AEROTECH

Automation Solutions for Motion Control and Positioning

Automation 3200

- Complete motion capabilities include: point-to-point; linear, circular, helical, and spherical interpolation; velocity profiling; electronic gearing; on-the-fly trajectory modification; high-speed I/O; camming
- 1 to 32 axes of scalable, synchronized motion
- Utilizes the power of the PC to eliminate the motion control card
- Programmable in native RS-274 G-code, AeroBASIC™ command set, C, .NET, or LabVIEW® for flexibility

http://www.aerotech.com/products/controllers/a3200smc.html

Ensemble™

- Up to 10 axes of coordinated motion
- Controller architecture capable of coordinating motion of up to five independent tasks
- Drives and controls linear or rotary brushless, DC brush servo, and micro-stepping motors
- Program in AeroBASIC™ with the IDE, Microsoft® .NET including C#, VB.NET®, Managed C++, or LabVIEW®

http://www.aerotech.com/ensemble

Soloist™

- Single-axis digital servo controller with integral power supply and amplifier
- Advanced software architecture shortens customer development time; use C#, VB.NET®, and LabVIEW® combined with our full IDE and multitasking operating system
- Network connectivity with Ethernet TCP/IP, USB, Modbus® TCP, RS-232
- Extensive tools and diagnostics: scope, encoder tuning, loop transmission

http://www.aerotech.com/soloist

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Dedicated to the Science of Motion

www.aerotech.com

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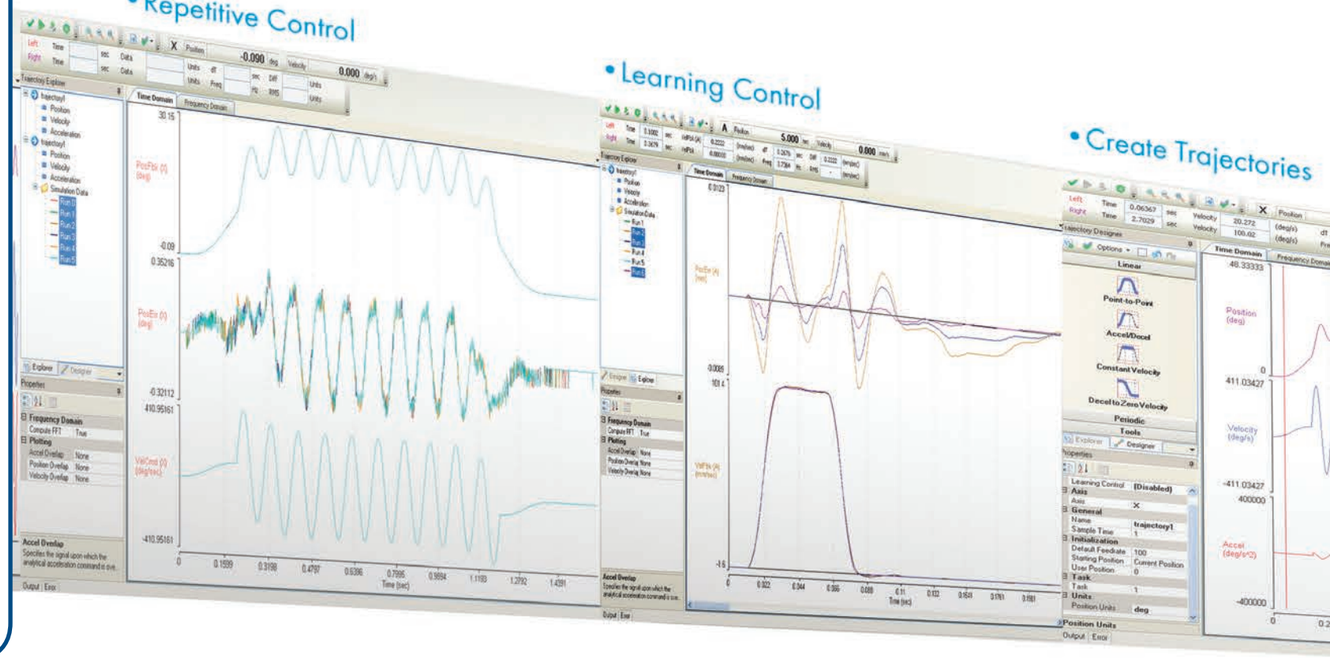
AEROTECH

