SPECTRUM
DYNAMICS MEDICAL

Better Matters

D-SPECT®L

Cardiac Imaging System

Nuclear Cardiology in the 21st Century

The nuclear cardiology market has now recognized the remarkable benefits that solid state Cadmium Zinc Telluride (CZT) based systems offer. It is no big surprise that more than one third of all dedicated nuclear cardiology cameras purchased in the United States are now solid state systems.

In an effort to make this technology available to a larger segment of the marketplace, Spectrum Dynamics Medical introduced the D-SPECT®L. Based on the same CZT technology as the D-SPECT,® the D-SPECT-L incorporates six columns of CZT detectors versus the nine in the D-SPECT allowing it to be a more cost effective solution.

The D-SPECT-L incorporates many of the same advanced features as the D-SPECT:

- New patient handling system offering unparalleled flexibility for technically challenging patients
- Modern gantry designed from the ground up for simplicity and reliability
- Innovative proprietary reconstruction algorithm that dramatically improves image quality
- Six columns of CZT detectors with Tungsten collimators

This unique hardware and reconstruction software enables what many industry experts said was not possible in SPECT…

- Gated SPECT acquisitions with no gantry motions completed in as little as six minutes* with standard doses
- Dose reductions to a fraction of where they are today
- Exceptional image resolution and quality
- Dramatic improvement in detector sensitivity when compared to conventional cameras

*Actual scan times can vary based on Injected Dose, BMI and acquisition parameters.

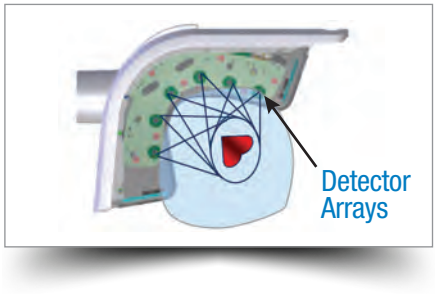
Where It All Starts...

Six Digital CZT-Based Detectors

The CZT modules, which consist of CZT plus the electronics, are populated on a column with Tungsten collimators in front which channel the photons to the detector array. Using Tungsten collimators rather than lead eliminates potential lead X-ray which can degrade image quality.

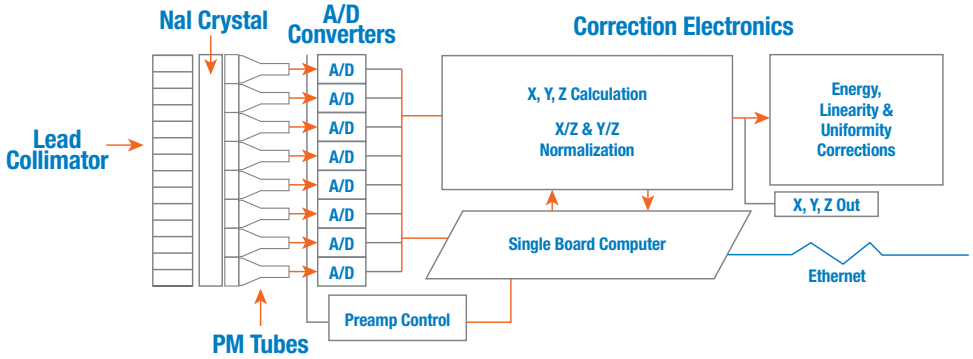
The semiconductor, CZT, combined with our unique implementation of hardware and software, offers superior performance advantages over Sodium Iodide. The most important is the dramatic improvements in sensitivity and energy resolution.

Detector Configuration and ROI-Centric Scanning

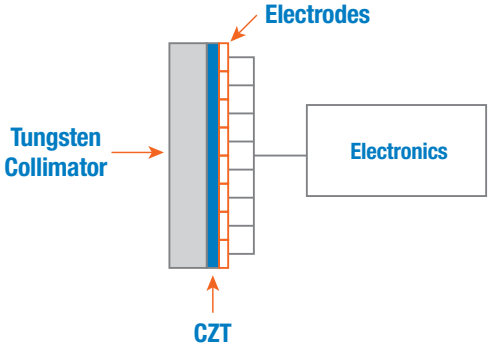


Comparison of Anger Scintillation and D-SPECT-L Solid State Technology

Anger Scintillator Technology



D-SPECT-L Solid State Technology



Gantry and Chair Design

The D-SPECT-L gantry design is simple, yet elegant. The system is counter-balanced for easy and smooth motions. Gantry positions are locked in placed with electromagnetic brakes.

