

A large, abstract graphic composed of flowing, translucent blue lines that swirl and intersect to form a central, glowing white sphere. The lines radiate outwards, creating a sense of dynamic energy and movement. The graphic is set against a white background and is partially enclosed by a thin black rectangular border.

energizing the future

our
commitment
to energy
efficiency
and
environmental
responsibility

MTS TESTING SOLUTIONS
be certain.

The background features abstract, flowing lines in shades of blue and green, creating a sense of movement and energy. The lines are layered and translucent, with some forming circular or spiral patterns. The overall aesthetic is clean and modern.

ENVIRONMENTAL RESPONSIBILITY IS CRITICAL TO
OUR FUTURE, AND MTS IS COMMITTED TO ENABLING
STEWARDSHIP OF OUR RESOURCES. AS A DEDICATED
CITIZEN OF THE GLOBAL COMMUNITY, MTS EMBRACES
ENERGY-EFFICIENT AND ENVIRONMENTALLY SOUND
BEHAVIORS AND VALUES — **AND WE ACT WHEN AND
WHERE WE CAN MAKE A DIFFERENCE.**

Diverse approaches to a complex issue

Energy and the environment are tightly linked. Global demand for energy is rising sharply in parallel with awareness of the importance of conservation, sustainability and stewardship. Using all resources wisely — including energy — will no doubt create the path to an environmentally responsible future. The challenge is how to achieve this goal while enabling steady, substantive growth in innovation, productivity and economic opportunity.

MTS understands that the interconnected issues of efficiency, energy and the environment are anything but simple. That is why we approach these complex problems in many different ways, using a wide variety of tools and technologies. In each case, we seek a balance between short-term needs and long-term objectives, between what is possible and what is practical.

Overall, MTS promotes, supports and reinforces environmentally responsible behavior in a comprehensive way that influences our customers' products and facilities, as well as our own. In the pages that follow, you will find more detail about how our organization:

1. Develops technologies that enable renewable energy to be cost effective and efficient
2. Helps our customers design products that consume less energy
3. Enables labs to perform tests in more environmentally responsible ways
4. Pursues environmental ideals in our own facilities

WIND

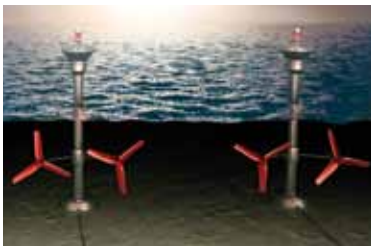
Maximizing the reliability of wind turbines is critical to creating a sustainable, economically viable global wind power infrastructure. MTS test systems help wind turbine manufacturers and suppliers understand the performance and durability characteristics of wind turbine materials, components and structures so they can optimize designs for lower costs and higher uptime. In particular, our vast knowledge in applying precise forces and motion to very large specimens translates perfectly to wind turbine development.



MTS expertise and test systems are vital to developing economically viable renewable energy sources such as wind, solar, tidal and geothermal.

Empowering the energy industry

Driven by rapidly increasing demand, the global energy industry is exploring every opportunity to increase production. The results are diverse, from massive wind turbines to advanced solar cells to more efficient gas turbines in power plants. MTS remains at the forefront of these innovations. Our knowledge, expertise and technology leadership are proving instrumental in the development of the materials, components and structures used across many segments of the energy industry.



SOLAR

Photovoltaic solar cells must be able to withstand the rigors of manufacturing, transportation, installation and usage. Solar panel assemblies must be able to tolerate wind, snow, hail and moisture. MTS solutions enable solar technology manufacturers to test solar panels, arrays, photovoltaic cells and materials, deposition methods and substrates, panel frames and mounting structures to improve performance and durability.

HYDROPOWER

Durable hydropower equipment is essential to tidal-, current- and wave-driven systems. For example, submerged turbines must be able to handle powerful natural currents as well as constant exposure to corrosive seawater. MTS systems help create realistic simulations of underwater forces and operating conditions. They also enable manufacturers to test large-scale rotor sections of axial turbines, crossflow turbine components, oscillating devices and related structures.

POWER GENERATION

Converting fossil fuels to electricity more cleanly and efficiently requires power plant equipment to operate at higher temperatures over a longer service life. MTS test systems are critical to R&D efforts focused on investigating and evaluating superalloys, ceramic matrix composites, ceramic coatings and other materials that will be used in ultra-efficient gas and steam turbine components, as well as the pipes, valves and pressure vessels used in power plants.

GEOTHERMAL

Drilling and exploration for clean, abundant geothermal energy is difficult work that involves orchestrating large equipment in areas where high pressures, temperatures and forces converge. MTS test systems enable effective simulation of actual operating environments, giving geothermal energy producers a better understanding of geomaterials found near areas that show potential for geothermal systems. Our solutions also ensure confidence in the equipment and structures used to perform drilling and extraction.



Faster and more efficient mass transit systems are critical for increasing economic expansion and reducing carbon footprints.

