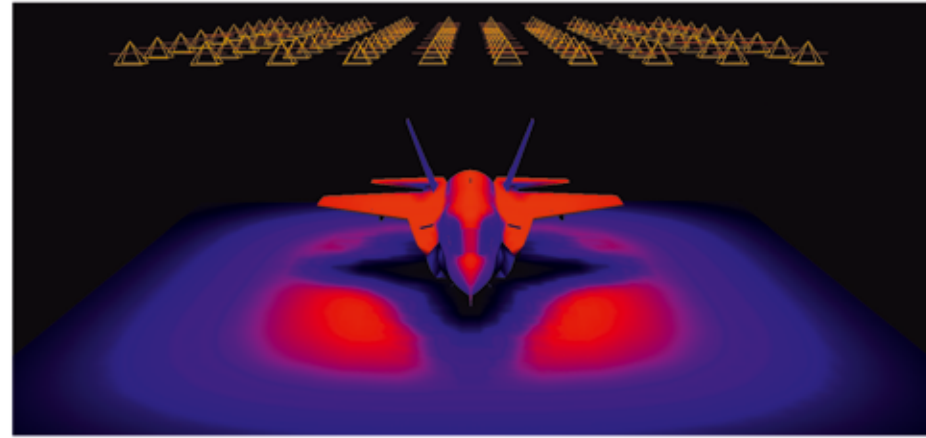


Planning, Design and Production

Our number one priority is to design and produce solutions that will meet your specific needs.



Atlas Custom Systems utilizes state-of-the-art solar simulation software to design innovative solutions to meet a wide range of lighting requirements.

Every lighting system is custom designed on a modern 3-D CAD modeling system, which can be easily integrated into building layout plans. By illustrating the solution, we can simulate movement in complex systems. This allows us to analyze and eliminate potential issues or failures before production begins.

Every step is documented in detail, from the pre-design phase through to manufacturing, ensuring our commitment to premium quality. All components are tested for quality and functionality in accordance with the latest standards before being installed at the customer's site.

Our expert technicians will install and start up the system in the customer's facility, ensuring that it is fully operational. We will then give the client's staff comprehensive training in the system's functions and features and will continue to ex-

tend post-installation technical support to ensure they feel confident that they are getting the most out of the investment.

Atlas Custom Systems works closely with the customers to clearly understand their needs and so design a custom-made system that will help them meet not only their current but also their future lighting requirements.



Enrico Hetzer
Dipl.-Ing. (FH)
Project Manager Mechanical Engineering
Phone: +49-6105-9128-76
Contact: enrico.hetzer@ametek.com

Technical Support

Ensuring your equipment's long-term reliability and service life requires regular inspections and maintenance.

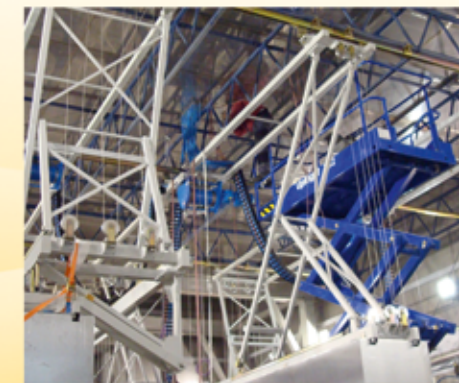
When operating solar simulators, poorly maintained systems can be susceptible to inconsistent and decreased power or light emittance, which may impede camera functionality. Proper maintenance will ensure that your system remains within specification and continues to provide reliable and repeatable.

data, but instruments that will stand the test of time.

"It makes us proud to visit clients and see our lighting systems still running smoothly after 25 years in operation," says Atlas Custom Systems Service Manager Karl Heinz Reitz.