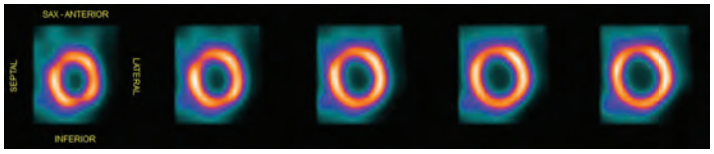
This unique design provides several advantages including:

1. Very small footprint: 9'5" x 11', ideal for small rooms.
2. Open gantry design eliminates claustrophobia.
3. Flexible imaging chair can be fully-upright, supine or anything in between to fit any clinical requirement.
4. Unique gantry/detector design eliminates the need for the patient to place their left arm "behind the head", improving patient comfort and reducing the chance of motion.
5. Chair weight supports patients up to 542 lbs./246 kg. for morbidly obese patients.

Total Flexibility

For Patient Fit and Comfort

The patient handling system's chair back and foot rest are fully adjustable, allowing the patient to be seated fully upright, supine or anything in between. The detector can be rotated for cephalic and caudal tilt as well as in and out for optimal positioning.



Patient is 490 lbs., 74.5 BMI and standard Tc dose.

Acquisition and Advanced Reconstruction Algorithms

List Mode Acquisition

All acquisitions are acquired in list mode. This provides the capability to reframe the data, allowing the operator to change a number of different parameters.

- Adjust the R-Wave windows
- Apply scatter correction and process the multiple isotope acquisitions within seven different energy windows
- Adjust energy window or compare different energy windows for the same acquisition

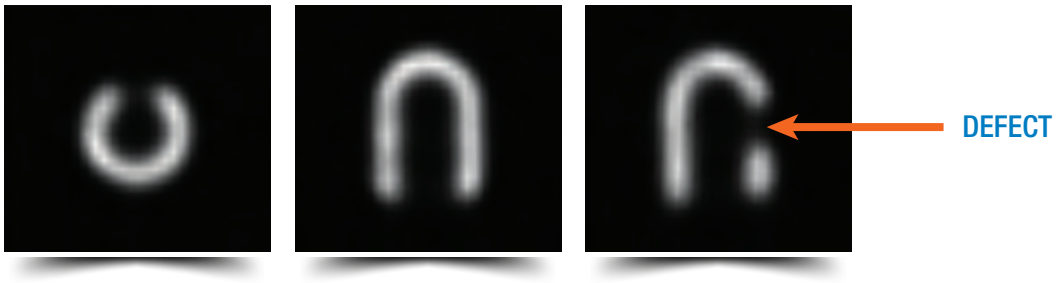
Reconstruction

Our advanced reconstruction algorithm is based on an OSEM iterative algorithm with resolution recovery. Multiple reconstruction options are included within the reconstruction software.

The Model based reconstruction is a proprietary Spectrum Dynamics Medical algorithm and starts iterations from a Model of the LV instead of a uniform image.

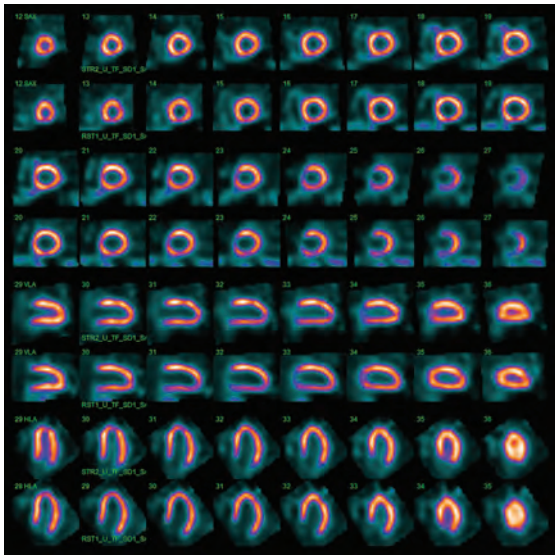
This Model is calculated on initial OSEM iterations using identified myocardium contours to create a Model that will be used as “Initial Guess.” This method helps the reconstruction algorithm converge more quickly on an optimal solution and demonstrates a significant improvement of image properties and quality.

