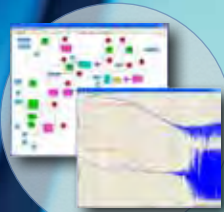# Optimize Motion Performance

with Kollmorgen MechaWare™

Precision. Versatility. Performance.

KOLLMORGEN ®

Because Motion Matters™

Improve Mechanical Performance, Quickly and Easily with MechaWare™.

Overcome Mechanical Limitations. Eliminate vibration and mechanical resonance, adapt to dynamic loads and changing inertias, and accelerate your design using MechaWare Software tools. Use the power of MATLAB® to "click-and-build" the optimized control solution for your motion application.

Bridging the Gap Between Mechanical and Software Design

MechaWare enables software and mechanical engineers to work together to design, test and modify custom motion algorithms in a fraction of the time and cost of conventional methods. As the industry's only mechatronic "toolkit", MechaWare leverages MATLAB®/Simulink® to seamlessly integrate mechanical systems and control software design resulting in faster design cycles, superior motion system performance with reduced power consumption, and faster time to market. This is significant as it saves OEMs thousands of dollars and months of development time.

MechaWare Benefits

- Allows mechanisms to be designed with reduced weight and stiffness, resulting in lighter, faster, smaller and more precise machines

- Enables rapid development of control schemes from simple PID to complex, matrix-based vibration cancellation methods

- Reduces cost-of-ownership from weight savings and lower power consumption

- Provides faster time-to market using model-based design with full simulation support

- Supports double-precision math when used with 64-bit ZMP-SynqNet family of controllers

MechaWare Features

- Visual programming environment and system simulation with MATLAB/Simulink

- Off-the-shelf control blocks with performance matched to production hardware

- Kollmorgen drives and motor blocks quickly validate hardware sizing and selection

- Powerful data collection and analysis tools

Extensive Block Library for Rapid Control System Design

- Over 80 standard blocks for Filter, Motion, and I/O:
    - Filter Blocks – PID, PIV, Bi-Quad Filters, Observers, and more
    - Motion and I/O Blocks – Embed motion and I/O sequences
    - Math and Logic Blocks – Support most requirements

- Full-featured C/C++ API to modify block parameters from software

- Embed safety routines and system recovery in firmware
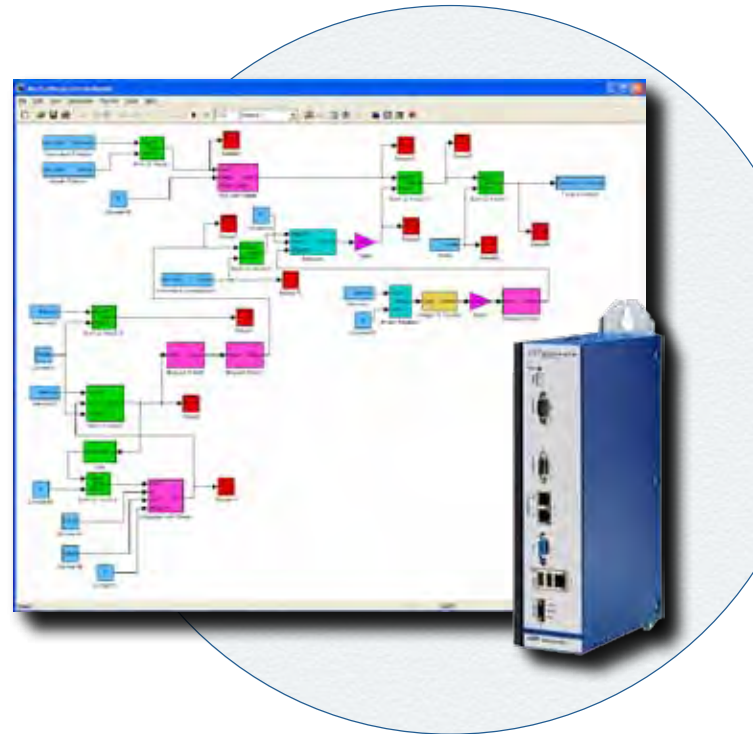
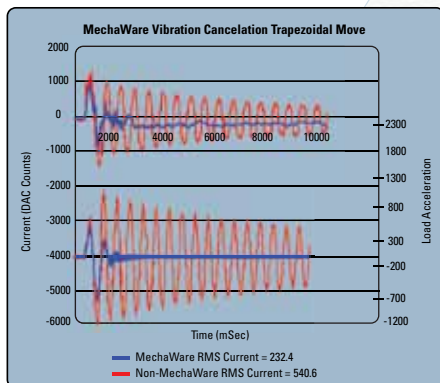| System Requirements |
| --- |
| ZMP controller or newer |
| 150 MB Disk Space |
| MATLAB version 2008b and higher |
| MATLAB plugins – Simulink, Control System Toolbox, and Signal Processing Toolbox |
| Windows Operating System |
| Kollmorgen programming libraries |
| Kollmorgen Controls Toolkit recommended |
| For additional information visit www.support.motioneng.com |

Solve Critical Issues in Complex Motion Control Systems

Eliminate Vibration to Improve Performance of Motion Systems

Motion system vibration limits throughput, creates noise, reduces component life, impacts machine quality and reliability, consumes more energy and forces expensive mechanical structures. Use MechaWare off-the-shelf algorithms or your own creative designs to engineer an exact-fit control solution, saving time, material cost, and system cost-of-ownership. Test and validate your design using Matlab/Simulink's powerful simulation engine and download directly into Kollmorgen off-the-shelf products. Use with powerful analysis tools such as Kollmorgen's Bode Tool to properly tune and optimize system performance.