Building smarter products

Across many industries, organizations are significantly changing how products are developed, manufactured, used and recycled. Innovators everywhere are redesigning how products are used in our world, paying special attention to sustainability, durability and energy-efficiency. MTS is committed to helping our customers evaluate and test new materials, structures, products and techniques that increase available energy, optimize efficiency and help sustain the environment.



AEROSPACE

Aerospace companies are focused on developing turbine-powered jet engines that use less fuel and produce fewer emissions. To surpass current limitations, new turbines must run hotter and require less cooling. This means individual components — disks, housings, blades and nozzles — must be fabricated from or coated with materials that perform reliably at high temperatures for extended periods.

In the most advanced aerospace test labs, MTS solutions are used to help researchers characterize innovative materials with extreme precision and repeatability. Our expertise in high-temperature testing is also invaluable, because these complex tests often require analysis of material behavior under exacting loads in high-temperature environments, incorporating multiple methods of correlated data acquisition. In addition, MTS test systems are vital to the development of composite materials used to make airframes weigh less and consume less fuel.

AUTOMOTIVE

Consumers expect automobiles to offer reliability, comfort, performance and fuel economy. MTS is a leading provider of the test solutions vehicle developers rely on to design more fuel-efficient vehicles. With more than 40 years of automotive testing technology leadership, MTS has developed a deep and detailed understanding of ground vehicle testing, including the performance testing and aerodynamic simulation that are essential to maximizing fuel efficiency.

MTS test systems are used to characterize a variety of subsystems and components that are vital to the development of conventional, hybrid and electric vehicles. We also offer rolling resistance measurement systems that allow tire manufacturers to design tires that reduce fuel consumption without compromising safety or performance. In addition, MTS engineers are instrumental in the ongoing development of sophisticated kinetic energy recovery systems that recapture the energy of a moving vehicle during braking and store it to provide a subsequent boost during acceleration.

RAIL

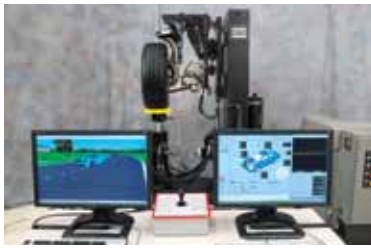
Global demand for faster, more efficient commercial rail and mass transit systems continues to grow. Economic expansion programs and the internationalization of railways are two key drivers, as is growing awareness that fuel-efficient rail transportation can make an impact on a nation's carbon footprint. MTS helps rail test engineers perform the tests required to meet this growing need. Specifically, MTS solutions enable precise, repeatable characterization and fatigue testing of bogies, wheels, bearings, pantographs and other components. Whether the primary testing challenge is bogie stiffness, force stability, damping, noise and vibration transmissibility or wear, MTS systems help engineers evaluate complex designs faster and more economically.



Integrating electric dynamic actuation into MTS test systems offers a proven way to reduce energy consumption.

Making every test count

Mechanical testing is inherently energy-intensive, but MTS is challenging the status quo. MTS remains committed to helping our customers conserve energy and other resources while they complete the work that ultimately helps our world run more efficiently. MTS also strives to help test labs perform tests in the most environmentally friendly way possible. To support these objectives, MTS has made several key R&D investments to enhance the test systems we provide.



HYDRAULIC POWER AND DISTRIBUTION

MTS SilentFlo™ Hydraulic Power Units (HPUs) deliver superior performance in servohydraulic testing applications. They are designed with standard features that maximize electrical efficiency and minimize water consumption. Additional options, such as remote monitoring of HPU performance, help reduce overall energy costs in the test facility. For even greater energy savings, HPUs can be equipped with real-time run-on-demand capability that reduces electrical power and cooling water consumption when the system is not running at full capacity.

