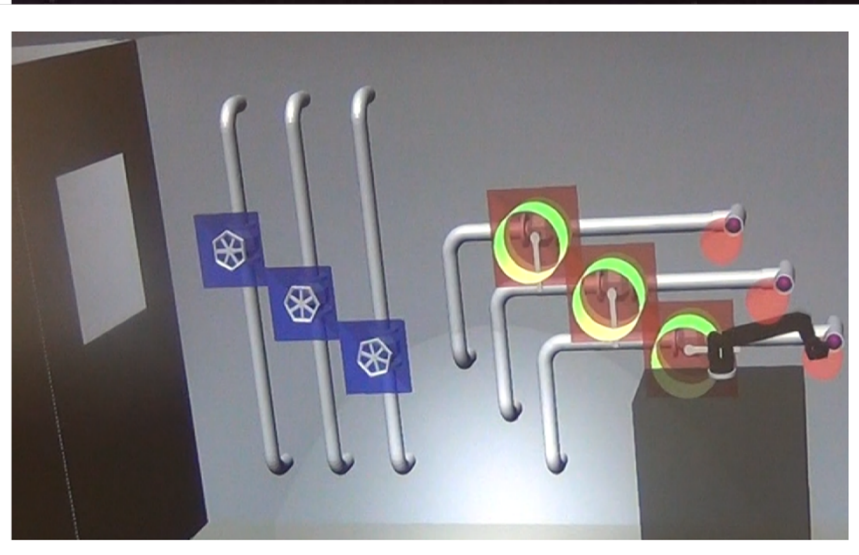
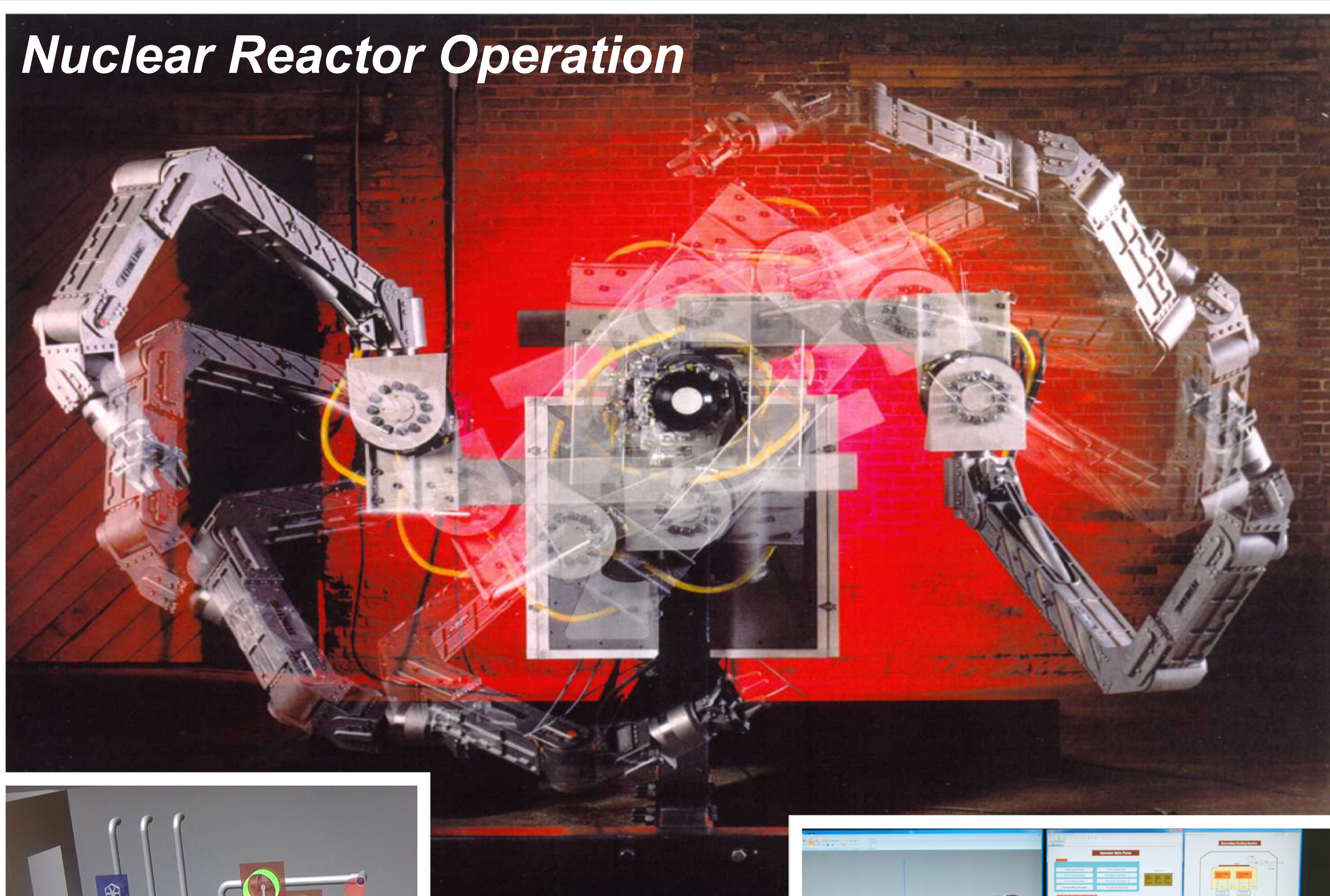