MOTIONDESIGNER

An Integrated, Easy to Use, Graphical Trajectory Generation, Data Analysis, and Enhanced Machine Performance Toolkit



MOTIONDESIGNER

An Integrated, Easy to Use, Graphical Trajectory Generation, Data Analysis, and Enhanced Machine Performance Toolkit

Motion Designer saves high-level program development and enhances your system's performance

Challenges

In many instances, an exact motion profile must be generated to simulate a dynamic environment for sensor or component testing. Inertial navigation devices such as gyros or accelerometers, tracking or beam-steering gimbals, as well as crash sensors and roll-over sensors, are meant to measure angular or linear motion events. To properly test these devices, they must be put through motion trajectories that simulate real-world applications, which is no trivial task.

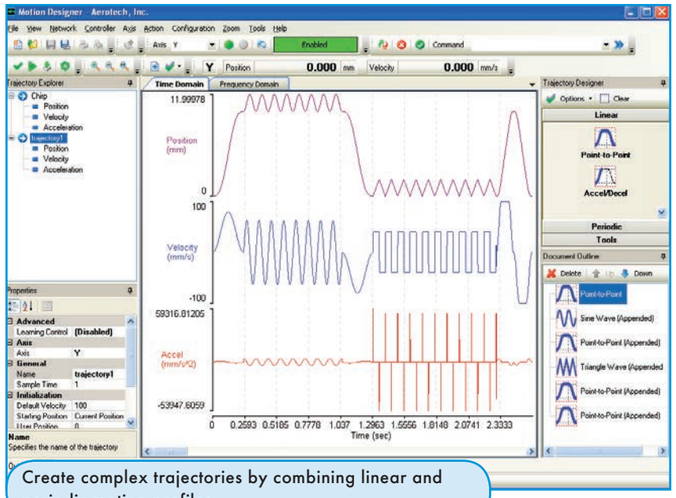
Simplified Motion Programming

Aerotech's Motion Designer is an easy to use software GUI for generating or importing motion trajectories, and running and then evaluating the trajectory. These functions typically require hours of programming and debugging to implement. Based on Aerotech's award-winning motion controllers, Motion Designer simplifies motion profile programming while providing important additional capabilities.

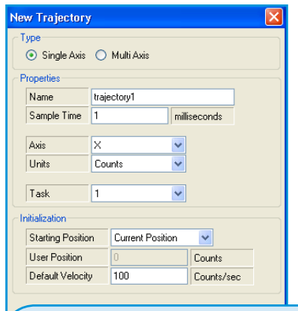
Motion Designer allows customers the ability to fabricate and run a simulated trajectory by generating position, velocity, acceleration, and time profile points, and download them to the motion controller. It has a number of waveform tools for easy waveform generation, even allowing multiple waveforms to be linked or blended together. The waveforms are then converted to AeroBASIC™ PVT commands. If the real motion trajectory can be measured, Motion Designer has built-in tools to download the real profile and convert it to actual motion commands for rotary or linear motion simulation. Data input file formats include Excel, CSV, or MATLAB®. If only partial trajectory information is known, such as position versus time or acceleration versus time, Motion Designer can calculate the other required state variables.

