



PRODUCT BROCHURE 2011/2012

MOTION SIMULATION - CONTROL FORCE SIMULATION

ELECTRIC MOTION SPECIALISTS

E2M PROFESSIONAL MOTION AND CONTROL FORCE SIMULATION



APPLICATIONS



COMPANY



E2M Technologies is specialised in simulation products for high quality applications.

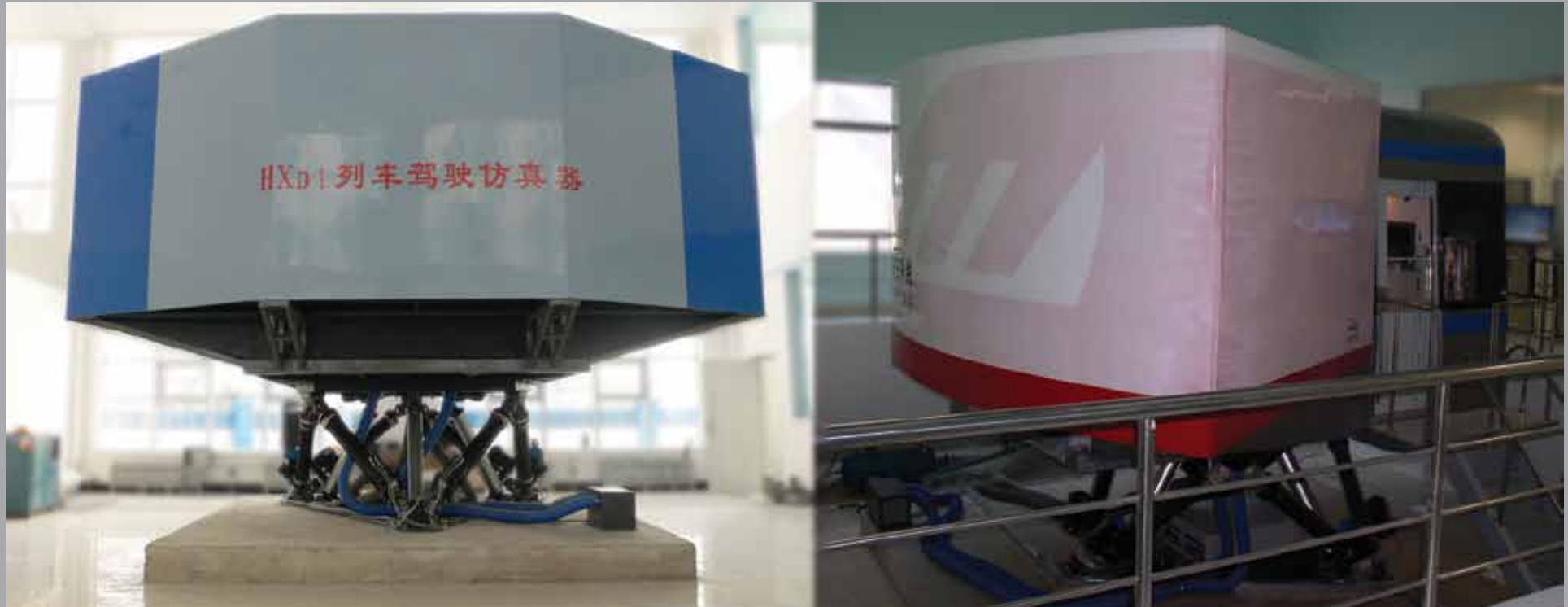
E2M stands for “Electric to Move”.

E2M Technologies engineers have a long history in producing simulator products like Motion Systems, Hardware Platforms and Control Loaders. This experience is now combined in E2M Technologies Simulator Products. Because of this background E2M has the perfect position to understand simulator requirements in every aspect. As such, E2M is the right partner for creating products for specific simulation applications.



