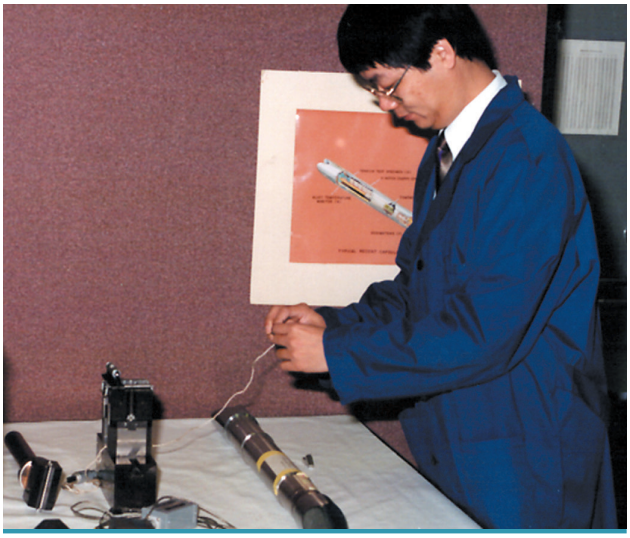
Fatigue and Fracture Laboratory

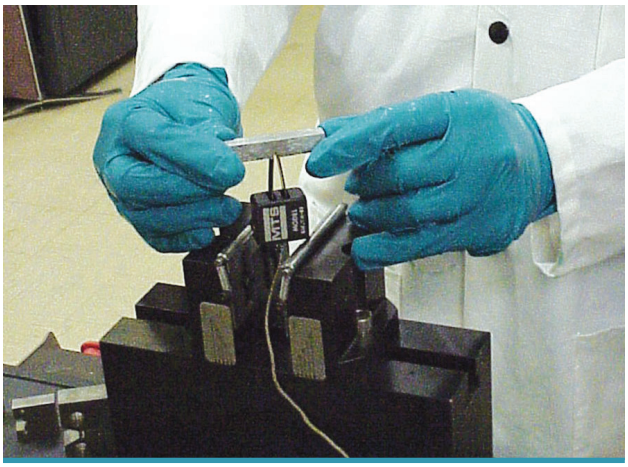
The BWX Technologies, Inc. (BWXT) Fatigue and Fracture Laboratory (F&FL) routinely performs a wide variety of mechanical test methods on metallic samples. The F&FL is staffed with experienced engineers and technicians and is directly supported by a dedicated Hot Machine Shop (HMS) to ensure accurate and reproducible test results. Standard or non-standard specimens are designed by engineers, machined in the HMS, and then tested in the F&FL.

Experience

The F&FL has handled more than 40 Reactor Vessel Surveillance Program (RVSP) capsules in the past. RVSP capsules are usually irradiated in reactors for various periods of time and then withdrawn from the reactors for testing. The F&FL has also been instrumental in several projects where highly irradiated components such as vessel internals were removed from a reactor for mechanical testing. These projects typically involve machining and testing miniature-sized tension and compact tension specimens. For miniature tension specimens, the strain is measured optically using a high resolution digital image correlation (DIC) system.



Testing a variety of specimens, including RVSP capsules



Three-point bend testing

Equipment

The F&FL is equipped with a 220 kN servo-hydraulic test machine and a Satec 240 ft-lb Charpy impact tester. These machines can be surrounded by 2 to 4 inches of lead to provide the appropriate shielding for operators as necessary. Charpy impact, tension, and compact tension fracture toughness tests are regularly performed in this laboratory in accordance with the appropriate ASTM standards. Remote handling tools and automatic specimen loading devices are available for transferring and loading of specimens. The F&FL is designed to handle specimens out of cell with radiation levels as follows (beta + gamma, single specimen):

- Charpy specimen - 2,000 mrem/hr at 30 cm
- Tension specimen - 2,000 mrem/hr at 30 cm
- Compact tension specimen - 7,000 mrem/hr at 30 cm

However, specimens with higher radiation levels can be handled if additional shielding is erected around the MTS test machine or the Charpy tester.

