OEC 9000 Series (9000, 9400 & 9600) C-arm Imaging System Maintenance Course

Course length: 1 Week
CEU's Awarded: 4

COURSE INTRODUCTION

The OEC 9000 Series Imaging System course is designed to teach the service professional those skills necessary to service the x-ray system and imaging chain. This includes the available calibration procedures, functional checks, and troubleshooting techniques. The course includes integrated lectures, labs, and documentation which complement each other ensuring the maximum learning environment.

COURSE OBJECTIVES

At the conclusion of this course, attendees will be able to:

- Troubleshoot to the component or board level.
- Perform all available calibration procedures to the manufacturer's specification.
- Perform all related CDRH compliance testing.
- Perform image evaluation.
- Verify the system performance.

PREREQUISITES FOR ADMISSION

Attendees must possess the knowledge acquired through attendance at our Advanced Concepts of Digital Imaging Maintenance-Level IV course or the equivalent electronics and service experience. A strong microprocessor background is recommended.

DAY 1

I. Introduction
II. System basic operation
  A. Front panel controls
  B. System specifications
III. System overall block diagram
IV. C-arm mainframe
  A. Power supplies
    1. Inverter supply
    2. Battery charger
  B. KV inverter
    1. Full wave bridge
    2. PWM control
    3. KV sense

LAB ACTIVITIES

I. System operation
II. Physical layout and component location
III. KV control waveforms
IV. KV calibration

DAY 2

I. mA control
  A. Filament drive / mid-frequency voltage control
  B. Filament selection
  C. mA sense
II. Rotor controller
III. Collimator
  A. Lateral leaf
  B. Longitudinal leaf
  C. Fluoro flippers
  D. Rotation

LAB ACTIVITIES

I. mA control waveforms
II. mA calibration
III. Rotor controller waveforms
IV. Collimator alignment

DAY 3

I. Image Intensifier
  A. High voltage supplies
  B. Mode selection
II. TV camera (Conventional)
  A. Overall block diagram
  B. Timing generator
  C. Horizontal and vertical deflection
  D. Camera tube supplies
  E. Video processing
  G. Shading correction
  H. Motorized iris
III. Automatic brightness control
  A. Video sample
  B. Sample window
IV. C-arm control panel

LAB ACTIVITIES

I. II sizing and focus
II. Sweep size and centering
III. Video level adjustment
IV. ABC setup

DAY 4

I. Monitor cart (3rd & 4th Generation)
  A. Overall block diagram
  B. Image acquisition
    1. A/D
    2. Preprocessing
    3. RAM memory
    4. Hard drive
  C. Display
    1. Postprocessing
      a. Window & leveling
      b. Road mapping
      c. Subtraction
      d. Averaging
      e. Zoom
    2. D/A
    3. Video switching

LAB ACTIVITIES

I. Operation
II. Physical layout
III. Power supplies
IV. Waveforms

DAY 5

I. Monitor cart (continued)
II. System review
III. Final exam
IV. Course critique