The areas of expertise of E2M include hardware design of actuators and platforms, system design conforming to all applicable standards, state of the art software development including class leading motion queing and extremely straight forward host interfacing.

APPLICATIONS





eMove PRODUCT RANGE

6 DOF systems

eM6-400-1500
eM6-300-1500
eM6-300-1800
eM6-640-1800
eM6-640-3000
eM6-900-5000
eM6-900-8000
eM6-ROT-1000
eM6-ROT-HF-1500

5 DOF systems

eM5-300

3 DOF systems

eM3-300-3000
eM3-400-1000



eForce PRODUCT RANGE

eF-DDM-20i
eF-DDM-50i
eF-DDM-20
eF-DD-20i
eF-DD-20
eF-DD-50
eF-DD-130



HEXAPOD SYSTEMS

eM6-900-8000

Supports Level B Commercial Flight Simulators

- A six degree of freedom motion system.
- Full electric motion system for up to 8000 kg payload without pneumatic support.
- Up to 0.78 m/s velocity performance.
- Up to 8 m/s² acceleration performance.
- Latest software innovations.
- Energy absorbing end-buffers.

eM6-900-5000

Supports Level B Commercial Flight Simulators

- A six degree of freedom motion system.
- Supports Level B commercial flight simulators.
- Custom designed pneumatic actuators provide support for payloads up to 5000 kg.
- Up to 0.7 m/s velocity performance.
- Up to 9 m/s² acceleration performance.
- Latest software innovations.
- Energy absorbing end-buffers.



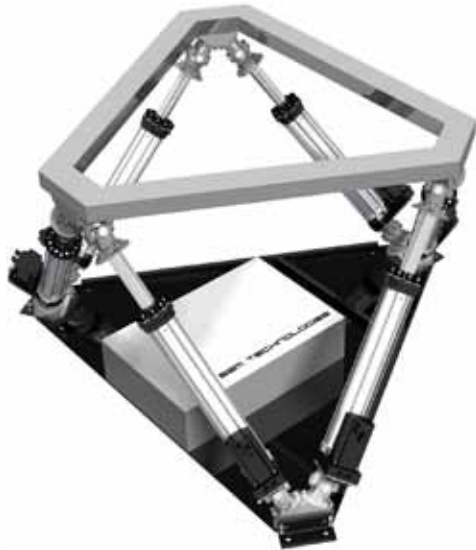
HEXAPOD SYSTEMS



eM6-640-3000

Most Popular Mid Range Unit

- A six degree of freedom motion system.
- Custom designed pneumatic actuators provide support for payloads up to 3000 kg.
- Up to 0.8 m/s velocity performance.
- Up to 9 m/s² acceleration performance.
- Latest software innovations.
- Energy absorbing end-buffers.



eM6-640-1800

High-End Leisure and Professional Applications

- A six degree of freedom motion system.
- For payloads up to 1800 kg.
- Up to 0.8 m/s velocity performance.
- Up to 10 m/s² acceleration performance.
- Latest software innovations.
- Energy absorbing end-buffers.

HEXAPOD SYSTEMS



eM6-400-1500

Most Economical System

- A six degree of freedom motion system.
- For payloads up to 1500 kg.
- Up to 0.6 m/s velocity performance.
- Up to 8 m/s² acceleration performance.
- Latest software innovations.
- Energy absorbing end-buffers.
- Also available the eM6-400-1000 with a payload up to 1000 kg.

eM6-ROT-1000

Extremely Compact System

- A six degree of freedom motion system.
- Extremely compact through the use of curved push-pull arrangement (patent pending).
- 385 mm settled height!
- For payloads up to 1000 kg, up to 0.6 m/s velocity performance.
- Up to 8 m/s² acceleration performance.
- +/- 110 mm (4.5") stroke , 10 deg. angles.
- No end-stops, inherently safe.
- Delivered with full software set including motion cueing.



