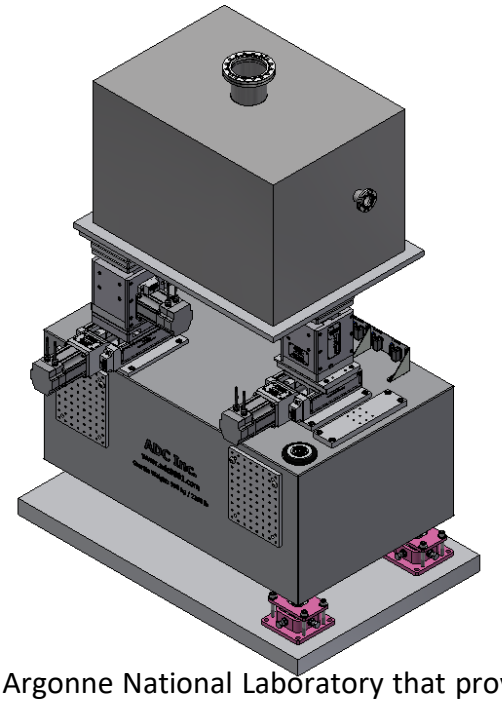
Motion System for KB Mirror

Customer:
Argonne National Lab
9700 S Cass Ave
Argonne, IL 60439



A system was designed for Argonne National Laboratory that provides 5 degrees of motion for their KB Mirror. The mirror chamber has 50 mm of vertical (z-axis) travel and 75 mm horizontal (x-axis) travel with a resolution of 1 µm. Using stacked precision slides, precision jacks, and free slides the chamber can also be rotated around the x-axis, y-axis, and z-axis to allow for leveling and alignment of the chamber. The slides and jacks use NEMA 34 stepper motors. The jacks are fitted with planetary inline gearboxes, and the slides use right angle gear boxes. This removes the need for a brake while allowing greater precision of motion. The motion system sits on a granite base providing stability and vibration dampening. The granite is leveled precisely with lockable leveling feet and bolted to an aluminum plate grouted to the floor.