

BENEFITS

- Cut parts 25-300 % faster than conventional flat stock waterjet cutting machines
- Improve cut part tolerances and geometry at significantly higher speeds
- Virtually eliminate taper
- Reduce part cost
- True part stacking ability with consistent tolerance layer to layer
- No secondary finishing required
- Cut a variety of materials, such as metal, stone, glass, and composites
- Easy to program; no specialized training or knowledge required
- Cut parts using virtually any CAD file, or scan a drawing directly into FlowMaster® software

DYNAMIC WATERJET® – RAISES THE BAR FOR WATERJET ACCURACY, SPEED AND FLEXIBILITY



A BREAKTHROUGH WATERJET CUTTING PROCESS

Dynamic Waterjet with Active Tolerance Control, produces more accurate parts at significantly higher cutting speeds than parts cut with a conventional waterjet. This patented system utilizes a newly developed advanced motion system that incorporates unique mathematical cutting models. These models control a small, articulated wrist that is attached to the cutting head. The wrist allows the cutting head to tilt in any direction, compensating for the stream lag and taper experienced with conventional waterjet cutting machines. Stream lag and taper are a natural, but undesirable, result of cutting with a beam-type cutter such as a waterjet. The faster parts are cut, the greater the stream lag. Stream lag causes part geometry errors. In addition, as cut speed is increased through a given material, the waterjet beam produces ever-increasing taper. Conventional waterjets must slow down in order to reduce or eliminate finished-part tolerance errors caused by stream lag and taper. Now, with Dynamic Waterjet, these limitations are overcome.

FLOWMASTER® SOFTWARE

The Dynamic Waterjet is extremely simple to operate – no specialized skill or knowledge is necessary. FlowMaster, Flow's intelligent PC-based waterjet control system applies Flow's exclusive SmartStream technology, and all mathematical calculations take place behind the scenes, triggering the appropriate motion commands to all five axes at lightning speed. The user simply enters the basic cutting parameters, such as material type and thickness, cut speed, and desired edge quality, and FlowMaster does the rest. FlowMaster dynamically controls the position of the cutting head. It knows the amount of tilt and rotation required at numerous incremental points along a cutting path. For example, at high speeds outside corners require increased tilt to prevent coning. FlowMaster also knows the optimal cutting speed to keep parts within tolerance and taper free. The faster the cutting speed, the more tilt that is required. In most cases the ability to tilt the cutting head allows for a faster cutting speed. Because of this, Dynamic Waterjet produces superior part features at higher speeds than those resulting from conventional waterjet cutting.



BY COMPARISON

Dynamic Waterjet part

Cycle time: 6'27"
Accuracy (per side): 0.04 mm



Conventional Waterjet part

Cycle time: 21'23"
Accuracy (per side): 0.15 mm



Dynamic Waterjet part



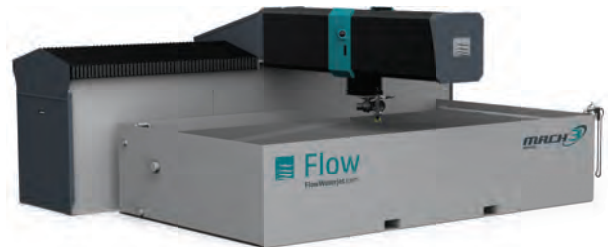
The parts were both cut at high speed.

DYNAMIC WATERJET PRODUCES HIGH-QUALITY PARTS AT HIGH SPEED

Conventional waterjets are capable of producing quality parts at low speed. Dynamic Waterjet is capable of producing higher quality parts at high speed. When operated at low speed, Dynamic Waterjet will produce even better edge quality and part geometry than conventional waterjet. Both parts shown on the left side were cut out of 25 mm aluminium.

OPENING UP MARKETS FOR MANUFACTURERS

Dynamic Waterjet is ideal for existing users of flat stock cutting technology or applications that were previously too inaccurate, slow, or expensive to cut using conventional abrasive waterjet technology. This revolutionary technology opens up markets to current waterjet users, such as tool and die, precision aerospace or component manufacturing, where in the past manufacturers might have selected laser, milling, wire EDM, punch, or router. Thanks to Dynamic Waterjet high quality stone mosaics or inlay work can now be produced economically and accurately.



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SPECIFICATIONS

- Exclusive Flow SmartStream technology
- FlowMaster software with Dynamic Waterjet module
- 5-axis kinematics with articulated A/B wrist
- High-precision PASER® cutting head
- High-precision quickclamp PASER mount for instant access to the cutting head to change components, while also providing extremely precise tool center point location
- Touchdown height sensor establishes proper standoff height between mixing tube tip and target material
- Integrated abrasivejet spray shield



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