HEXAPOD SYSTEMS



eM6-300-1800 Small Footprint System

- A six degree of freedom motion system.
- For payloads up to 1800 kg.
- Up to 0.8 m/s velocity performance.
- Up to 10 m/s² acceleration performance.
- Latest software innovations.
- Energy absorbing end-buffers.

eM6-300-1500 Most Compact System

- A six degree of freedom motion system.
- For payloads up to 1500 kg.
- Up to 0.6 m/s velocity performance.
- Up to 8 m/s² acceleration performance.
- Form fit and function compatible with the popular Moog MB-E-6DOF/12/1000KG.
- Very suitable for mobile truck based applications.
- Delivered with full software set including cueing.



SPECIAL PURPOSE MOTION SYSTEMS



eM3-400-1000

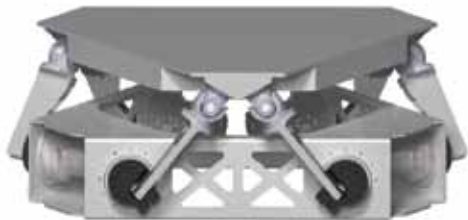
Pitch, Roll, Yaw System

- A three degree of freedom motion system.
- A version for 1000kg payload (including upper triangle).
- The eM3-400 sets new standards for price performance ratio.
- Up to 40 deg/s velocity performance.
- Up to 40 deg/s² acceleration performance.
- Latest software innovations.

eM6-ROT-HF-1500

High Frequency System

- A six degree of freedom high frequency shaker system.
- Extremely compact through the use of curved push-pull arrangement (patent pending).
- 50 mm stroke.
- For payloads up to 1500 kg.
- Up to 50 Hz frequency performance.
- Up to 5 m/s² acceleration performance.
- Software supports cross coupling reduction feature.



SPECIAL PURPOSE MOTION SYSTEMS



eM5-300-3000

Optimum Train and Metro Simulation

- A five degree of freedom motion system.
- The eM5-300 sets new standards for price performance ratio.
- Up to 0.6 m/s velocity performance.
- Up to 3 m/s² acceleration performance.
- Latest software innovations.
- Unique workspace optimization.

eM3-300-3000

Most Cost Effective Height Saving System

- A three degree of freedom motion system.
- A version for 500kg and for 3000kg payload (gross moving load) are available.
- The eM3-300 sets new standards for price performance ratio.
- Up to 0.5 m/s velocity performance.
- Up to 5 m/s² acceleration performance.
- Latest software innovations.
- Unique workspace optimization.



CONTROL FORCE SIMULATION PRODUCTS

Electric Direct Drive control loading actuators with latest software innovations.

eF-DD(M)-20(i)

Compact Direct Drive Control Loaders

- Multi turn (DDM) version for entertainment and professional simulation applications.
- Internal sensor (i) for lower cost version.
- Up to 30 Nm torque peak performance.
- Up to 80 rad/s velocity performance.

eF-DD(M)-50(i)

Mid Size Direct Drive Control Loaders

- Multi turn (DDM) version for entertainment and professional simulation applications.
- Internal sensor (i) for lower cost version.
- Up to 80 Nm torque peak performance.
- Up to 30 rad/s velocity performance.

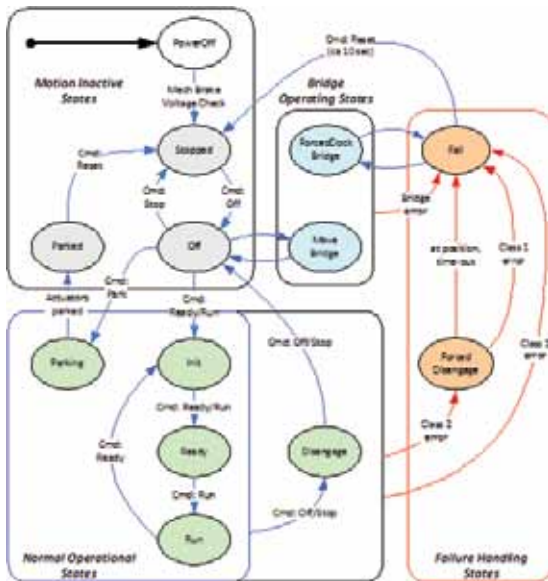
eF-DD-130

For Professional Training Devices

- Up to 160 Nm torque peak performance.
- Up to 20 rad/s velocity performance.



