Canon
CANON MEDICAL SYSTEMS EUROPE B.V.

Made For life

CT Lung Imaging

Computed Tomography and advanced Lung Analysis solutions

Canon Medical has been innovating and developing cutting edge products in Computed Tomography (CT) for over 40 years, and have more than 40,000 CT scanners installed globally. Specialists from around the globe appreciate the outstanding image quality, usability and reliability of Canon CT scanners.

The spread of the COVID-19 virus continues to present unprecedented difficulties in providing health care. Canon Medical is are aware that medical imaging is not the primary tool in the diagnosis and treatment of the virus, recent research suggests that medical imaging is crucial in the diagnosis and treatment of underlying health conditions which could cause significant complications in high risks patients if left untreated/undiagnosed.

All systems in our CT portfolio are standard equipped the latest workflow and dose reduction technologies, quickly delivering the best possible images to the reader for further analysis.

Innovative solutions solving your clinical challenges - Scanning

Usability, reliability and reproducibility are essential in busy radiology departments. Together with consistent high image quality and ease of use, the are key factors for CT scanners designed by Canon Medical Systems. The short and wide bore of Canon CT scanners provides easy access to the patient during all phases of scanning.

Pre-defined scan protocols guarantee best image quality throughout a large variety of patients. Artificial Intelligence is used to define a patient specific selection of the best possible kV and mA settings to generate low dose, high quality images using SUREkV and SUREExposure technologies (*image 1*). This automatic parameter selection allows clinical staff to focus on the patient.

Image 1. The automatic selection of parameters prior to scanning.

Upon positioning the patient on the CT table, the operator can manipulate the table height as well as the left-right movement from outside of the scan room by the click of a mouse. Providing optimal image quality and lowest possible dose while at the same time avoiding unnecessary contact with the patient. At the same time it also prevents the physical stress of manually re-positioning the patient by radiology staff. Standard available iterative reconstruction technology, AIDR3D, is fully integrated in the image chain and requires no manual parameter selection or other additional manual interference prior, during or after scanning.

The pre-defined protocols can be adjusted upon the demands of the user; a standard set of protocols is delivered with each individual scanner. These standard protocols include pre-defined reconstruction parameters based upon the clinical task (*image 2*), varying from complex contrast-enhanced scans to quick scans of the lungs.

Image 2. Pre-defined multiplanar (MPR) reconstructions with a slice thickness of 5 mm in Axial, Coronal, Sagittal plane. Adjustments of the slice thickness and activated reconstruction plane can be performed.

These pre-defined and user dependent reconstructions can be set up to include Maximum Intensity Projections (MIP) and Minimum Intensity Projection (MinIP) (*image 3*). The images are reconstructed immediately after scanning without any manual interference. The InstaView algorithm provides the possibility for real-time checking by the radiology staff of the scanned region, confirming a correct start and end position for the diagnostic CT scan.

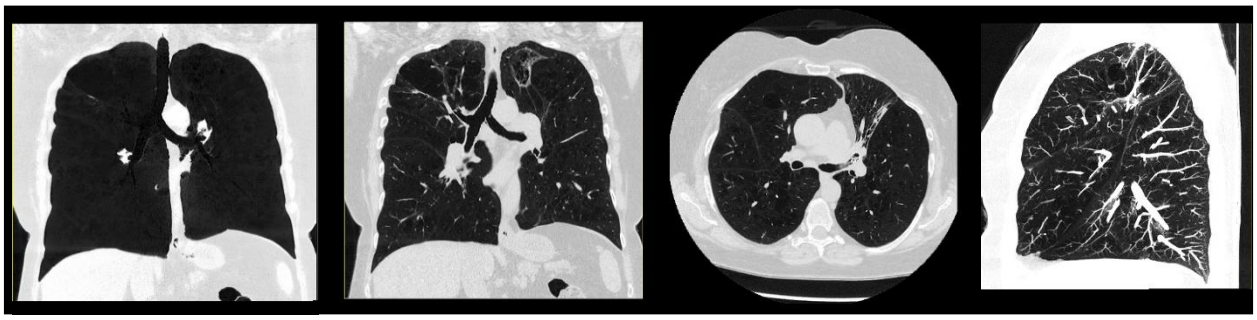

Image 3. Left to right: Coronal MinIP, Coronal, Axial, Sigittal MPR reconstruction.

Innovative solutions solving your clinical challenges – Transfer and Post-Processing

The pre-defined protocols can be setup including automatic transfers to DICOM destinations in the hospital or critical care units. The MPR reconstructions and other DICOM images can be stored in the PACS or locally on the CT scanner. The available memory for storing of DICOM images depends upon the scanner model.

Access to the raw-data of each individual patient provides the possibility to reconstruct additional series after scanning has finished and after the patient has left the scan room or even when the next patient is already in the scan room in case of busy radiology departments. Canon Medical's Hybrid reconstruction filters provide both a soft tissue as well as a lung kernel within the same dataset, limiting the reconstructions needed and speeding up the process.

Innovative solutions solving your clinical challenges – Post-processing

To aid in your pressing lung imaging needs, Vital Images, a Canon Medical company, has developed the comprehensive Lung Analysis, CT Lung Density Analysis and Vitrea Image Denoising applications (*image 4*) for Vitrea Advanced Visualization;

- Vitrea Image Denoising offers the following key benefits;
    - Structure Preserving Diffusion denoising algorithm (SPD) improves signal to noise ratio

  - Predefined image filter presets may be modified and saved for future use
  - Interactive denoising preview capability
  - Real time toggle between original and denoised volumes

- CT Lung Analysis offer the following key benefits
  - Automated segmentation of lung and airways with expert presets for visualization
  - Single-click lung nodule segmentation tools to include solid nodules and ground glass opacity (GGO) nodules
  - Automatic nodule tracking of all measurements, including: maximum and perpendicular short axis diameter, effective diameter, volume, and average/minimum/maximum Hounsfield Units
  - Dictation table with Lung-RADS®, Fleischner Criteria

- CT Lung Density Analysis offers the following key benefits
  - Aids in characterization of areas of low attenuation within the lungs and provides quantifiable controls and renderings for communication with referring clinicians
  - Lung density result quantification with HU density range, volume measurements, lung density index and the PD15% measurement
  - Density graph/histogram of the classified lung voxels' relative frequencies
  - Adjustable density thresholds for refining and optimizing HU ranges