

# PV Module Durability Testing -- FASTER -- at CFV Solar

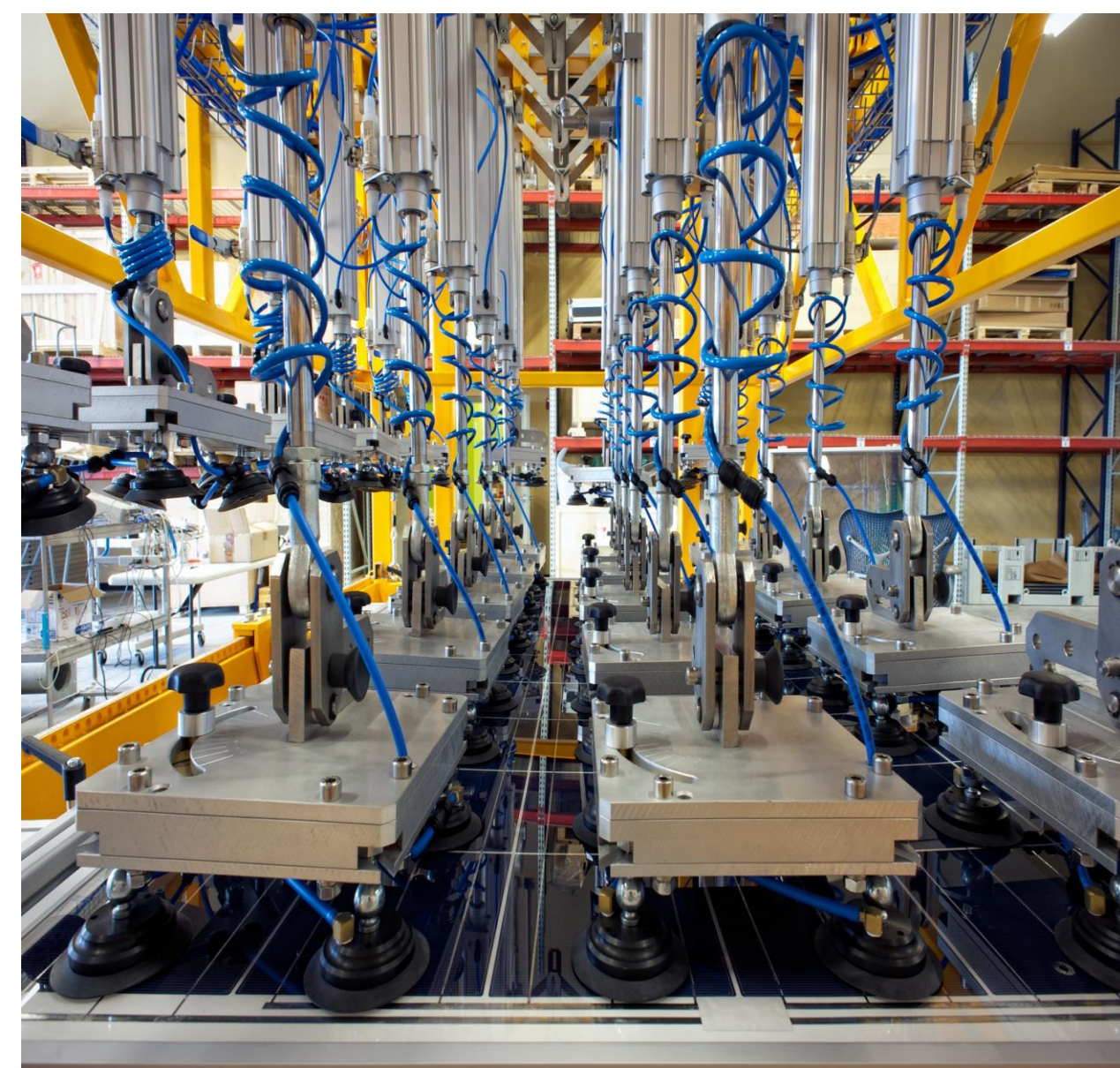
## Environmental Stress Testing

- Testing to Thresher Test, PVDI, Qualification Plus, Custom Protocols.
- Thermal Cycling -40C/85C: (8 cycles per day). TC200 in 27 days.
- Rapid Thermal Cycling -40C/85C: (12 cycles per day). TC200 in 18 days.
- Elevated Temperature Thermal Cycling -40C/95C-110C.
- Humidity Freeze -40C/85C/85% RH.
- Damp Heat Exposure 85C/85%RH.
- PID Testing +/- 1500V: (96-600 hours).
- Dark IV Measurements in chamber under development.