Atlas Custom Systems is committed to providing its clients not only with systems that give accurate test

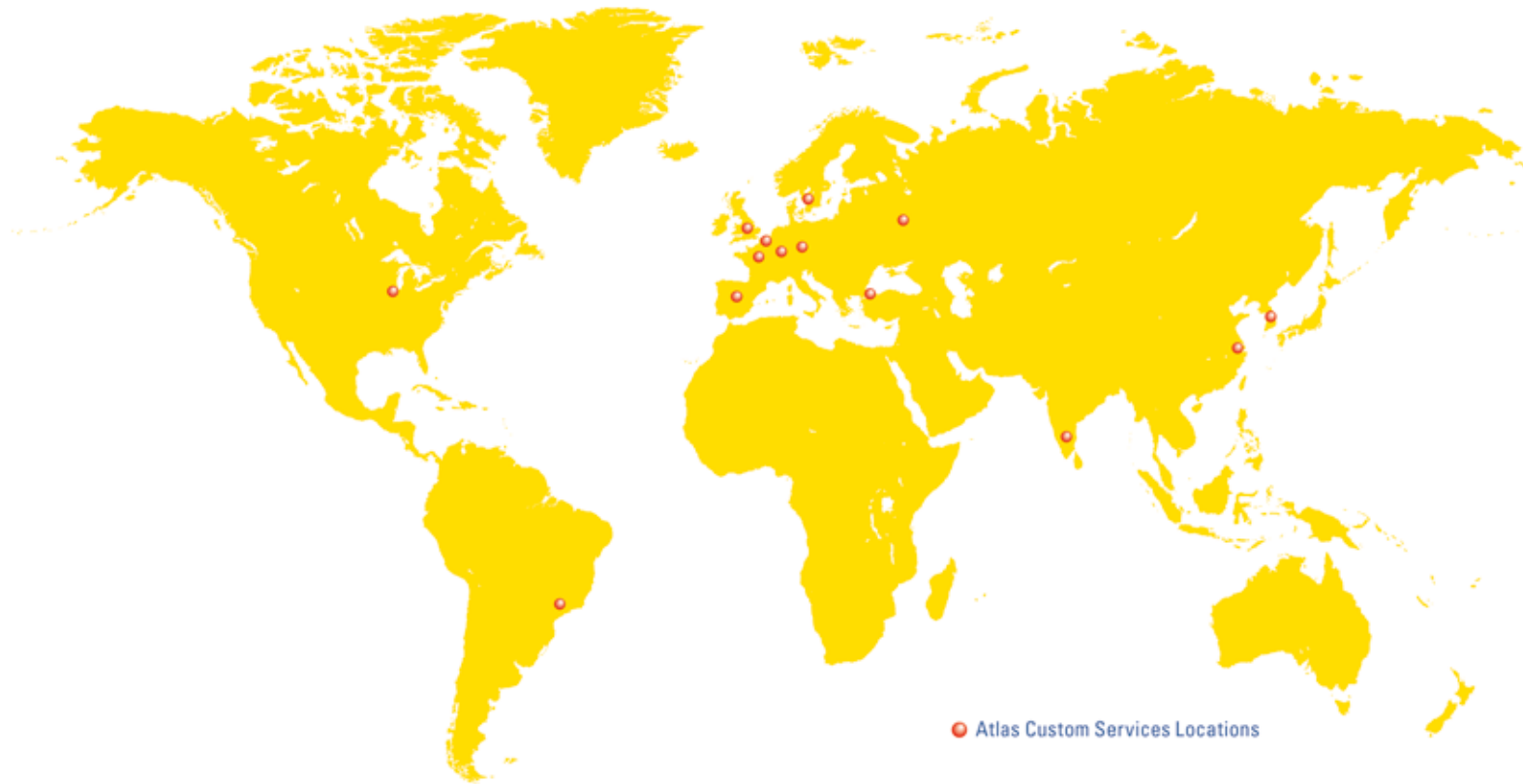
No matter where the customers are located, Atlas Custom Systems has a global technical service network,



guaranteeing they will receive superior support at all times.

