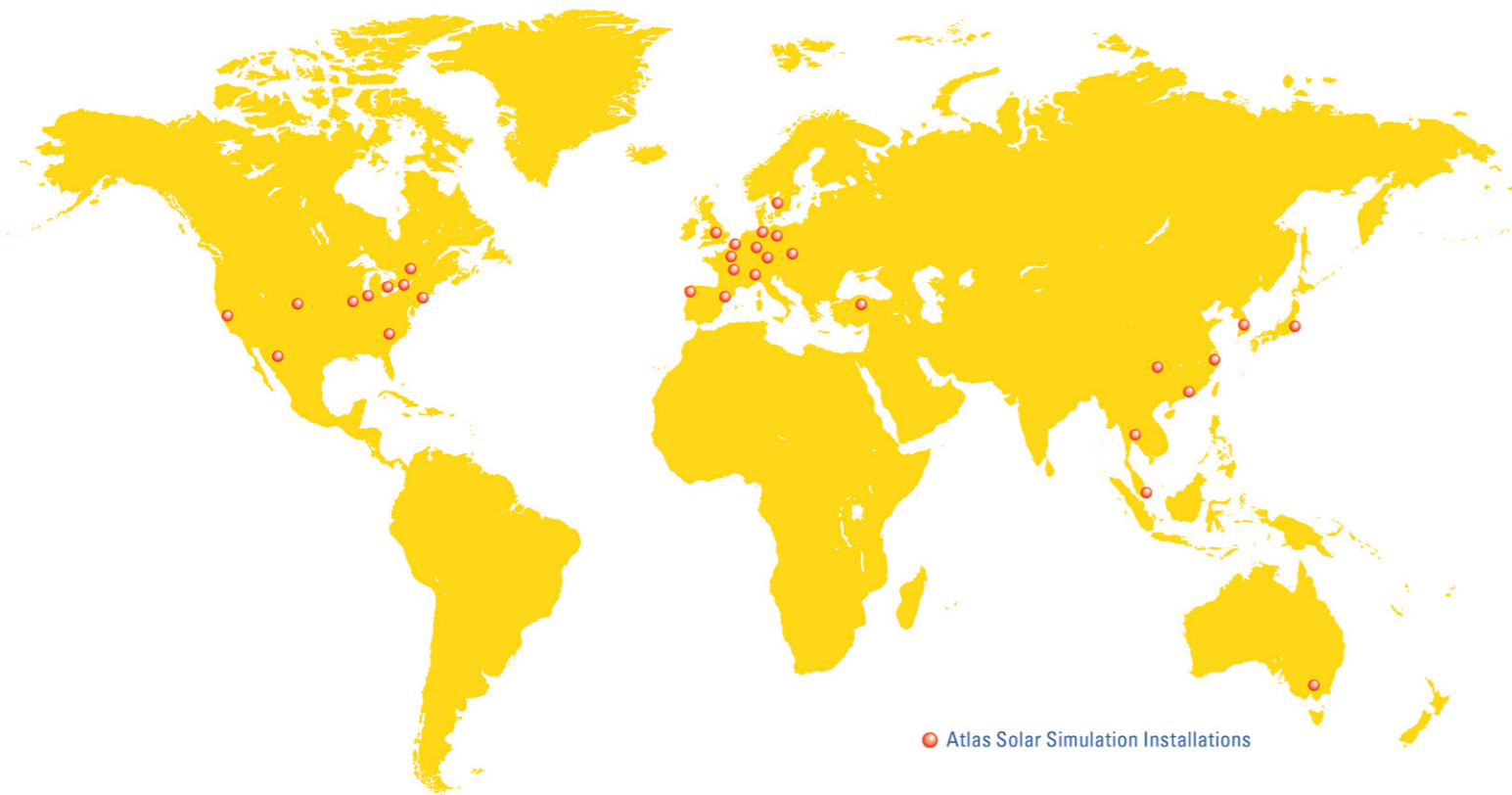


# Atlas Installations Worldwide



Atlas Solar Simulation Installations

# Solar Simulation Systems by Atlas



Custom-designed Solar Simulation Systems for Environmental Testing in the Automotive, Military, Photovoltaic and other Industries