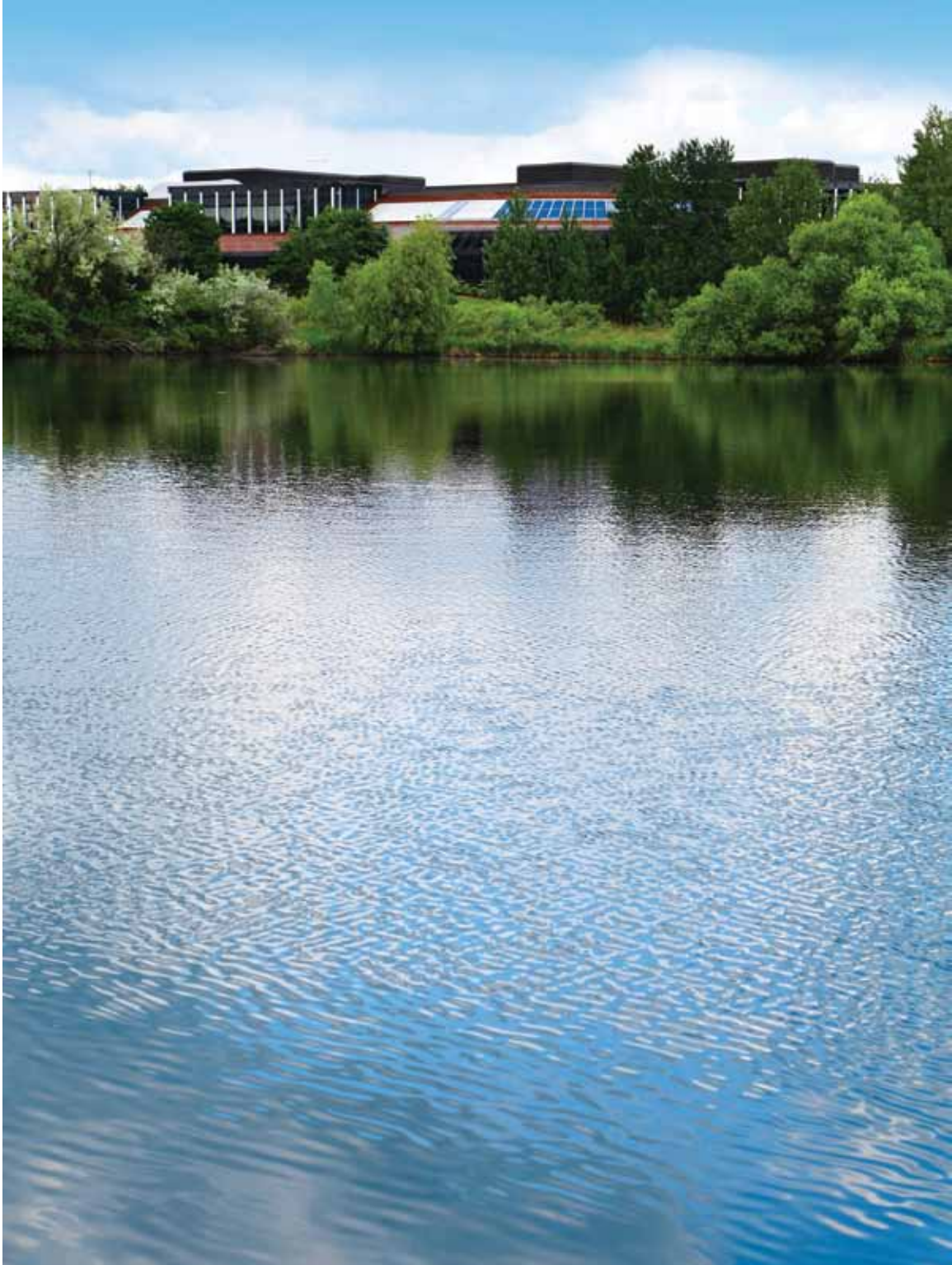
MTS is also developing more efficient ways to distribute hydraulic energy without affecting performance in the lab. Driven by breakthroughs in hydraulic power management and control, our state-of-the-art systems provide real-time visibility of hydraulic distribution activity, creating opportunities to improve productivity while reducing energy costs and prolonging equipment life. Predictive maintenance minimizes unplanned downtime, enhances overall test system health and slows component wear rates. Other advances remain in the pipeline, including more efficient hydraulic fluids that can be disposed of with less environmental impact.

ENERGY-EFFICIENT TESTING

MTS enables test labs to reduce the amount of energy consumed during testing in two ways. The first is hybrid simulation, a complex endeavor that integrates physical testing and computer modeling to help test engineers accelerate tests and test smaller components or subsystems while still generating valuable data about the entire vehicle or structure. Hybrid simulation is used frequently in civil engineering with additional applications in ground vehicle testing.

MTS is also promoting the use of electric dynamic actuators that consume less energy than comparable servohydraulic systems and do not require hydraulic power units or related infrastructure. MTS has already integrated electric actuation into our tire testing systems and our materials testing load frames. And we will continue to look for opportunities where electric dynamic actuation can maintain or enhance test system performance while reducing energy usage.

Minimizing environmental impact is also a long-term goal for MTS as we consider the design and maintenance of every test system we offer. To this end, we offer fluid care programs that improve operating efficiency and help extend the life span of our test systems. We are also continuously working on reducing or eliminating hazardous substances used during the manufacturing process.



MTS takes an environmentally responsible approach to operations around the world. Shown here is MTS headquarters in Eden Prairie, Minnesota. The facility is situated in a minimally landscaped area that features native grasses and a pond that hosts a variety of local wildlife.

Living up to our ideals

Any organization that outwardly supports environmentally responsible behavior in the industries it serves must live by those same principles internally. This is what we strive for at MTS.



We meet the environmental challenge in many ways. Because we frequently test our own systems during development, we make sure that we run our test labs, including HPUs and other components, in the most efficient manner possible. We also minimize hazardous materials wherever possible, and we exert careful control of these materials when they must be used.

MTS identifies opportunities to prevent pollution by setting and achieving goals to reduce both the amount and the toxicity of our waste streams. We actively recycle

waste materials and continually look for ways to expand this practice. Enterprise-wide, we are committed to meeting — and when possible, exceeding — regulatory requirements for environmental health and safety. Whenever possible, these activities are verified through third-party audits to make sure we stay on track.

In our facilities, we have changed our processes to conserve cooling water usage. We have upgraded our lighting, HVAC, HPUs and other building systems to reduce our environmental footprint. Of course, we continue to look for innovative ways to make our footprint even smaller as new methods and technologies become available.

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