

AUTOMATED VACUUM TECHNOLOGY

In a nuclear weapons program, countless materials questions arise: What materials are compatible? How do they interact? What happens to material properties after 20, 40, or 60 years of storage?

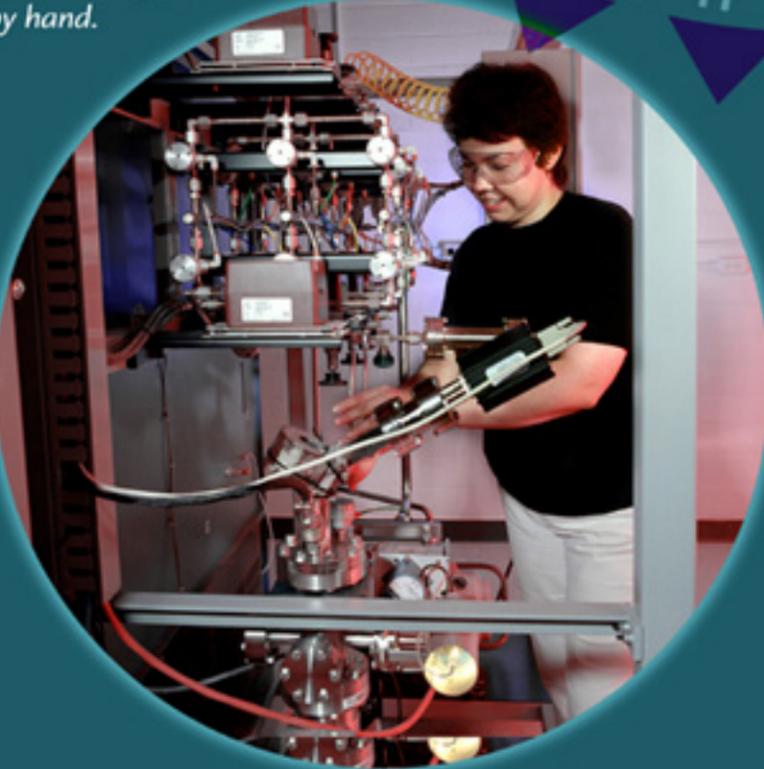
As part of the Stockpile Readiness Campaign's modernization efforts at Y-12, a new compatibility laboratory is the setting for design-agency-required compatibility studies. In this facility, researchers conduct core tests, materials aging studies, and vacuum microbalance experiments.

The compatibility laboratory includes a custom-made Automated Vacuum System that features automated (rather than manual) valves, roughing pumps (dry rather than oil-sealed), turbomolecular pumps, a residual gas analyzer, an ion gage, and automated pressure control valves. New specialty test software controls vacuum system operations that were previously performed manually and checks the applicability of "smart algorithms" to continuously monitor the system's pumps, ion gages, and power supply.



A mere press of a computer key can adjust the valves behind the new Automated Vacuum System, or users can opt to change them by hand.

Unlike its predecessor, the Automated Vacuum System, at left, requires less floor space because its components are assembled together in one convenient, compact station.



The thicket of valves on the previous system, still in use, can only be adjusted manually.