Technical Support
Phone: +49-6105-9128-6
Contact: Atlas.Service-ACS@ametek.de

Our Local Representatives – Worldwide



Our Clients – here is a list of companies we have had the opportunity to work with:

3M China · A.I.R.I.C. · ACTS · Aiolos · Antec · Argonne National Laboratory · Arsenal Wien · ARTC · Audi AG · Autoliv · Balzers AG · BASF · Behr · Bertrand Ingenieure · BIA · BMW AG · Boeing · BAST · CAERI · Canadian National Defense · CATARC · CEAGA · Chery · Chongqing Changan · Chrysler Corporation · Cidaut · Clemson University · Columbia University · Continental Safety Engineering Int. · CTS · Daewoo · Daimler AG · Dalphi · Delphi GmbH · Denso International · Dow Chemical · DuPont · EADS · EDF · Eging · Eliosys · Envirotronics · ESPEC · ETWGmbH · Faurecia Innenraumsysteme GmbH · FAW VW · Fiat · Ford Motors · Ford Werke AG · Forschungszentrum Jülich · Four Square · Fraunhofer Institute · GE Deutschland · General Motors · GKSS · Halla · Hanwha Solarone · Happich GmbH · Harley Davidson · Honda · HUB Electric Services · Hyundai Motor · IAV · Idiada · IFT · InDyne · Institute of Building Environment and Energy Efficiency · J.H. Bennecke AG · Ja Solar · JAC · Jacobs · Jaguar · Johnson Controls · Karman · Katri · Key Safety Systems · KIA Motors · KMUTT · Krauss Maffei · Kunshan Ning System · LNE · LVM · Mando · Marley Foam · MBB · METU · Microsys Technologies · Modine · NAC · NAST · Nedcar · Neton · Nissan · Novtec · NREL · Nukem · Ohnishi Netsugaku · Opel AG · PATAAC · Peguform · Peugeot · Phoenix · PMG · Porsche AG · Proton · PSE · Q Corporation · Renault · Riechy · Rover · Rücker GmbH · SAGA · Samsung · SASE · SBB · SEAT · Selby-Biolab · Skoda · SMVIC · SNCF · Soltech · Solyndra · Ssang Yong · SunPower · Sverdrup Technology · Syngenta · TAKATA · Takata-Petri · TATA · TNO · Tongji University · Toyota · TRW · TRW-Repa · TÜV Rheinland · UL · United States Army Test Command · University Kassel · University Gießen · University Heidelberg · University of Arizona · University of Ontario · University Stuttgart · University Wisconsin · US EPA · UTAC · VETC/Flanders' Drive · Visteon · Volkswagen · Volvo · Vötsch Industrietechnik GmbH · Webasto · Weiss Umwelttechnik GmbH · WestPak · York/Johnson Controls

Technical Lighting

Atlas Material Testing Technology GmbH
Kurhessenstrasse 11
64546 Mörfelden-Walldorf
Germany

Phone: +49-6105-9128-6
Fax: +49-6105-9128-80

Atlas Material Testing Technology, LLC.
1500 Bishop Court
Mount Prospect, IL 60056-6039
United States

Phone: +1-773-327-4520
Fax: +1-773-327-5787

Contact: atlas.info@ametek.com



Superior Lighting & Solar System Technology

Offering 40 Years of Expertise in Customized Lighting Solutions



Expert Solutions for Light and Sun

With 40 years in research and development of artificial sunlight, Atlas Custom Systems has emerged as a global leader specializing in technical lighting systems for Solar Simulation and high-speed photography.



Martin Welling
Dipl.-Ing (FH)/Dipl.-Wirtsch.-Ing. (FH)
Managing Director

Atlas Custom Systems offers an array of lighting solutions starting with initial consultation through to the full realization of turnkey projects, successfully serving the automotive, transportation, aviation, aerospace and PV solar.

In addition, Atlas Custom Systems understands the obstacles clients face when trying to create the “right light,” specifically in crash test facilities. As one of our core competencies, Atlas Custom Systems works to ensure proper lighting conditions for various scenarios and, with our expertise in this field, we assist clients in overcoming these challenges.

“Our knowledgeable and efficient team has been working together on complex projects for over 20 years, and it’s always a pleasure to watch them in action,” says Division Vice President and Managing Director Martin Welling.

