Siemens Definition CT Family: Definition AS, DS, Edge, Flash

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Introduction

The Siemens Definition CT Family course is a skills development course designed as a continuation of the Principles of Servicing CT Systems course. Through attending this course, the service professional will become self-confident in working on the gantries, patient handling system, detector assemblies, DAS systems, image processing systems, X-ray control systems, rotor controls, and operator control systems of the Siemens Definition Family, which includes the Definition AS, DS, Edge, and Flash systems. Hands-on lab time is emphasized and makes up approximately 80%-90% of the overall course content.

Prerequisites

To attend this course, the service professional must have an extensive knowledge of CT physics, physical principles and service procedures gained through attendance at the RSTI Principles of Servicing CT Systems course or equivalent training and experience.

Objectives

Following attendance of this course, participants will be able to:

- Perform scheduled maintenance on Siemens Definition Family CT systems
- Change the X-ray tube, realign and recalibrate the X-ray generator
- Calibrate, replace and align the collimator
- Calibrate, service, align, and use diagnostic tools to evaluate performance of the DAS and detector assembly
- Calibrate, replace and align the hardware associated with the gantry and patient handling system
- Diagnose and correct problems in the scanning sequence
- Troubleshoot gantry, patient transport and X-ray system problems
- Diagnose and correct problems in the digital acquisition system and detector array
- Diagnose and correct problems in the image generation system
- Troubleshoot the operator workstation problems

Course Outline

Day 1

- System introduction and overview
  - Siemens CT models, history, and evolution
  - Definition major components
    - Control Room
      - ☐ ICS
      - ☐ IRS
      - ☐ IES
    - Exam Room
      - ☐ Gantry
      - ☐ PHS
    - Equipment Room
      - ☐ PDC
      - ☐ Water Cabinet (option)
- Operation and power distribution
  - Systems operational parameters
  - Major system component identification
  - System controls
    - Safety
    - Interlocks
  - Patient registration/scheduling
  - Exam/technique settings
- System architectures
  - System block diagrams
- Power distribution
  - Power distribution diagrams
    - Main AC power
    - Sub-system AC power
    - DC power supplies
- Service Access
- System Documentation
- Terms & Acronyms

Day 2

Lab Activities

- Basic operation
- Username & Passwords
- Scheduling an exam
  - Patient registration
  - Selecting technique parameters
    - Scout view
    - Axial views
    - Helical views
- QA Checks
- Component Identification
  - Control Room
    - ICS
    - IRS
    - IES
  - Exam Room
    - Stationary Gantry

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Hands-On Training Course
Course Length: 2 Weeks
CEU's Awarded: 8 CEU's
State of Ohio Registration No. 93-09-1377T

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- ☐ UMAS
- ☐ PDS

Day 3

- Component Identification (continued)
  - Rotating Gantry
    - UMAR
    - DMS
    - UHR
    - XGR
    - XDC
    - XTA
    - TCO
    - COC
    - PDR
  - PHS
    - LMAS
    - PMM
- Equipment Room
  - PDC
  - Water Cabinet (option)
- Local Service (service software) Access
  - TuneUp

Lab Activities

- Gantry rotation
  - Axial driver verification
    - Rotational balance tests
- Patient Handling System (PHS)
  - Vertical movement
  - Horizonal movement (Tabletop)
  - Horizonal movement (Table Support

Day 4

- Power Distribution
- System Communication Busses
  - FL (FastLink)
  - TCP/IP
  - CAN
  - CANOpen
- Geometry & Movements

Lab Activities

- Test communication busses
- Geometry calibrations

Day 5

- X-Ray generation
  - High voltage control
  - Filament controls
    - Filament drive
  - Rotor controller
  - Collimator controls
  - Filter control
- Straton XTA tube change
  - Tube selection
  - De-install/install issues
  - Required calibrations and alignment

Lab Activities

- Straton XTA tube change
  - De-install procedures
  - Installation procedures
- Calibration types:
  - FRU Replace
  - Auto-Complete
  - Adjustments
  - Table Generation
  - Expert Mode
- Calibrations:
  - Firmware
  - Gantry Tilt
  - Balance Gantry
  - AnodeRotFreq
  - GenOSC
  - FocusSpot
  - Filament Adapt
  - Z Adjust
  - Defective Channels
  - DMS Signal Value

Day 6

Lab Activities

- Calibrations:
  - Module Z-Align
  - Focus Alignment
  - GenAdapt
  - Air Calibration
  - Channel Correction
  - Spacing
  - Beam Hardening
  - Water Scaling
  - Quality Constancy Ref

Day 7

- Collimation
- Detector and DAS
  - Detector architectures
    - Maintenance issues
    - Detector replacement
  - DAS architectures
  - Data transmission
    - Fiber optics
  - Slip ring data transfers
    - Brushes
    - RF transmitters
- Network & DICOM configuration

Lab Activities

- Calibration & Replacement Procedures (continued)
- Network & DICOM configuration

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Day 8

- Software & Computer Maintenance
  - Backup
  - Restore
  - Software Reload
    - ICS
    - IRS

Lab Activities

- Backup
- Software Reload
  - ICS
  - IRS
- Restore

Day 9

- PM
- Troubleshooting

Lab Activities

- System PM
- System Troubleshooting
  - Error log analysis
  - Common Failures

Day 10

- First Visit Checklist
- Course review
- Final exam
- Course evaluation