Reconstructed Cardiac Phantom



Clinical and Workflow Benefits

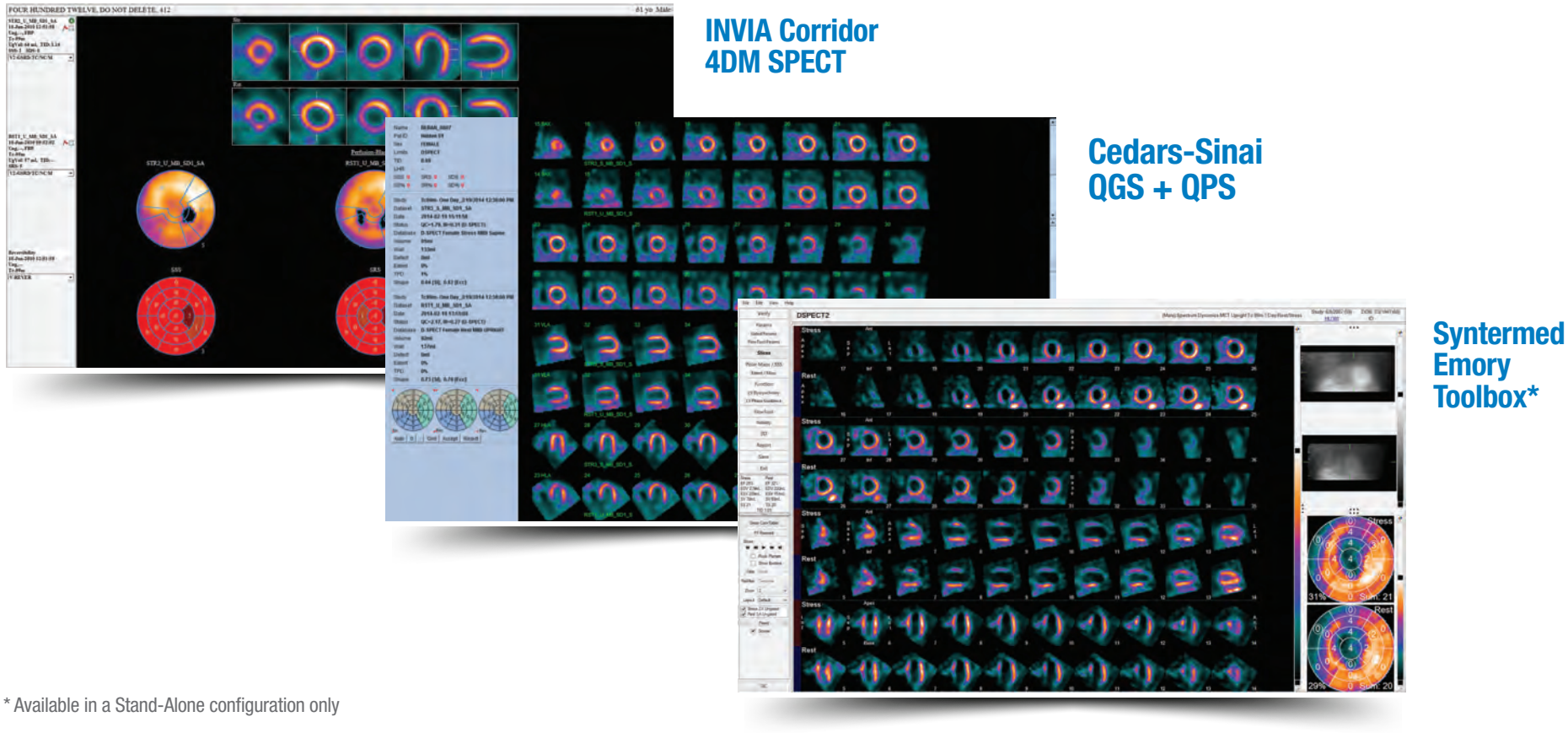
- **Fast results:** The D-SPECT-L can acquire a complete gated SPECT study in as little as six minutes,improving department workflow, enhancing patient compliance and reducing the chance of patient motion.
- **Image quality:** D-SPECT-L's count rich data sets combined with a proprietary reconstruction algorithm to ensure optimal spatial resolution and exceptional image quality.
- **Dose reduction:** The extremely high sensitivity of the D-SPECT-L detectors allows for "reduced patient injected doses. Patients and staff benefit from the lower radiation dose.
- **Patient compliance:** The open gantry design and the ability of the CZT columns to "swivel" back and forth allows the six detectors, in an L shaped array, to acquire data from the patients Left Posterior Oblique (LPO) to Right Anterior Oblique (RAO) without the need to rotate the detectors around the patient. This eliminates the chance of an acquisition collision, pinch points or claustrophobia that moving detectors can cause.



