- 0.0025mm, (0.0001 inch).

The drive motors are digital servo motors which are the state of the art in servo positioning. Because they are digital and have power ratings in excess of the minimum required to drive the axes, the motors will last for many years without adjustment or repair.

The axis drive lead nuts are a dual nut configuration with adjustable preload to assure the best system accuracy and lead screw life possible. The design is made to compensate for small amounts of wear between the lead screw, the lead nut balls and the lead nut body. Empirically, it has been shown that during the first few hundred hours of operation it is possible that there will be physical “wear in” to the grooves where the balls make contact. It is non-discernible to the human eye but can show up as backlash in the drive when testing the system.  A simple adjustment of the dual nut assembly will set the load applied to prevent backlash to the correct value. This will

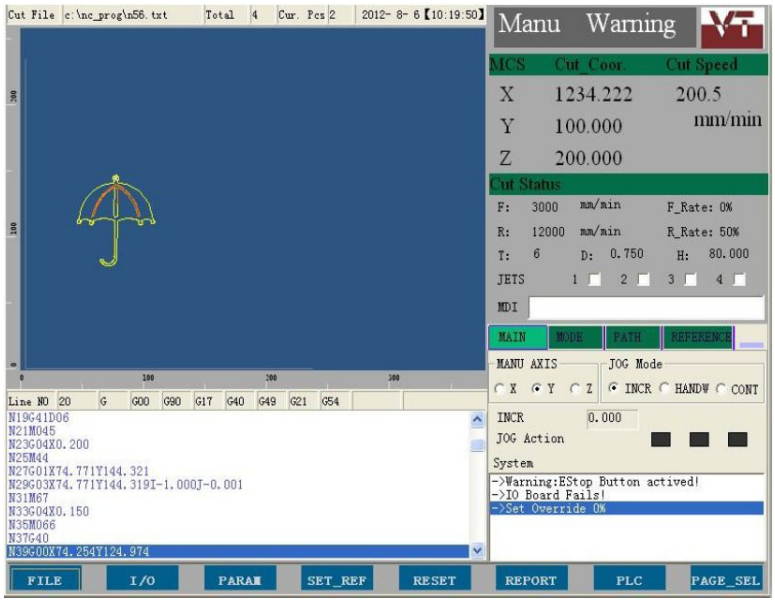


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eliminate any backlash and often lead screw replacement that would occur due to wear from system operation.

The z-axis when motorized, but manually controlled by the operator, uses a dc gear motor coupled to an acme type lead screw. By using an acme screw we eliminate the need for a brake on the motor. The acme screw will not back feed and will maintain its vertical position. If a servoed Z is applied to the machine, it uses a ball screw type drive which requires a brake because the carriage weight will back feed the screw and it will fall to the lowest position when the motor is not servoing.

The control system is a hardened CNC control employing the Microsoft Windows XP operating system. Using a hardened system yields a control that is protected from the electrical noise problems often encountered when one uses a standard PC as the control CPU. Yet we are able to take advantage of the broad capabilities and storage capacity of the Windows based system. Windows XP is a time proven operating system which is very stable and so gives the machine very good reliability with little to no down time associated to the CPU, (see Figure).






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A hand held pendent with motion stop, hand wheel for servo axis movement and an individual up/down switch for systems with a manual Z-axis. The up/down switch for the Z-axis is active in all machine modes, AUTO-MDI-MANUAL. This gives the operator instantaneous control to move the cutting head up or down at any time. The stop motion button when activated stops machine's motion, turns off the outputs for abrasive, waterjet etc and displays a warning on the operators screen. It does NOT cancel the active program. It allows the operator to correct any problem that the button was actuated to avoid, fix the problem and then restart the program by resetting the button and pushing START on the control panel. The outputs that were active prior to pushing the stop motion button will become active and the motion will start again from where it was stopped. Each end of the Mid-Rail cross beam has a motion stop switch mounted for easy access by the operator.

The control also has the ability to do mid program start and block retrace to help the operator recover from a problem. If an orifice goes bad and needs to be changed, the operator can stop the program. Move the head to a position where the orifice can be replaced and then restart the program and it will continue on from the position on the table where the operator interrupted the process.

The cutting head has a manual override switch for each of the functions, Waterjet, abrasive and shield. Each switch has three positions, ON,OFF,AUTO. Turning the switch to off during automatic operation will override the automatic function. However, returning the switch to AUTO will allow the function to resume.

Please contact us and we will assist you to define your System. And then we will quote the system as configured to address your needs.

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