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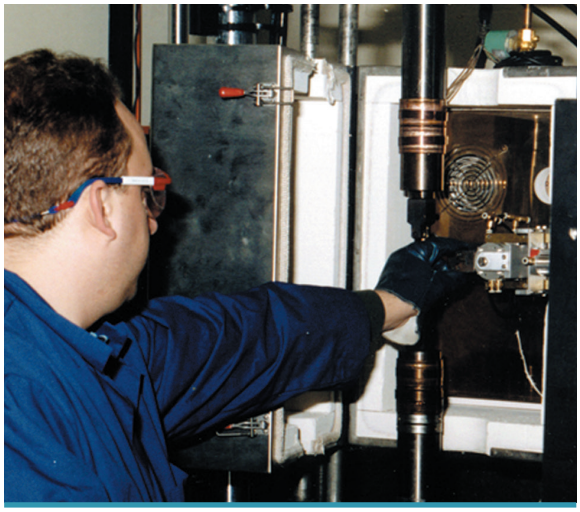
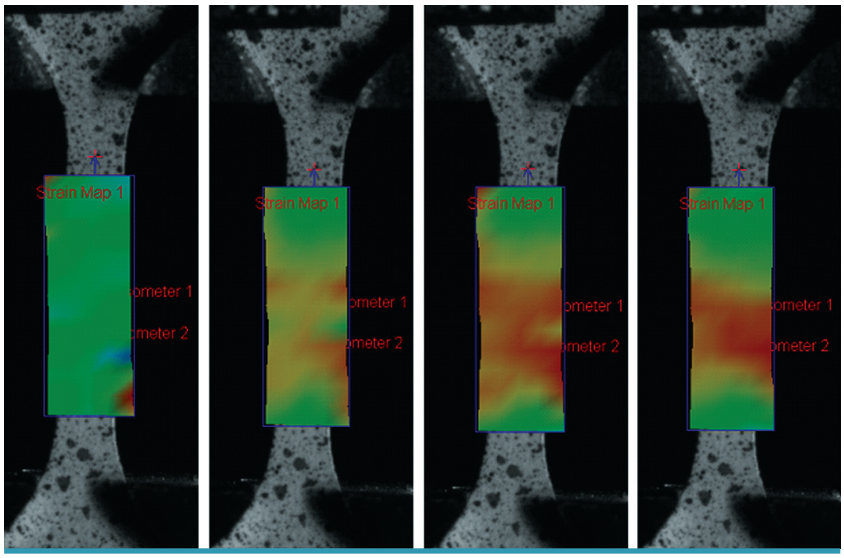


Elevated temperature tensile testing

Services

- Charpy Impact Testing (ASTM E23 and A370)
- Tension Testing (ASTM E8 and E21)
- Fracture Toughness Testing (ASTM E1820)
- Low Cycle Fatigue Testing (ASTM E606)
- High Cycle Fatigue Testing (ASTM E466)
- Fatigue Crack Growth Rate Testing (ASTM 647)
- Transition Region Fracture Toughness Testing (ASTM E1921)
- Vickers and Knoop Microhardness Testing
- Miniature Specimen Machining and Testing



Strain mapping using DIC system

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At BWX Technologies, Inc. (NYSE: BWXT), we are People Strong, Innovation Driven. Headquartered in Lynchburg, Virginia, BWXT is a Defense News Top 100 manufacturing and engineering innovator that provides safe and effective nuclear solutions for global security, clean energy, environmental restoration, nuclear medicine and space exploration. With more than 7,000 employees, BWXT has 14 major operating sites in the U.S., Canada and the U.K. In addition, BWXT joint ventures provide management and operations at a dozen U.S. Department of Energy and NASA facilities. For more information, visit www.bwxt.com. Follow us on LinkedIn, X, Facebook and Instagram.

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