

ATSM-2550: FIRE LIFE SAFETY TECH I SUPERVISOR

Cuyahoga Community College

Viewing: ATSM-2550 : Fire Life Safety Tech I Supervisor

Board of Trustees:

January 2021

Academic Term:

Fall 2021

Subject Code

ATSM - Applied Ind Tech- Sheetmetal

Course Number:

2550

Title:

Fire Life Safety Tech I Supervisor

Catalog Description:

Certification course covering the management systems of Fire Life Safety (FLS) including the principles of fire and smoke resistance and fire stages. Included is a comprehensive study of the features and components of FLS dampers and testing requirements.

Credit Hour(s):

1

Lecture Hour(s):

1

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Sheet Metal Worker's apprenticeship program and/or a member in good standing with the sheet metal worker's union.

Outcomes

Course Outcome(s):

I. Discuss and explain management systems of Fire Life Safety testing procedures with respect to different building construction and occupancy classifications, and interpretations of codes and standards.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. List and define the terms related to Fire Life Safety.
2. Differentiate between smoke control and smoke management.
3. Explain the importance of effective communication between the parties involved in the functional testing of Fire Life Safety components.
4. Identify the test procedures for Fire Life Safety including the master list, system coordination, and record keeping.
5. Discuss the principles of fire and smoke resistance including stages of a fire, fire and smoke barriers, and penetrations.
6. Identify the applicable codes and standards with respect to Fire Life Safety and describe methods used to maintain or upgrade management systems.

Course Outcome(s):

II. Discuss the features and components of various Fire Life Safety (FLS) dampers and describe the procedures and frequency of cycle and certification testing.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. List and describe the different types of FLS dampers.
 2. List and explain the FLS standards required for all damper installations.
 3. Describe the importance of maintaining the clear space envelope for FLS dampers equipped with actuators.
 4. Explain how the orientation of the FLS damper affects the operation of the entire FLS system.
 5. Differentiate between cycle and certification testing.
 6. Apply technical writing procedures in reports of test data to respective test sponsors.
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Methods of Evaluation:

1. Quizzes
2. Tests
3. Class participation
4. Apply the industrial codes in practical applications.

Course Content Outline:

1. Fire Life Safety Testing
 - a. Terms
 - i. Smoke control systems
 - ii. Smoke management
 - iii. ATRIA
 - iv. Dedicated
 - v. Non-dedicated
 - vi. Fire alarm systems
 - vii. Building management systems
 - viii. Compartmentation
 - ix. Compensated systems
 - x. Pressurization
 - xi. Smoke compartment
 - xii. Penetrations
 - xiii. Plug holing
 - xiv. Smoke layers
 - b. Smoke control vs. smoke management
 - i. Smoke control
 1. Compartmented smoke
 2. Pressurization
 - a. Stairway
 - b. Shaft
 - c. Smoke zones
 - d. Floor
 - e. Barrier
 - f. Non dedicated system
 - ii. Smoke management
 1. Exhaust systems
 2. Fan testing
 3. Plug holing
 4. Dedicated systems
 - c. Communication
 - i. Concise
 - ii. Technical content
 - iii. Verbal
 - iv. Written report
 - v. Documentation
 - vi. Parties

1. Test sponsors
 2. Authority Having Jurisdiction (AHJ)
 3. Owners
 4. Engineers
 5. Manufacturer
 - d. Test procedures
 - i. Master list
 1. Damper location
 2. Ratings
 3. Hourly classifications
 4. Identification numbers
 - ii. Written
 1. Systems
 2. Sub system
 3. Functionality
 - iii. Approval
 1. AHJ
 2. Established
 3. Written procedure
 - e. Fire and smoke resistance
 - i. Fire stage
 1. Growth
 2. Fully developed
 3. Decay
 4. Flash over
 - ii. Barriers
 1. Fire
 2. Partition
 3. Wall
 4. Smoke
 5. Smoke partitions
 - f. Codes and standards
 - i. Codes
 1. Legacy
 - a. Building official code
 - b. International code of building officials
 - c. Southern Building Code Congress
 - d. International building codes
 2. Mechanical
 3. Fire Life Safety Code
 - ii. Standards
 1. Underwriter Laboratories (UL)
 2. Air Movement and Control Association
 3. American Standard of Testing Materials
 4. American Society of Heating and Air Conditioning Engineers
 5. International Code Council
 6. American National Standards Institute
 7. Sheet Metal Air Conditioning National Association
2. FLS: Features and Testing
- a. Damper types
 - i. Fire
 1. Fusible link
 2. Spring
 3. Locking quadrants
 4. Curtains
 5. Rigid connections
 6. Break away connections
 - ii. Smoke

1. Actuators
2. Multiple blade
3. Smoke detectors
4. Locking quadrants
5. Duct connections
- iii. Ceiling radiation
 1. Types
 - a. Butterfly
 - b. Rectangular
 - c. Fabric curtain
 - d. Rigid/breakaway
 2. Thermal blanket
 3. Duct connection
 - a. Rigid
 - b. Break away
- iv. Combination
 1. Wall rating
 2. Versatile
- b. Manufacturer standards
 - i. Orientation
 1. Vertical
 2. Horizontal
 3. Combination
 4. Out of wall
 - ii. Dynamic closure
 1. Actuator
 2. Locking quadrant
 3. Fusible link
 - iii. Hourly fire resistance rating
 1. One and one half
 2. Three hour
 - iv. Operability
 1. Actuator
 2. Pneumatic
 3. Electric
 4. Electro-pneumatic
- c. Space envelope
 - i. Maintenance
 - ii. Accessibility
 - iii. Clear space
- d. Orientation
 - i. Labelling
 - ii. Operational failure
- e. Cycle versus certification testing
 - i. Cycle
 1. Visual
 2. Component
 3. Frequency
 - ii. Certification
 1. Hospitals: six year
 2. Business/commercial establishments: four years
 3. Code required
- f. Recordkeeping
 - i. Technical language
 - ii. Short report writing
 - iii. Supervisor generated
 - iv. Test sponsor

Resources

National Energy Management Institute,. *HVAC Fire Life Safety Level One, Supervisor*. current edition. National Energy Management Institute: Fairfax, VA, 2005.

National Fire Protection Association. *NFPA 101 Life Safety Code* . 2018 edition. National Fire Protection Association: Quincy, MA. , 2018.

Sheet Metal and Air Conditioning Contractor's National Association Inc. *Sheet Metal and Air Conditioning Contractor's National Association Inc. Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems*, . 2002 edition. Sheet Metal and Air Conditioning Contractor's National Association Inc: Chantilly, VA , 2002.

Resources Other

Additional Resource

www.ruskin.com (<http://www.ruskin.com>)

www.greenheck.com (<http://www.greenheck.com>)

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