Six minute gated SPECT study with standard doses

Quantitative Software Packages

We offer the following quantitative software SPECT packages from:



INVIA Corridor
4DM SPECT

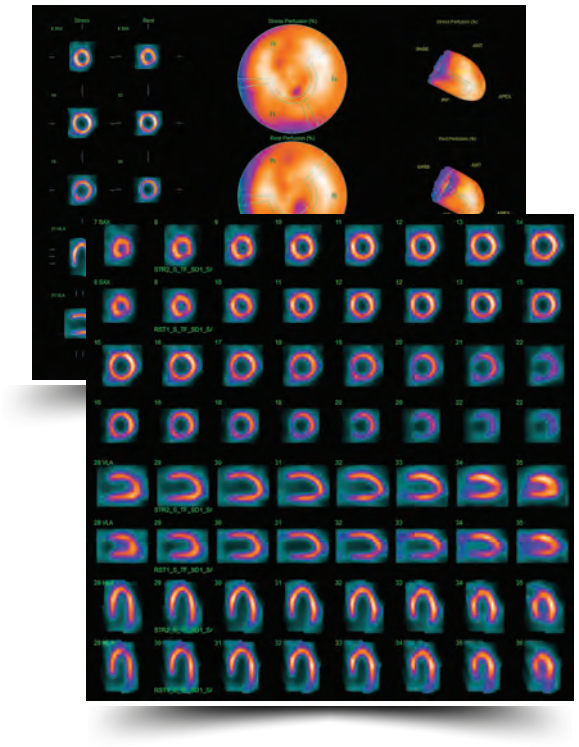
Cedars-Sinai
QGS + QPS

Syntermed
Emory
Toolbox*

* Available in a Stand-Alone configuration only

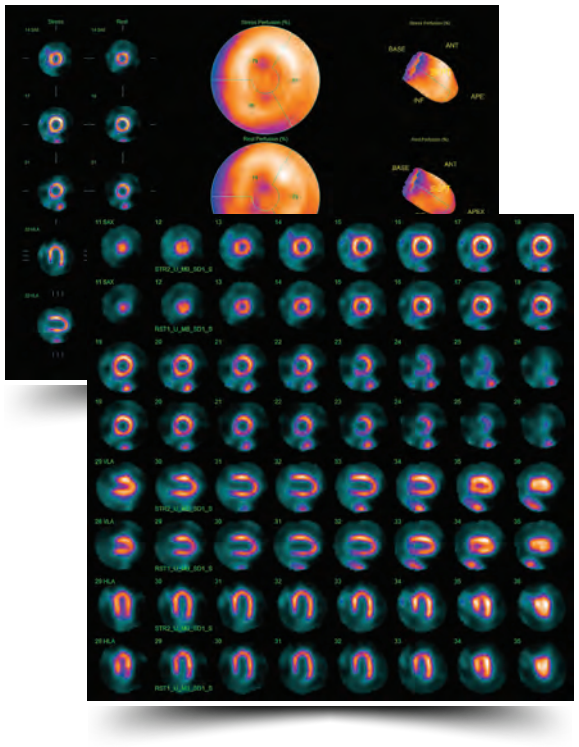
Image Gallery

Obese



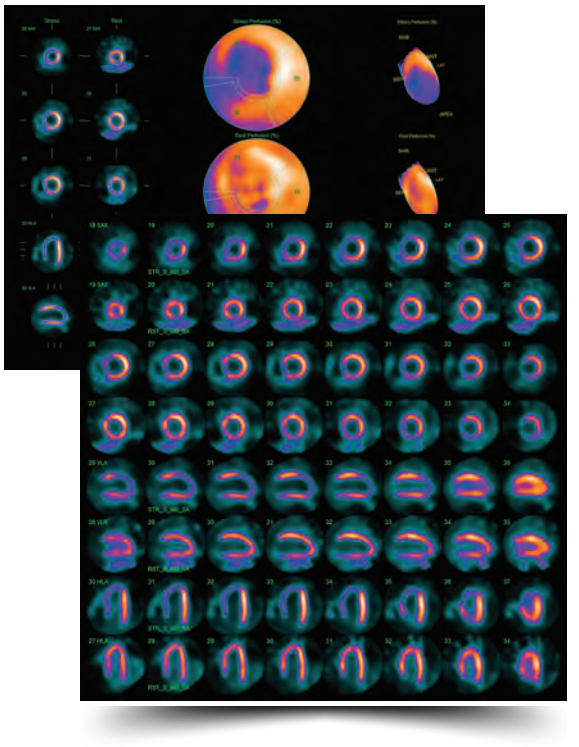
490 lbs., 74.5 BMI

Low Dose



5 mCi ^{99m}Tc-Sestamibi

Ischemia

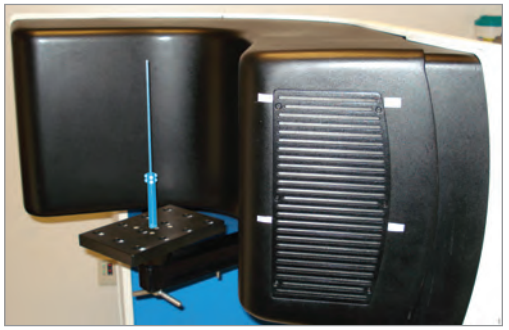


Large abnormality indicative of proximal LAD stenosis

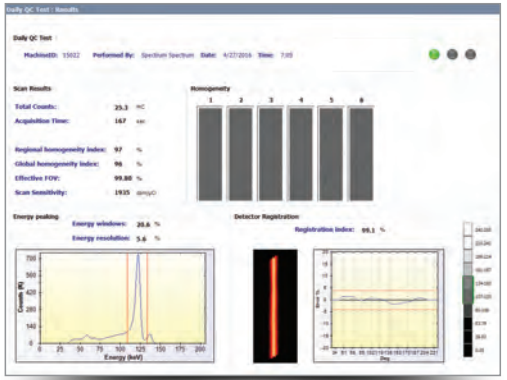
Quality Control

The D-SPECT-L acquisition software incorporates a very simple to perform ^{57}Co based quality control acquisition that is executed daily and checks all key imaging parameters prior to clinical imaging. The procedure only takes a couple of minutes (varies with source strength) to accomplish.

Daily QC Set-Up



Daily QC Results



Connectivity

The D-SPECT-L can connect and transfer data back and forth to a wide variety of HIS/RIS systems, PACS servers and other imaging devices using the DICOM standard. If you have questions regarding specific devices, Spectrum Dynamics Medical personnel can work on-site with your IT department to demonstrate connectivity and data transfer procedures.

Serviceability and Remote Diagnostics

The D-SPECT-L system was designed from the ground up with remote connectivity in mind. With the site's permission, regional specialists and/or factory trained engineers can log into your D-SPECT-L and perform almost any of the diagnostic technical functions a Field Service Engineer can complete on-site. With the exception of a part's replacement, it is often possible to correct or implement a workaround solution remotely, allowing imaging to continue while waiting for a technician to arrive on-site.

We have some of the most experienced service engineers throughout the world, but the best solution to a problem is to correct it before anyone even knows it exists. D-SPECT-L's built in remote connectivity makes this a reality.

Remote Service Diagnostics

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Exceptional image quality, dramatic dose reductions and a clear upgrade path, D-SPECT®L is the future.

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