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

3M China · ACTS · Aiolos · Argonne National Laboratory · Arsenal Wien · Audi AG · Balzers AG · BASF · Behr · BIA · BMW AG · Bodycote Materials Testing Canada · Boeing · CAERI · Canadian National Defense · CEAGA · Chongqing Changan · Chrysler Corporation · Clemson University · Columbia University · Continental Safety Engineering Int. · CTS · Daewoo · Daimler AG · Denso International · Deutsche Fibrit/Johnson Controls · Dow Chemical · EDF · Eliosys · Envirotronics · ESPEC · Fiat · Ford Motors · Forschungszentrum Jülich · Four Square · Fraunhofer Institute · GE Deutschland · General Motors · Halla · Happich GmbH · Harley Davidson · Honda · Hyundai Motor · IAV · IFT · Imtech · InDyne · J.H. Bennecke AG · Ja Solar · Jaguar · Karman · Katri · KIA Motors · KMUTT · Krauss Maffei · Kunshan Ning System · LNE · Mando · METU · Middle East Technical University · Modine · Nissan · Novtec · NREL · Ohnishi Netsugaku · Opel AG · PATAAC · Peguform · Peugeot · Phoenix · Porsche AG · PSE · Q Corporation · Renault · Rover · Rücker GmbH · SAGA · SASE · Satake · SBB · SEAT · Selby-Biolab · Skoda · Soltech · Solyndra · Ssang Yong · SunPower · Sverdrup Technology · Syngenta · Tongji University · Toyota · TÜV Rheinland · UL · United States Army Test Command · Universität Kassel · University Gießen · University Heidelberg · University of Arizona · University of Ontario · University Stuttgart · University Wisconsin · US EPA · VETC/Flanders' Drive · Visteon · Volkswagen · Vötsch Industrietechnik GmbH · Webasto · Weiss Umwelttechnik GmbH · WestPak · York/Johnson Controls



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



40 Years of Expertise in Custom-designed Solar Simulation Solutions





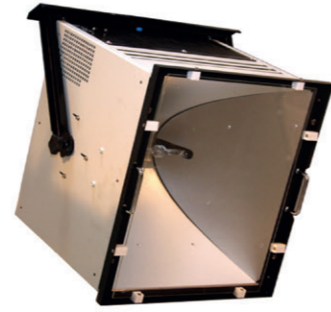
# The Effects of Sunlight

Sunlight can have adverse effects on materials, oftentimes initiating and accelerating the degradation process as it interacts with temperature, moisture and other environmental effects.



Before new products come to market, materials and components need to be tested to determine their resistance against the stresses caused by solar radiation.

This includes complete products such as cars, trucks, aircrafts and photovoltaic modules that require testing under realistic end-use conditions in order to support durability and performance expectations. Solar simulators designed for testing of components, sub-assemblies, partial test sections up to complete fully configured end products, can identify failure mode that may occur during service life.



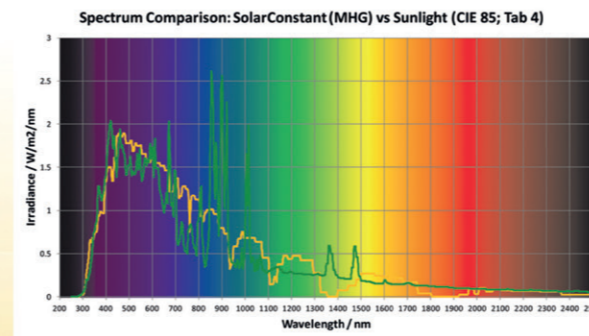
# Solar Simulation and Natural Sunlight

A key to the success of solar environmental test equipment is the quality of the solar simulation itself. A close spectral match to natural sunlight is critical for accurate reproduction of test conditions.