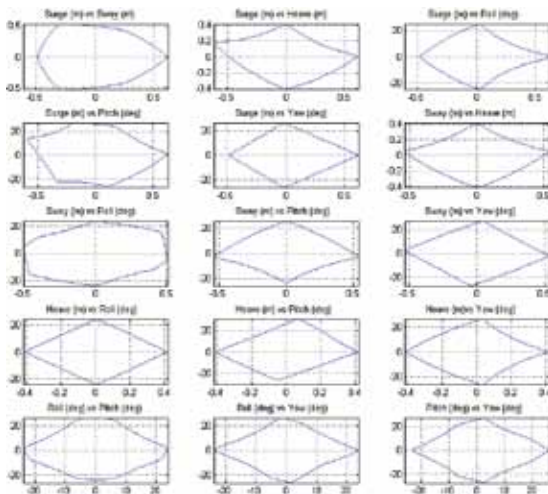
SOFTWARE



E2M uses a single turn-key software and hardware controller solution for all motion and control loading systems. The servo drives and peripheral hardware are interfaced with the real time controller using the industry standard EtherCAT real time network technology. The digital information on this network is fully integrated into the controller code resulting in excellent diagnostics capabilities. The real time operating system cooperates with Microsoft Windows XP on one CPU. This means easy accessibility of the data files via the network and Windows based remote diagnostics and support. At the same time hard real time performance is maintained.

FEATURES OF THE CONTROLLER SOFTWARE ARE:

