Technology Brief

Q & A Format

KOLLMORGEN

Because Motion Matters™

TRENDS IN MECHATRONICS

Mechatronics is a holistic approach to design that includes software, electrical and mechanical engineering. All designs are started at the same time with open communications between project teams as opposed to the more traditional mechanics first, electrical second and finally software. Joint decisions are made to meet performance requirements. For example, a simple mechanical change at the beginning might save weeks of software effort.

What trends are occurring in Mechatronics?

- System Simulation - system simulation can be used as a precursor to physical prototyping to evaluate alternative solutions. A computer model of the mechanicals can be combined with simulations of the drive and control algorithm. Performance of the entire systems can be simulated and tradeoffs can be made between software, electrical and mechanical disciplines to determine an optimal solution.

- Adaptive Control - self tuning and adaptive auto-tuning of servo parameter are being offered by many controls vendors. Continuous measurement and monitoring of key performance indices of a piece of equipment can be used to automatically adjust servo tuning parameters to maintain performance and to signal the need for preventative maintenance.

- Multi Input, Multi Output - traditional servo drives operate in velocity or position mode with feedback from only one sensor. Typically either a resolver or encoder mounted on the back of the motor. More advanced drives allow for a dual loop control. These have two feedback devices; one for the velocity and the other position feedback. New control algorithms will use accelerometer feedback in addition to velocity and position feedback.

How can design engineers learn about Mechatronics and find related tools that will be most useful to them?

- Trade publications
- Investigate system simulation software
- Investigate solutions for generating software code directly from simulation

What do end users need to learn to begin implementing useful mechatronic solutions in their applications?

- Develop a process of project management that fosters Mechatronic principles of holistic design. The design is driven by developing the best solution that meets the performance requirements.

What should be on a to-do list to get mechatronics up and running at a facility?

- Upper management buy-in
- Incorporate simulation into design - this means clear definition of what you want the simulation to accomplish Take it one step at a time.
- Training of engineering teams on the Mechatronic method

How is Mechatronics likely to evolve and what new tools are likely to become available to users in the future?

- Component (i.e. motor drive) suppliers will start to incorporate simulation capability into their tools.
- Servo drives will we be able to interface to a variety of different types of sensors.
- Customers will want to develop their own control algorithms and will need an easy way to incorporate these into the motion control products they use.

ABOUT KOLLMORGEN

Kollmorgen is a leading provider of motion systems and components for machine builders around the globe, with over 70 years of motion control design and application expertise.

Through world-class knowledge in motion, industry-leading quality and deep expertise in linking and integrating standard and custom products, Kollmorgen delivers breakthrough solutions unmatched in performance, reliability and ease-of-use, giving machine builders an irrefutable marketplace advantage.

For more information visit www.kollmorgen.com, email support@kollmorgen.com or call 1-540-633-3534.

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