

Dual Work Zone CNC Machining Center - Bertsche Engineering

The X-Mill is a raised bed high velocity traveling column machining center that the company says meets the needs of shops that machine both long structural parts and shorter parts, especially parts where load and setup times match machining times. Based on a raised bed design concept, the machine is said to provide a stable and stiff bed structure for the high speed traveling carriage. With a rapid traverse up to 2,362 ipm, high acceleration and an integrated 15,000-rpm, 30-hp motor spindle, the machining center can machine a variety of materials to final size. The X-axis travel starts at 130", with models available to 283" of stroke. The Y- and Z-axis travel is 20" x 20". The X-travel partitions into two equal sized work zones for machining shorter parts.

The machine is capable of working interchangeably as a single and dual work zone machine. As a dual work zone machine, the spindle is constantly cutting. While the operator loads parts in one work zone, the spindle is machining in the other work zone. Dual work zone features include a dedicated high speed direct pickup tool changer (recessed in the machine bed) and an operator station for each work zone. Left and right independently actuated powered operator doors automatically open at the end of a machining cycle, allowing the operator to load the next group of parts while the spindle is already machining in the other work zone. The company says the work zone divider protects the operator but is lightweight enough for easy removal when switching into single work zone mode. To switch, the operator simply selects single work zone from the console, removes the work zone divider and the machine is ready to machine long parts. Both tool changer magazines are available for tool changing. For very long parts, the end panels are removable, and parts can be fed endwise into the machine.

Other operational features, says the company, include swift axis movement, fast spindle acceleration/deceleration and high pressure coolant. Tools can be loaded into the toolchanger to set up for the next job while the machine is still machining. The Flex-table reconfigurable table feature allows the T-slotted table tops to be either horizontally or vertical mounting. Tables can be lowered or raised, and add-ons such as repositionable work support, rotary indexers, flexible workholding mounts directly to the sidewall of the bed. A traveling mist collection system is said to help meet new stricter OSHA requirements for a particulate-free work environment.

Maintenance features include the elimination of hydraulic and lubrication systems, which the company says reduces machine maintenance while prolonging coolant life. Maintenance screens provide current status, advise when service is pending and alert when it is past due.

Technology highlights include monolithic raised bed structure with low mass-minimized three-axis carriage FEA analyzed and optimized for maximum stiffness and high speed performance. A raised carriage, according to the company, provides good high speed machine dynamics and eliminates problems with column sway and deflection found on C-frame machines. Dual beam support arms fully support the YZ carriage and ram. The center of mass is close to X, Y and Z servomotor and ballscrews. The axes of motion are close to the cutting tool. The moved mass is constant, and the weight and size of the part do not affect machine dynamics.

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