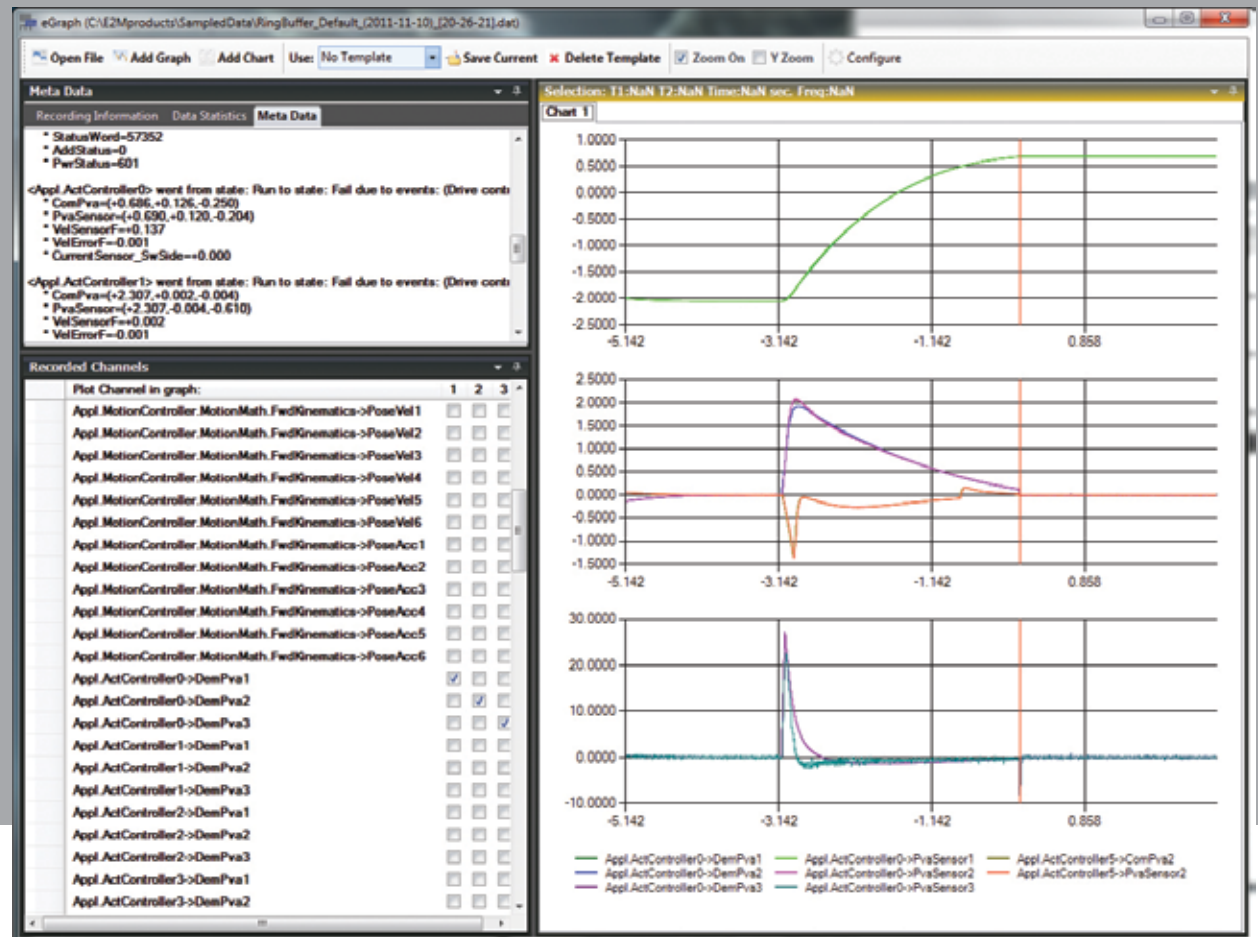
- Single real time controller for motion and control loading.
- Motion cueing model with Direct Workspace Management adaptive washout (patent pending).
- Integrates configurable special effects database (periodic, random and time based signals).
- Integrates advanced control force simulation models.
- Standard support for Matlab Simulink Real Time Workshop.
- Controller and features are fully customizable through data files.
- Host interface: user configurable, UDP Ethernet based, auto connecting.
- User friendly host interface API (including C++ source code).
- Detailed text based error messages in multiple languages, including values of relevant signals.
- Many product support features such as: automated documentation generation, parameter database, signal recording, signal playback, signal generators, automatic tests, logging and configurable control panels.



USER TOOLS

EGRAPH

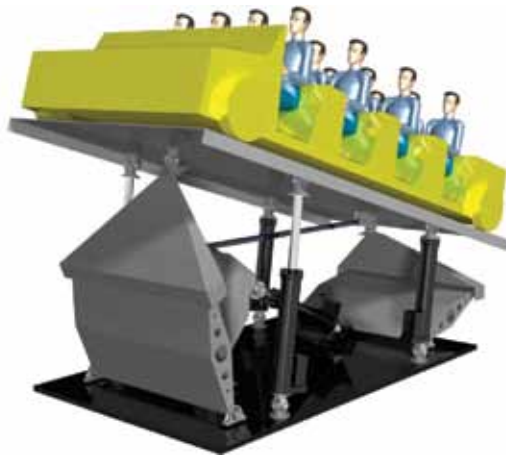
- Plotting tool for signal recording files.
- User templates to customize layout and content of the screens.
- Pan and zoom functions.
- Indicates error events and error messages.



APPLICATIONS



The smaller E2M motion systems like the eM6-400 and eM6-640 are successfully used in many professional car simulation applications of renowned simulation companies. They are used for both research and development applications and (race-) driver training. The systems offer an optimum price - quality tradeoff, have short delivery times and include state of the art cueing technology providing what many customers call "the best we experienced to date".



