

# Rov-A-Scan Laser Scanner Delivery and Positioning System

## Background

Laser scanning is a technique commonly used to help evaluate wear of the control rod drive mechanism (CRDM) penetration thermal sleeves. This proven measurement process provides high-resolution point cloud data of features under the reactor vessel head (RVH) with sub-millimeter accuracy (Figure 1).

The laser scanner is typically delivered and positioned under the RVH manually by a single technician. This approach requires multiple entries and exits from under the RVH to position and reposition the laser scanner at specified measurement locations. Not only is this process inefficient, but it also results in additional occupational exposure for the technician and a greater overall exposure dose for ALARA planning.

## Technology Description

The Westinghouse Rov-A-Scan vehicle is a novel solution that automates the delivery and positioning of a laser scanner system for thermal sleeve wear measurements. The Rov-A-Scan is comprised of a laser scanner attached to a roving vehicle (Figure 2), with both the scanner and rover operated by wireless controllers. This allows

an operator to *remotely* drive the vehicle under the RVH in preparation for measurements.

The scanner is configured with a wireless machine vision system that provides forward, reverse, and upward views that support directional driving of the rover to specified measurement locations. Once in position the scanner collects and captures data that are analyzed to determine if geometries under the RVH have changed. If changes are observed, corrective actions such as thermal sleeve replacement or repair may be required.

## Benefits

The Rov-A-Scan provides several benefits over traditional manual laser scanner delivery methods including:

- Reduced need for technicians to perform manual wear inspection
- Reduced radiation exposure for technicians and reduced overall exposure dose
- Improved measurement efficiency (compared to manual delivery methods)

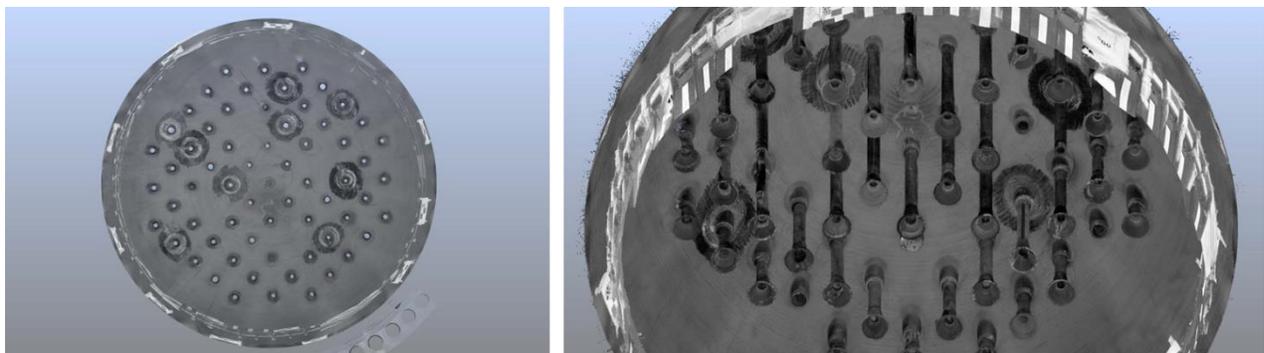
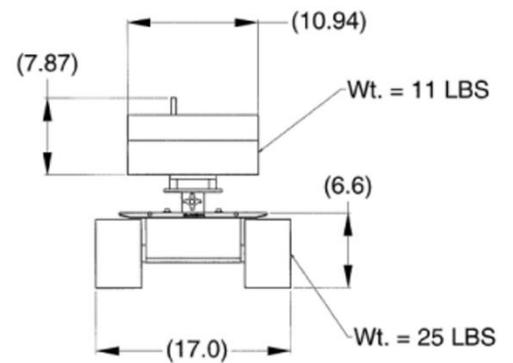
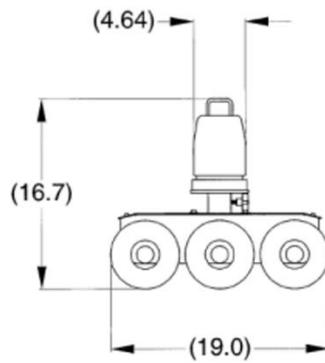


Figure 1 – Laser Scanning Point Cloud



**Figure 2** – The Westinghouse Rov-A-Scan Laser Scanner Delivery and Positioning System

## Experience

Westinghouse’s global RVH service team combines state-of-the-art equipment and technology with highly trained and qualified personnel. The Rov-A-Scan laser scanner delivery and positioning system is a testament to our commitment to deliver the most advanced solutions to our customers to increase the safety and quality of their plants.