

Delta Computer Systems, Inc.

Q's & A's

1. What specific benefits do Delta Computer Systems motion controllers offer for the Metals and Fabrication industries?

Metal fabrication and forming typically involves several machine motion steps. For example, in a tube processing application, maximizing throughput while scarf cutting, punch cutting, washing, dedimpling and deburring requires precise motion and tight coordination. Due to their ability to control both pressure and position applied by hydraulic, pneumatic or motorized actuators, Delta's controllers are capable of producing smoother motion than traditional motor or motion controllers. This has the benefit of improving the quality of finished products and extending the life of machinery (by eliminating shock due to "jerky" motion). Delta's smooth control allows these benefits to be realized while simultaneously maximizing production.

Delta's motion controllers are also designed to enable machine builders to compose systems using "best-of-class" components from different vendors. This is accomplished with the controllers' standardized interfaces to popular fieldbuses such as Ethernet or PROFIBUS. In addition to helping machine designers build optimally-performing systems, modular design reduces the cost of system manufacturing and maintenance by allowing system elements to be connected with fewer wires.

2. What experience does Delta Computer Systems have with Metal Fabrication and Forming machinery applications?

Delta has supplied motion controllers for machines for many metal processing applications, including pressure-forming of satellite dishes by Andrew Corp, hydroforming of metal parts by Behco, and tube processing by Tier 1/Buckeye. The hydroforming application used RMC100 motion controllers for controlling hydraulic cylinders for closing water seals and maintaining proper pressure inside the tube of the hydro-forming machine.

3. Why use a dedicated motion controller for closing the loop instead of using a PLC?

Dedicated motion controllers provide fast, deterministic loop times (1 to 2 milliseconds for the RMC100) while programmable logic controller (PLC) loop times often reach 10 milliseconds or more by the time the entire system is configured – much too slow for many closed-loop motion applications, especially if pressure control is required.

Motion controllers also have the specialized motion parameters and functions that are necessary to achieve maximum performance, and they simplify motion control programming with easy to use software tools making a complex task less challenging. As an example, consider Delta's Curve Tool that helps optimize control algorithms via a visual point and click design approach. Doing this truly provides the designer with a "best in class" option compared to a general purpose PLC. With the many open fieldbus options available today, the PLC can focus on non-motion control tasks while still maintaining tight communications with the motion controller motion. Advanced motion controllers such as the RMC100 can also control a limited amount of discrete I/O, speeding up processes by allowing critical motion-related functions to be executed at the motion controller loop times.

4. What other types of applications benefit from Delta Computer Systems motion controllers?

Delta has manufactured multi-purpose motion controllers for more than fifteen years, selling into a variety of markets including automotive, metals, and plastics injection molding. Delta also has experience in custom control systems for metal and food processing markets and specialized motion controllers for the forest products equipment markets for over twenty years. This extensive background in control systems design has motivated Delta to develop products that are easy to tune and optimize for specific applications. To aid in application tuning, Delta has developed a unique set of software tools that are provided along with Delta's motion controller hardware. The modularity of the RMC allows it to be optimized for a wide variety of applications from presses to robotics, controlling hydraulics, pneumatics, and both servo and stepper motors.

5. How many different motion controller types does Delta Computer Systems manufacture?

Delta's motion controllers are most easily differentiated by the communications connection (sometimes called the system topology) that they support. Delta makes controllers for systems based on fieldbuses (Ethernet, Modbus Plus, PROFIBUS, and Serial) that connect via cables; industry standard card rack buses (VMEbus and Multibus), and controllers that are tailored for direct interface to Rockwell, Modicon and Siemens PLCs. In addition to the different interconnects (buses) that are supported, Delta's controllers support a wide range of interfaces to sensors and transducers, which provide measurement information used in controlling motion. Delta also makes a designer's task easier in small ways with companion products like the VC2100 for simple voltage to current conversion to drive hydraulic servo valves.

Delta's flagship motion controller family, the RMC100 Series, is a modular controller that offers five communications modules supporting over twenty-five protocols and eight interface modules to connect to a wide variety of motion axis types. With the ability to mix-and-match interface modules, resulting in over 500 possible configurations from two to eight axes, the RMC motion controller can fit virtually any motion control need: servo electric, hydraulic or pneumatic or stepper with or without feedback.

Delta's RMC family of motion controllers, including the RMC100 Series motion controllers and the NEW RMC70 Series for one and two axis applications, are also capable of position-pressure/force control, making it possible to significantly improve part quality from many machines, such as powder metal presses.

6. What other products does Delta Computer Systems manufacture?

In addition to motion controllers, Delta also makes a line of LED-based color sensors. Electronic color sensors are increasingly being used in automated applications to reduce automation errors and improve quality at production line speeds. Delta's color sensors and sorters are based on patented pulsed LED technology and offer the benefits of rugged, long-life, solid-state lighting with a wide range of colors from blue to near-infrared.

For additional information see www.deltamotion.com or call Delta at 360-254-8688.