MechaWare Vibration Cancelation Trapezoidal Move

MechaWare RMS Current = 232.4
Non-MechaWare RMS Current = 540.6

Reduce Settling Time to Achieve Greater Efficiency

With over 80 blocks optimized for motion control, MechaWare has the power to increase throughput and reduce settling time to achieve greater efficiency. Whether you want to implement and test a simple PID algorithm, or build a multi-axis Controls Model using Pre-filters, Observers and BiQuad filters, MechaWare scales to meet your needs.

Targeted Solutions for Robot and Gantry Applications

## Embed Inverse Kinematics, Axis Transformations, and Motion & I/O Blocks

MechaWare's graphical interface allows controls engineers to reduce development cycles and simplify machine design. Embed Inverse Kinematic calculations in firmware for customized, real-time performance. Define coordinate transformations to improve system accuracy based on registration mark or vision system input. Create Motion and I/O routines in Firmware for reduced latency and improved safety.
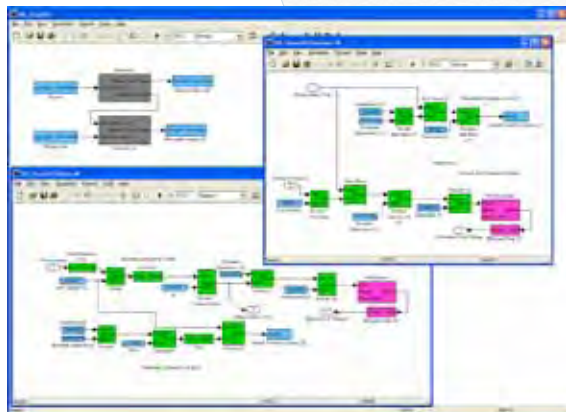
Shorten Development Time with Powerful Simulation Tools

MechaWare leverages the power of MATLAB/Simulink to support model-based design. All MechaWare blocks are matched to controller firmware performance to ensure model behavior represents the actual hardware response. Use the Kollmorgen Drive and Motor simulation blocks to accurately size components and select the complete motion system for your application.
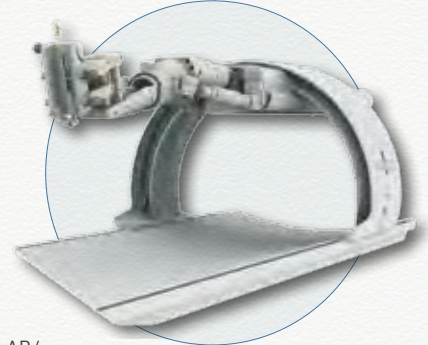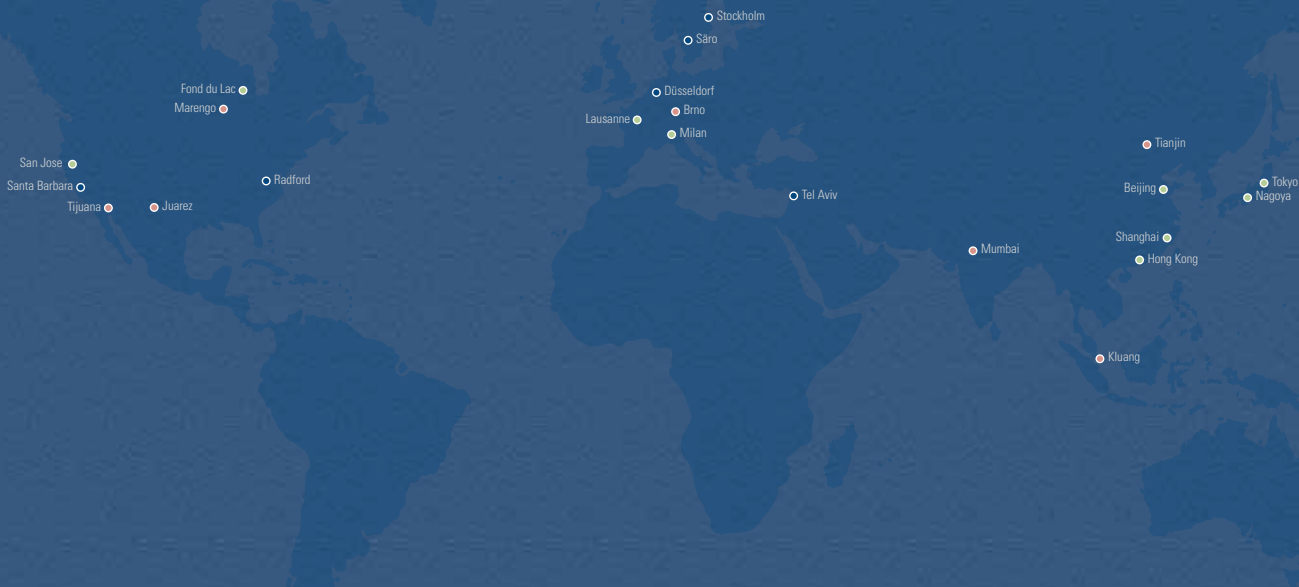
About Kollmorgen

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

For assistance with your application needs, contact us at: 1-800-449-0227, info@kollmorgen.com **or visit www.kollmorgen.com**

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