As a unit of AMETEK, Atlas Custom Systems has the ability to partner with AMETEK’s extensive global network of 120 manufacturing locations and over 100 sales and service centers in over 40 countries to provide clients with fast and reliable support.

Customized Systems

Today’s large-scale industrial testing facility projects are driven by the need to formulate global strategies.

As test procedures must be harmonized among international laboratories, each lab must be able to reproduce and repeat tests efficiently in time and frequency, all while still satisfying local test demands. To meet these constantly changing requirements, custom systems are required.

Successfully implementing complex test facility projects is crucial to ensuring a standardized level of quality that high-volume global manufacturers must maintain. Such projects also act as the foundation for developing innovative products based on precise testing data.

Andreas Kühlen, Vice President of Sales and Business Development at Atlas Custom Systems emphasizes the benefits of working with the lead-

ing global supplier of Solar Simulation- and Crash Lighting Systems: “The long-term success of customized test facility projects can only be achieved by working with a partner that has the expertise to provide intelligent design solutions coupled with experience in meeting the actual testing targets. Atlas Custom Systems offers over 40 years of experience in project management, along with a comprehensive knowledge of detailed application standards and inter-laboratory harmonization. Our mission is to be more than just a material supplier. Instead, our sales and technical service experts strive to fully understand the needs of our clients and become a partner: One that can help them successfully achieve their unique testing goals.”



Andreas Kühlen
Dipl.-Ing.
Vice President

Phone: +49-6105-9128-93
Contact: andreas.kuehlen@ametek.com

Solar Simulation/ SolarConstant

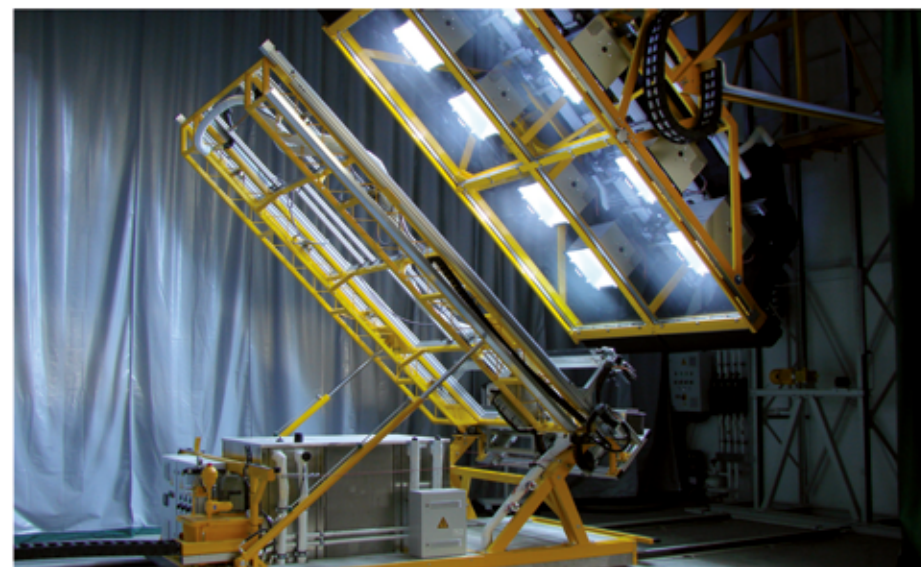
The Sun’s radiation in combination with ambient temperature and relative humidity is considered the major cause of material failures. Accurately replicating solar radiation for testing purposes can be a challenge, though. Atlas Custom Systems has the perfect solution – the SolarConstant.

“If 15 years of experience in working with our standard-sized Solar Simulation equipment and custom-designed larger systems (i.e. walk-in chambers or full-scale test facilities) has shown anything, it is that design is highly adaptable. As project manager, it is my responsibility to find the right solutions to fit our customer’s needs,” says Carsten Klinik, Project Manager Solar & Crash.

