**Dose Reduction Tool**

Laser scanning of selected nuclear plant areas can provide cost-effective and dose-sensitive support for the following activities:

- Scaffolding Reduction Programs
- Permanent Shielding Installations
- Plant Virtual Tours
- Real-Time Radiation Data Displays
- Plant Modifications
- In-Service Inspections
- Personnel Training
- Radiation Surveys
- Field Measurements/Surveying
- Outage Planning
- Accident Support Activities
- Configuration Management

**Plant Design Modifications**

Laser scan “Point Cloud” Data is automatically converted to CAD format, which provides an interface to AutoCAD, MicroStation, and other CAD systems.

Laser scanned data allows verification of new design and plant modifications. The CSA-designed program provides a process which automatically identifies interferences with the existing plant structures.

The figures on the following pages detail the integration of new design merged with scanned data of existing plant conditions.

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The user has a 360° view of the scanned area.

User can pan, zoom, and rotate within this space.

Laser scanning provides a very accurate representation of existing conditions of the plant.

The surveying accuracy is within 0.25 - 0.5” and also provides excellent visual representation of the plant.

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Scaffolding Reduction Program Support

CSA has built an extensive library of Excel Scaffolding components, which is being used to create 3D scaffolding configurations which can be merged with a Laser Scanning Database. This provides a very practical tool to:

- Review and verify the exact spatial scaffold configuration.
- Provide a tool for training, and instructions for installing the scaffolding.
- Eliminate rework and delays due to location problems.
- Minimize the need for costly contingency material to ensure approved and qualified field fit of scaffold design.
- Support engineering requirements for approval of scaffold design and installation in sensitive plant areas.

Permanent Shielding Design and Installation Support

Laser Scanning is a very effective tool to support planning and design of permanent shielding installation. This tool provides very accurate representation of existing space, as well as a means to verify any potential interferences in the proposed design area.

The review format provides a very user-friendly review tool for non-engineering or non-CAD personnel.

The major benefit of dose reduction includes the capturing of existing plant conditions, as well as support for installation planning. By using Laser Scanning the design process can be completed much quicker with a higher degree of accuracy and without expending any significant dose.

This application also provides major risk avoidance benefits.
Laser Scan Support for Outages

EXCEL Permanent Shielding Support Structure previously installed within the Scanned Area

New Design from 3D CAD Format merged within Scanned Area for Design Verification
Laser Scan Support for Outages

NEW DESIGN  merged with  SCAN MODEL

Proposed Permanent Shielding Design

Under Vessel Scanning for Placement of Additional Supports
**Plant Virtual Tours: Surrogate Travel Applications**

The Laser Scan Database provides support for a variety of applications where visual access to plant configuration is important. In addition to a very realistic visual representation, the Laser Scan Database provides a very accurate dimensional representation of the plant. This tool brings the plant configuration to every desktop computer on your plant server system.

CSA’s PanoMap Viewer provides user-friendly access to specific plant configuration and associated data. This tool is a considerable improvement over earlier photographic-based virtual tour/surrogate travel applications.

**RADCON Surveys: Real-Time Radiation Data Display**

Laser scan representation of a facility can be effectively used to visualize the facility as well as related radiation survey data. This provides an efficient tool to collect survey data, as well as to review the radiation survey data in selected plant areas. A Laser Scan Database interfaced with RADCON survey applications can provide support for accurate data collection, in addition to providing the radiation data display in a very realistic format without expending time and dose to collect the radiation data.

The Laser Scan Database can also be used to display radiation data from permanent, real-time monitors.
Access to Plant Drawings, Documents, Databases, Other Information

The user can place ‘labels’ (Tag Numbers) in the scan database. Using Tag Numbers (valve numbers, weld numbers, support numbers, etc.) the user can select and view related documents or database information from the facility document database, or from the Master Equipment List.

If intelligent P&IDs exist, they can be integrated with the scanned model.

Identification of components within scan space can provide access and interface to a number of applications besides documents/P&IDs. This includes:

♦ Photographs, Video Documentation
♦ Plant Component Databases
♦ ISI Database
♦ Maintenance Database
♦ And Others.
Gradual Implementation Approach

CSA’s technology can support a gradual approach to building the improved facility as-built configuration specifically oriented to critical plant activities.

High quality plant spatial documentation can provide major savings in radiation exposure during plant outages.

CSA provides field and data capture using high-resolution 360° laser scanners. After field data collection, CSA organizes the laser scanning data into a comprehensive database installed at the site.

CSA’s PanoMap software technology provides very effective, user-friendly access to scanned data for all project users.

CSA can also integrate laser scans provided by other suppliers into the integrated database.

The database can be gradually updated with new scans, as well as with new design modifications.
Laser Scan Support for Outages

The complete Scan Database is installed with CSA’s PanoMap Review System. PanoMap is provided as a “Lite” version for reviews, and as a “Full” version with a number of available applications.

For additional information, please contact:

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