Recently E2M introduced an innovative new 4 DOF system specifically targeted at entertainment applications. It's 2500 kg payload capability allows for 16 people combined with an entertainment vehicle. The system features a high roll centre as a result of which the gap between the floor and the motion system can be small without causing any collisions. This feature omits the need for any moveable floor panels on the side of the unit allowing optimum people exchange times.

CUSTOMER QUOTES

"I like to express my satisfaction about the different motion systems provided by E2M and integrated in our simulators. The 6 DOF and 5 DOF systems we have got from E2M are giving entire satisfaction to our customers."

"Our experience with E2M Technologies is that they are a very professional company with a highly knowledgeable staff. We always deal with the specialist engineers. We can even do the system tuning by ourselves with remote support from E2M engineers."

"The software of all E2M systems is identical. The software is very easy and therefore quick to interface. A clear API is available to help make the connection between our simulation and the motion system. An advanced workspace management feature in the software leads to realistic motion cues, the best we had so far from any other vendors."

"We can recommend the motion systems of E2M because the quality of the system is at least as good and often better than those of other vendors. Furthermore, customer service is the most excellent based on our experiences in working with other vendors, and the systems including the software are all state of the art with many innovative features."

THE CORE E2M TEAM

JAN VAN BEKKUM

General manager of E2M Technologies. Jan has a computer technology background and is besides general management responsible for real time systems, user interface tools and drive system software.



PIETER CAMPAGNE

Responsible for all things mechanical. Pieter designs our actuators, electro-motors and mechanical structures. More than 20 years of experience helps him to design 1st time right, reliable robust systems.



LEVI SPREEUWERS

Our system designer and project manager. Levi knows all about safety, standards and specifications. He specializes in advanced servo control and gets the absolute maximum performance out of a servo drive and actuator.



RUBEN DE VALOIS

Control Loading expert and force feedback specialist. Ruben has over 15 years of experience in flight control modeling and design, as well as handling qualities of airplanes. He is specialized in implementing and improving control theory aspects on force feedback products.



THE CORE E2M TEAM

MARK VELTENA

Motion control expert and software development specialist. Mark is strong in mathematics, drive system analysis and motion cueing theory. He knows how to translate this knowledge into flexible, high quality real-time software.



ŽELJKO VLAISAVLJEVIĆ

Besides being responsible for logistics and quality, Zeljko also has a background in strength analysis and construction. His extensive experience with FEM calculations using Ansys and Femap means E2M Technologies gained the expertise to perform strength analysis to support the mechanical design process of our simulation systems.



RABIH AL ZAHER

Mechanical drawings, project management and truly magnificent renderings. CAD systems have little secrets for this Nuna veteran. (Nuna is the name of the extremely successful contender in the Australian solar car race)



CUSTOMER SUPPORT

E2M Technologies is well known for excellent customer support. Customers can contact the design engineers and specialists directly, leading to efficient, knowledgeable support.

New customers are supported to get started with E2M systems free of charge. If engineering support is required it is charged at a fixed daily rate, clear estimates about duration of the work are made up front.

To support our customer better, E2M equipped it's systems with the latest technology electronics and software allowing extensive (remote) diagnostics capabilities to find the cause of a problem as efficiently as possible.

A strategic spare stock is maintained at the factory to support customers without spares.

WHY CHOOSE E2M

- E2M is innovative
 - 2 patent applications since motion development started
 - Latest software platform technology
 - E2M developed more than 6 different motion systems in 3 years
- E2M is responsive
 - E2M is a focused smaller organization with excellent flexibility and responsiveness
- E2M delivers on support
 - All E2M customers are satisfied with E2M support
 - E2M systems are designed for minimal support requirements
- E2M products are affordable
 - Prices are consistent
 - Prices are competitive



E2M
TECHNOLOGIES

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Not all systems produced by E2M are listed in this brochure. Please contact E2M if you have specific requirements.