The Solar Constant Unit uses special HMI lamps and optical filters to accurately reproduce a spectrum matching natural sunlight in accordance with CIE 20 and CIE 85 standards. With these specifications, our specially designed Natural Global Radiation Reflectors also contribute to the superior spatial uniformity that is critical in solar simulation testing and in the development of superior products.



The SolarConstant is a highly precise unit that guarantees the right homogeneity and intensity level, ensures system reliability and functionality, provides good correlation to the sun and reproducibility of testing conditions, as well as sufficient exposure. These are the main characteristics for the development, design, fabrication and function of Solar Simulation Systems.



The spectrum of sunlight is accurately reproduced, allowing reliable system performance decisions to be made.

Atlas Custom Systems Solar Simulators can be used for an array of applications, such as material aging tests, studies of thermal effects and air conditioning, emission test stands, and the testing of solar energy conversion systems. Although the general requirements for most solar simulation applications are similar, it is the resources and experience that Atlas Custom Systems can provide that sets our systems apart.

Atlas Custom Systems has the experience to help the clients identify the key parameters that play a vital role in the design of an effective Solar Constant Simulation System.

Benefits:

- Atlas Custom Systems will assist with comprehensive test system development and test method design
- Spectrum matching natural sunlight (CIE 85)

- Standards compliance; e.g. DIN 75220, MIL-STD 810, IEC 68
- Specially designed reflectors for best-in-class homogeneity
- Optical filters to control spectral output (indoor/outdoor/special applications)
- Positioning systems, moveable in all spatial directions, which can effectively simulate day cycles
- Operation via remote control, PC touch screen or priority systems



Carsten Klinik
Dipl.-Ing. (FH)
Project Manager Solar & Crash

Phone: +49-6105-9128-83
Contact: carsten.klinik@ametek.com

High-Speed Lighting

The automotive industry conducts numerous crash tests in order to improve safety technology. This testing commonly utilizes high-speed photography with 2-D and -3-D picture analysis in which the lighting and camera optics are the most critical elements.



“You can never have too much light” is still a valid remark made by high-speed photographers today. This is where our technical lighting team comes into play. They produce German-made lighting systems that help all high-speed cameras operate with optimal settings and take superior images.

“Our high-speed lighting systems help images at the highest frame rates gain realistic color, contrast, and maximum depth of focus – critical for superior test analysis. These are the primary benefits that we provide to all crash test researchers – that’s

what differentiates us from others,” says Oliver Rahäuser, Product Manager of the KHS High-Speed Lighting team.

Atlas Custom Services has perfected its set of modular components, which consists of a standard set of luminaires (HMI and LED), lighting frames and electronics, supported by a computer simulation specialist who checks the optimal arrangement and size of a given lighting system. The team can then create small- to large-scale custom concepts within days.

HMI and LED Technology

Atlas Custom Systems provides professionally designed and engineered lighting solutions based on Metal Halide (HMI) and the latest LED technology.

The Atlas Custom Systems HIGH-S-LIGHT series based on HMI technology allows the testing process to stay simple:

- Proven technology that provides stable output even when main powers vary
- Continuous light at 50%, 100% or 200% (Boost) – no need for camera synchronization
- High-intensity continuous light up to 200,000 lux
- Daylight color temperature of 5,600 – 6,000 K
- > 95 CRI for excellent color rendering
- Flicker-free for frame rates up to 100,000 fps

The M=LIGHT LED is the latest LED product innovation for crash

test lighting. New LED technology has several advantages over conventional HMI lighting solutions. For example, it significantly reduces the heating of crash dummies and airbag systems. This allows each test to run within its specified test temperature, increasing the value of the data set provided.

- No warm-up time – starts instantly
- Minimal heat radiation to objects, which guarantees reliable test data accuracy
- Dimmable continuous light mode from 0 – 100%
- Reliable flash-mode synchronization up to 10,000 fps -> achieving energy savings of up to 80%
- Lightweight at just 5.5 kg



Dr. Oliver Rahäuser
Product Manager Crash Systems

Phone: +49-6105-9128-73
Contact: oliver.rahaeuser@ametek.com