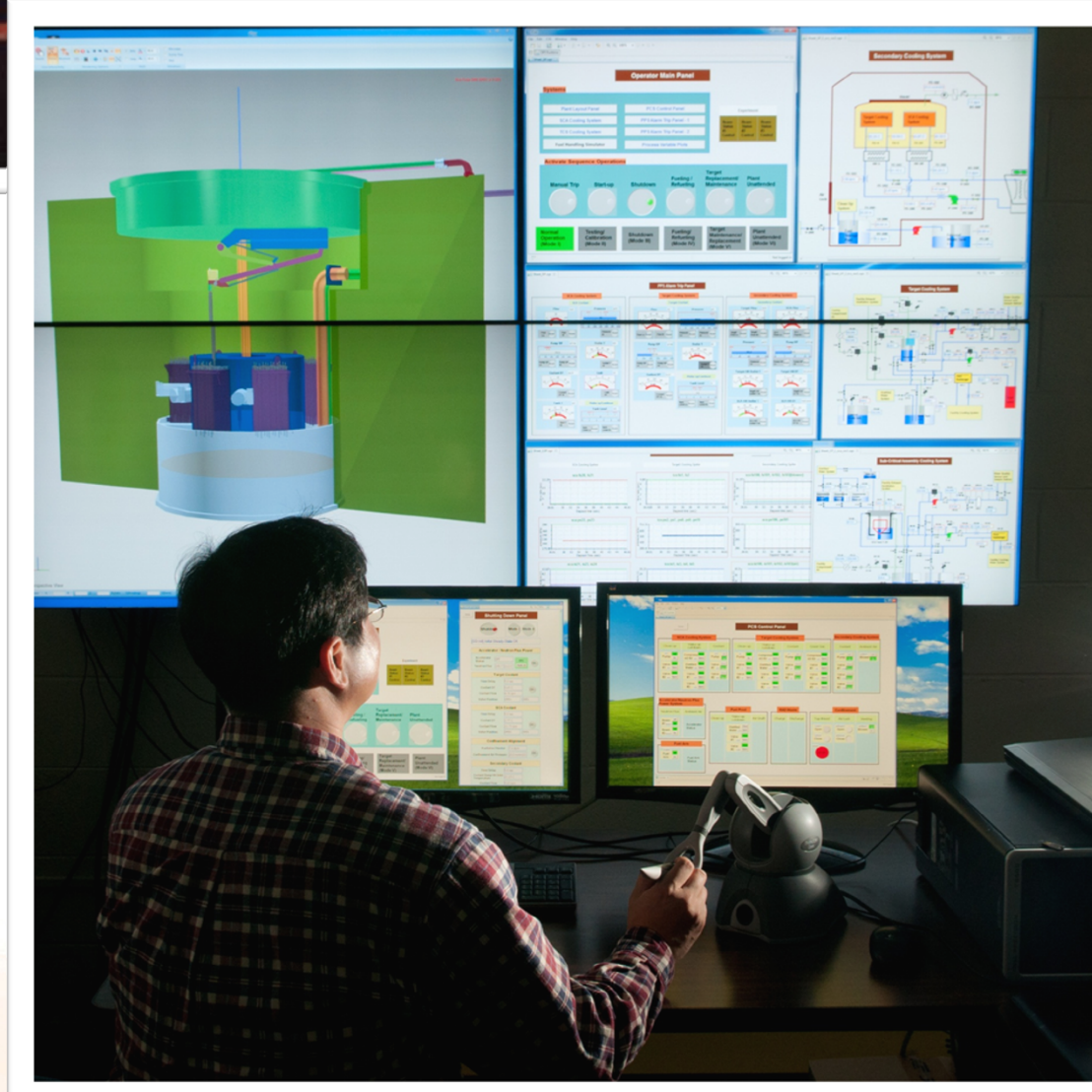
Robotics Program

The Robotics Program within the Nuclear Engineering Division is developing new technologies to enhance the performance of telerobotic systems (robots remotely operated by humans) with growth potential which complement or enhance our Division's core programs and the Laboratory's strategic thrust areas. Currently, we are exploring opportunities in applications for nuclear reactor operation, maintenance of remote energy installations, decontamination and decommissioning, and minimally invasive surgery. For further information, please contact Young Soo Park at ypark@anl.gov.