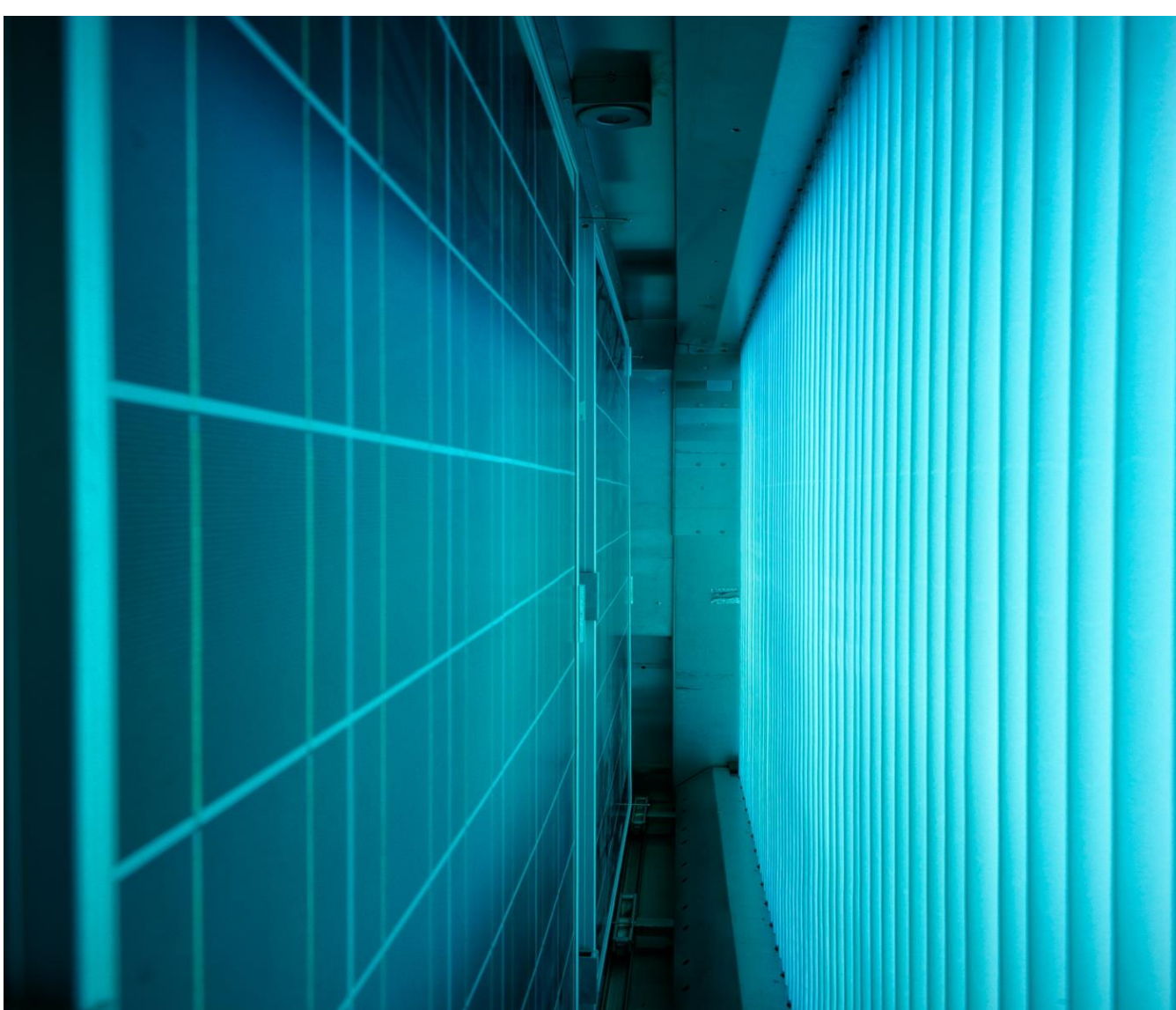
## Mechanical Load Testing

- Custom PSE pneumatic mechanical load test stand.
- Capable of precise and repeatable load testing of modules, racking and tracking systems.
- Up-force to 5,000 Pa, down-force to 10,000 Pa.
- Capable of angled loading as well.
- Dynamic MLT testing at up to 4 cycles per second.
- MLT stand can be placed in large environmental chamber for low temperature load testing.



## UV Exposure Testing

- Custom UV testing chamber with 150W/m<sup>2</sup> irradiance, much higher than conventional UV chambers.
- Conforms to IEC UVA/ UVB irradiance ratio requirements.
- 3x outdoor exposure intensity, 10x overall exposure acceleration factor.
- Chamber can accept very large modules.
- 15 kwh/m<sup>2</sup> exposure in 4days, 60kwh/m<sup>2</sup> exposure in 16 days, 100kwh/m<sup>2</sup> exposure in 27 days.



## Outdoor Exposure Testing

- Large outdoor test yard attached to lab with secure, fenced perimeter.
- Dual-axis trackers, single-axis trackers and fixed-tilt racking systems available.
- Located in Albuquerque, NM with greater than 2,300 kwh/m<sup>2</sup> annual fixed rack irradiance.
- Both string level monitoring and module level micro-inverter monitoring available for long term exposure testing.
- LID testing with flashing at various intervals to assess performance degradation.

