



SOLAR PHOTOVOLTAIC INDUSTRY

SCALING SOLAR EQUIPMENT FROM LAB TO HIGH VOLUME PRODUCTION

The Situation

A technology company developed an innovative approach to produce cost effective material for the photovoltaic industry. Their innovation will help the PV industry drive towards grid parity. Now that the company had proven the process in the lab, they were faced with the challenge of scaling this technology to meet global demand.



*Drive Mechanism Incorporated
High Vacuum Feed Throughs*

The Challenge

Transitioning from R&D into production is non-trivial. For this project, scaling up was not only challenging in the design of a manufacture-able large vacuum chamber, but also managing complex process parameters such as temperature, electro-magnets,

gas flows and precise motions to move a 400 kg payload in vacuum. Such a multitude of engineering challenges were too much for an up-and-coming, technology centric company to resolve quickly on their own.

The Solution

Owens assembled a group of industry experts to collaboratively design and build this complex production system. The tool has to move a 1.5m x 1.5m sized 400 kg payload through load-locks and process chamber with millimeter precision. This was accomplished by using a series of timing belts, and vacuum feed throughs with differential vacuum pumping to maintain high vacuum integrity. Multiple mechanisms were designed to transport the material and to

oscillate the material during process. Part of meeting production worthiness was not only in functionality, but in serviceability. The Owens team designed this large scale system with easy access to critical components and, where easy access was not achievable, incorporated a service cart to allow minimal time to repair.

This system not only met the functional requirements of our customer, but also turned lab results into production reality.



Innovative Drive System Positioned 400 kg Payload Precisely in High Vacuum