Advanced Learning Algorithm

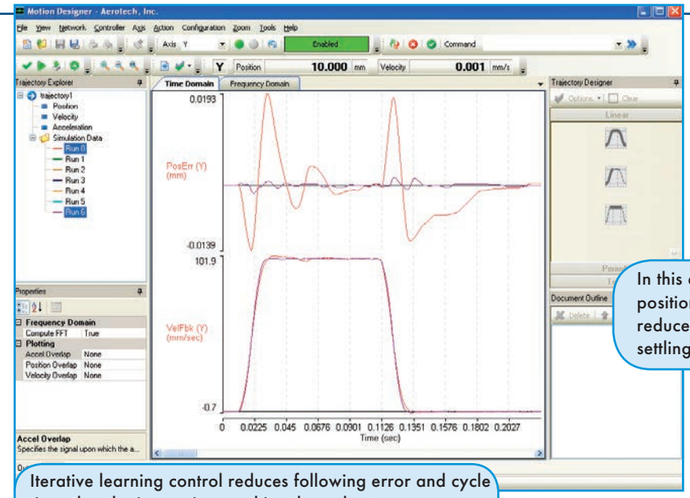
While the motion trajectory is running, Motion Designer captures the rotary or linear axis motion and verifies the proper path was run. The system also can optimize the trajectory on multiple runs to make the system simulation as real as possible with the available system capabilities. Multiple runs are overlaid on the scope and system commands are automatically optimized to minimize position errors from the true motion trajectory. After the runs, post-processing includes a number of statistical analysis tools to verify that the motion generated and device performance meet the objectives.



Create complex trajectories by combining linear and periodic motion profiles.

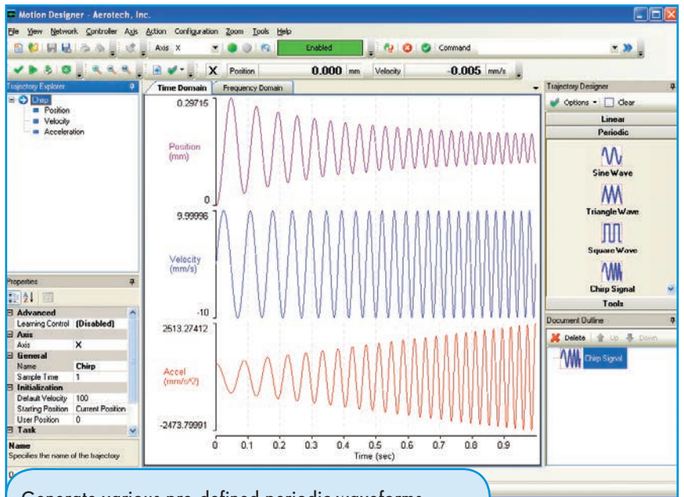


Easily create new trajectories using graphical tools.

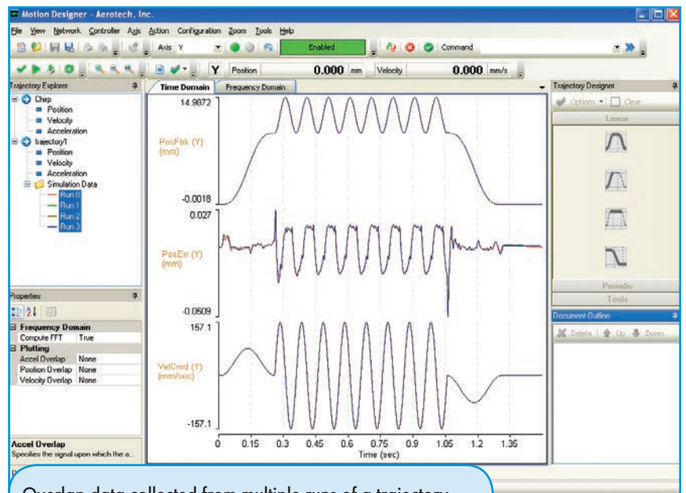


In this example, peak position error has been reduced by 85% and settling time by 80%.

Iterative learning control reduces following error and cycle time, thereby increasing machine throughput.



Generate various pre-defined periodic waveforms.



Overlap data collected from multiple runs of a trajectory.

Features and Benefits

- Learning algorithms designed to reduce position error between runs let the system improve the move and settle results
- Import an existing trajectory consisting of position, velocity, and/or acceleration state vectors from an external file to simplify profile input
- Plot trajectories and use analysis tools in the time or frequency domain to give detailed motion evaluation
- Create and modify multi-axis trajectories using predefined building blocks to provide rapid motion prototyping
- Overlap multiple runs of a trajectory to easily see how program changes modify the motion
- Create and export a trajectory to an AeroBASIC™ program for optimized motion functions
- Perform data analysis such as FFT, max, min, average, rms, and standard deviation from an existing trajectory for diagnosing system performance