Nuclear Reactor Operation

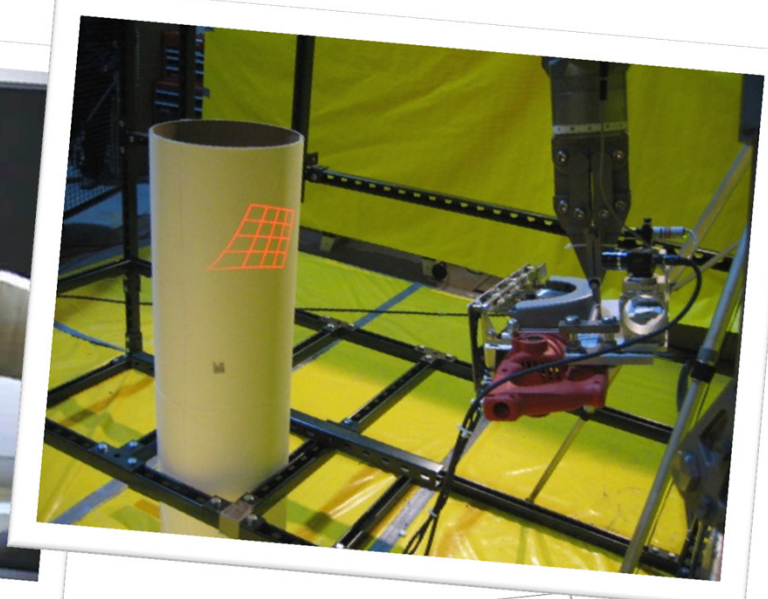
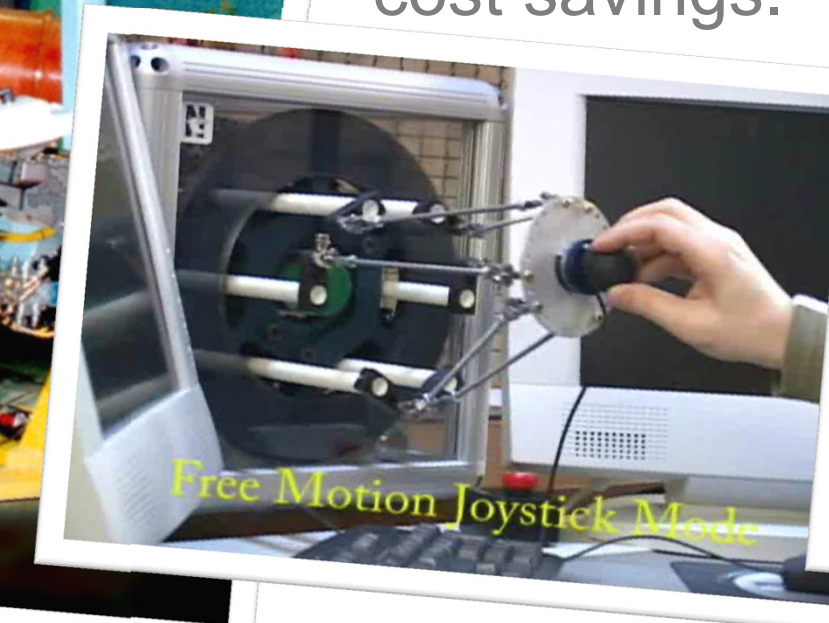
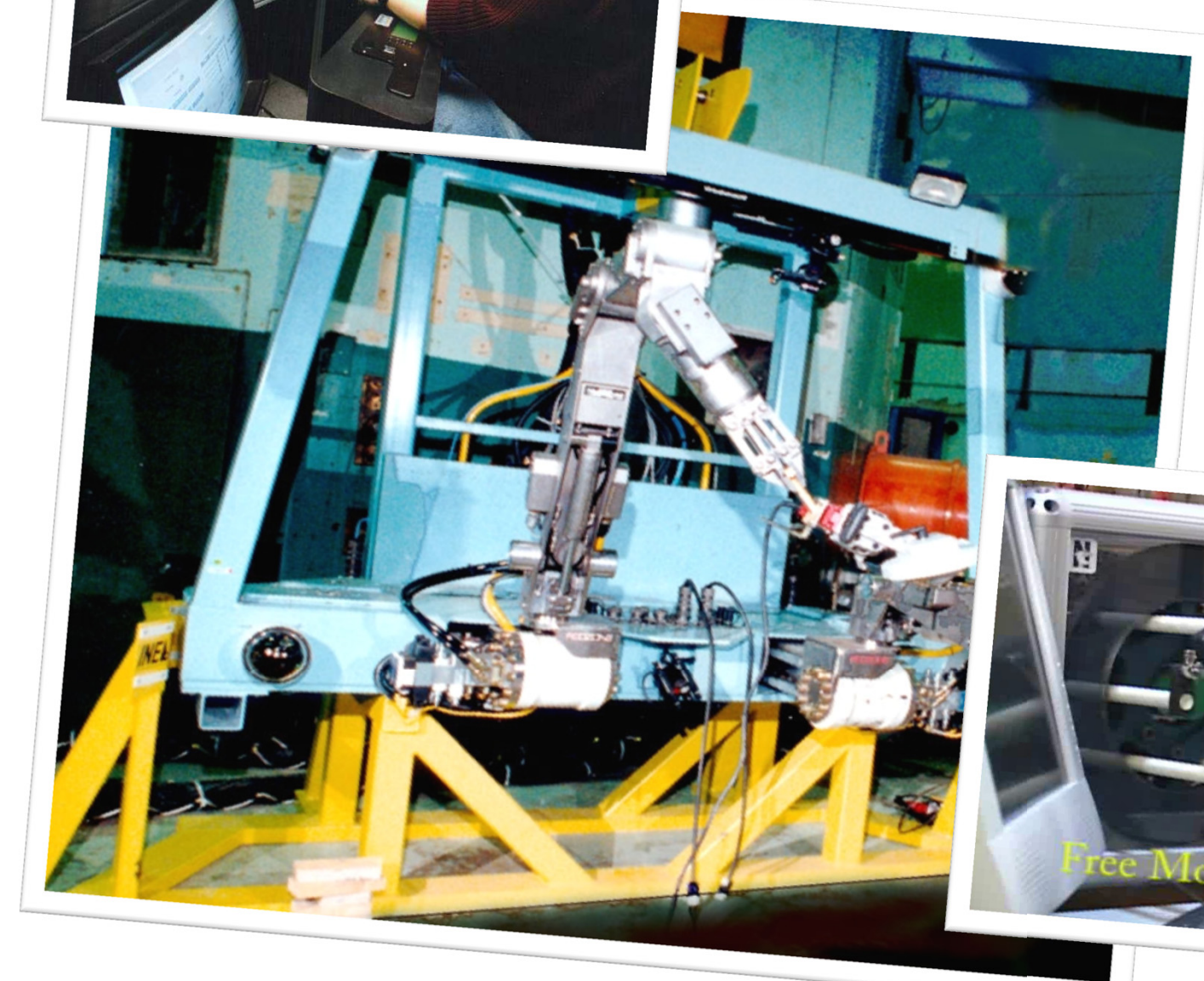


Teleoperation technology is applied to the operation and maintenance of nuclear reactors and remotely-located energy facilities, such as ocean-based oil rigs and wind mills. Advanced man-machine interface and interactive simulation allows hands-on experience and training of such operation.



Decontamination and Decommissioning

Telerobotic systems are used for the decontamination and decommissioning (D&D) of nuclear facilities. Our dual-arm robot (at left) has doubled the efficiency of D&D operations over conventional approaches while improving safety. However, our advanced control and multi-modal operator interface under development could potentially make these system 10 times more efficient, resulting in substantial time and cost savings.



Medical Robot

Robotic systems are now widely used in surgeries. Currently more than 50% of total prostatectomies are performed by robotically-assisted operation. We are leveraging telerobotic technology for surgical applications. Our current innovations address haptic sensory feedback for dexterity surgical operations, and application of augmented reality technology for orthopedic surgery.

