Developing Custom Motion Control Solutions

The best practices of managing custom development projects.

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In order to meet challenging design and performance objectives, under tight constrains of budget and schedule, many OEMs work with motion control experts such as Parker to create a customized solution for their equipment. While Parker customers have specialized expertise in machining, measurement, instrumentation, etc., the nuances of motion control design are often best understood by companies like Parker. By collaborating, OEMs can often reduce their time-to-market and concentrate their own engineering and development resources on their core areas of expertise.

Best practices for custom development projects

However, collaboration and custom design projects must be tightly managed in order to avoid delays and stay on track. Parker has developed a variety of best practices for managing these custom development projects in order to bring projects in on time, based on the following building blocks and core principles:

- Build a team of engineering problem solvers that can quickly evaluate alternative configurations and predict candidate solutions' cost and performance tradeoffs. Parker uses an extensive set of system analysis tools, shared with the customer, to accomplish this.
- Gather the manufacturing tools and resources to quickly conduct feasibility tests of the selected configuration. These tests are done to assure that there are no knowledge gaps between conceptual solutions and full scale manufacturing, and reduce development risks. Parker has environmental lab facilities, and large in house machine shop capabilities, to quickly test innovative configurations and new positioning components.
- Create call schedules and meeting plans that ensure close interaction between Parker and the customer's engineering team. Many elements of an automated system are interdependent on the OEM's system designs, so Parker engineers work directly with our customer's design teams to develop motion control systems as integral elements of the overall automated process systems.

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Manufacturability

The development of a cost-effective motion or positioning solution is only the first step in a successful business development program. Next, a working prototype needs to become a full scale production environment. Parker's recommended procedures, refined and based on years of experience in developing and manufacturing thousands of motion and positioning systems, include:

- Highly organized production files, including BOM, drawings, material sources, assembly and test instructions, and a dedicate team for JIT manufacturing.
- For large OEM production, development of a dedicated manufacturing cell which employs state-of-the-art, lean, manufacturing principles and quality plans throughout the manufacturing process. In many cases a final test stand, utilizing the end customer structure, is used to test parameters and variables critical to operation performance.
- Establishment of an official Acceptance Test Procedure (ATP) with related documentation. The test procedure is agreed upon with the customer during the development phase. An ATP is intended to assure that all systems leaving the factory meet critical performance requirements, and that system parameters are consistent with parameters of other similar products for long-term product consistency.

After sale support

In full-scale production it is important that custom systems, shipped to various destinations around the world, will have local after-sale support. Parker, one of the world's largest suppliers of positioning solutions and motion control components, has a solid after sale support organization that includes: strategic account managers (SAM), Regional Advanced Technology Centers (ATC), a global distribution network, live representative phone support and 24/7 emergency breakdown support.

The customized solution

Standard motion control components and systems don't always fit the needs of every OEM project, so a custom-developed solution is at times the best approach. Whether, for example, you've determined that an XY stage needs a miniature linear motor actuator and linear encoders added to your design, or that you realized the design of an autofocus Z stage needs a custom designed slide and base and Invar encoder, successful product development requires maintaining close contact between you as the customer and Parker as your motion control design partner. Processes such as engineer-to-engineer development work and feasibility testing and analysis (as needed) minimize development risks and increase the probability of successfully delivering high-quality and competitively-priced products to the market.

For more information on Parker's custom motion control solutions, see our Web site.

www.parkermotion.com