N46. VESSEL INSPECTION MADE EASY

Mitsubishi Heavy Industries in Japan) is developing a remote-controlled inspection system to inspect reactor pressure vessels.

The system travels on wheels along the interior wall of the vessel, moves by propellors, and forms a vacuum to attach itself to the wall of the vessel while performing an inspection. It does not need to be moved by a polar crane because it is smaller than traditional inspection systems (0.8 x 2 m x 0.9 m) and weighs less (around 300 kg). The inspection system can move automatically at up to 0.2 m/s and can set its position to within 0.5 mm using laser orientation. The system is mounted on a watertight articulated manipulator, and the test signal is transmitted from a small multiplexer in the vehicle to an ultrasonic test data acquisition and evaluation system. Time is saved by evaluating the data off-line once the inspection is finished. To save on weight, data is transmitted via optical fibre, which is much lighter than the coaxial cable normally used for such inspections.

Mitsubishi has tested the prototype on a full-scale mock-up of a reactor pressure vessel, and will build a machine for practical use in the near future. The company is optimistic that it can further reduce the size and weight of the system, and now wants to develop automatic computer control.

For more, see Nuclear Engineering International, p. 20, October 1990.