## Superior Solar Simulation with SolarConstant

The Atlas SolarConstant solar radiation unit offers high irradiance efficiency and superior spatial uniformity on the test area.

Designed with special Metal Halide Global (MHG) lamps and optical filters, the SolarConstant luminaire creates a spectral distribution that accurately matches natural sunlight. The proven design makes this unit ideal for custom-designed solar simulators or standard test equipment provided by Atlas.



## Test methods and standards

Atlas SolarConstant technology conforms to a large number of national and international standard test methods. The following table lists the most commonly used industry standards for SolarConstant technology:

Automotive	Defense	PV/ Solar	General
DIN 75220	MIL- STD 810	IEC 61215	CIE 85 (Table 4)
ISO 12097- 2	DEF STAN 0035	IEC 904-9	IEC 903-3
EPA 40 – CFR/ SC03	STANAG 2895	IEC 61646	
BMW PR 306.5	STANAG 4370 (M.305')	IEC 86-2-5	
Renault 32-00-022		ASTM E 892	
EPA			



# Project Partners and Applications

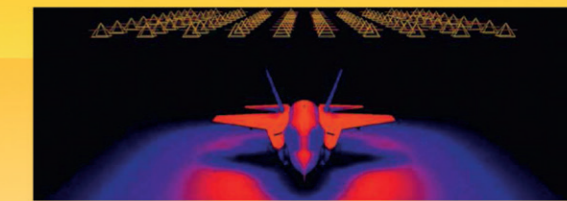
Atlas is a global leader specializing in custom-designed solar simulation systems. With a global reach, we specialize in partnering with producers of standard testing chambers and custom-designed solar systems for environmental simulation, stability and emissions testing.

Material aging (degradation), thermal heat load (deformation, fit/finish, HVAC operation), and operational performance (cycle testing) are performed using Atlas SolarConstant solar simulation technology. Our instruments are available in several sizes. They range from compact laboratory test chambers for small parts and components, up to walk-in chambers and full-scale drive-in chambers for complete cars, trains or airplanes.

innovative solutions that will meet your specific needs.

We utilize state-of-the-art solar analysis and modelling tools to help develop and design a test system meeting your specific requirements and capabilities. Design criteria and performance factors are discussed, adjusted if so required and verified in advance of production.

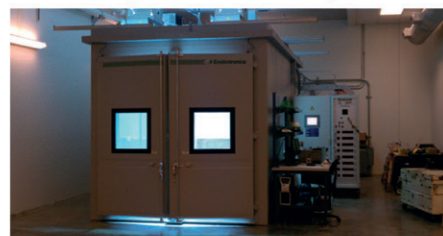
When you enter into a partnership with Atlas, you can be confident in the knowledge that our number one priority is to design and produce



# Test Chamber Examples

Atlas has vast experience in the field of combining climatic test chambers with solar simulation systems. The most common systems and applications include:

## Automotive, defense and transportation:



Solar environmental test chambers



Climate test chambers with wind tunnel and solar simulation



Climate test chambers with dynamometer and solar simulation

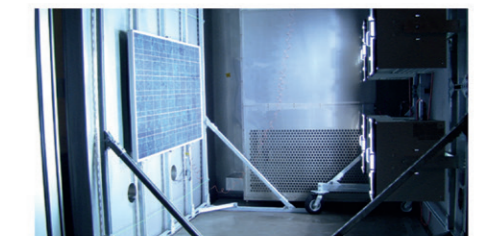


Solar Heat Load test chambers (Day Cycling)



Climatic chamber with 4-poster / dynamic road simulation with solar simulation

## Photovoltaic:



- UV Preconditioning of PV modules
- Light-soak test
- Steady-state simulators for I/V curve tracing
- Thermal collector testing under clear or cold sky simulation