Fire Pumps and NFPA 25

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Russ is the Executive Chairman of Telgian Holdings Inc., an international fire protection and life safety services company. He is a graduate of the University of Nevada, Las Vegas with 45 years of experience in the fire and life safety profession. Russ is a former chair of the board NFPA, is a board member for NFPA Global Solutions, and is on the NICET Board of Governors. He serves on NFPA Technical Committees including NFPA 13 Installation and Sprinkler Discharge Criteria, NFPA 3 System Commissioning, NFPA 4 Testing of Integrated Systems, among others. He has provided training and presentations in over 40 countries around the world. He has authored numerous articles and training materials used throughout the industry.

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Fire Pumps and Sprinkler Systems

- There are three essential for a working fire sprinkler system.
  - A fire sprinkler
  - A water supply
  - A pipe or tube connecting the two

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Fire Pumps as a Water Supply

NFPA 13

- A single automatically controlled fire pump installed in accordance with NFPA 20 is an acceptable water supply source.

NFPA 14

- An automatic fire pump installed in accordance with NFPA 20 and connected to an approved water source

NFPA 15

- Fire Pumps with adequate water supply, in accordance with NFPA 20

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Why a Single Fire Pump?

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When is more than one fire pump required?

- NFPA 20—Very tall buildings
- Insurance—Highly protected risks
- High pressure required—pumps in series
- High capacity required—pumps in parallel

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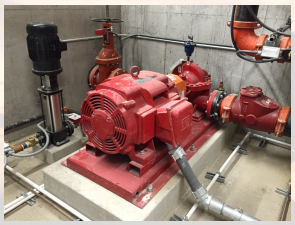
NFPA 20 Installation of Stationary Fire Pumps



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Diesel Engine versus Electric Motor

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Diesel Engine versus Electric Motor

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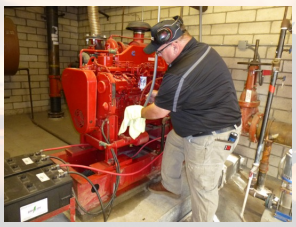
Inspection, Testing, and Maintenance



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NFPA 25 Early Editions

1992

- Four pages of text [Eleven pages in 2026]
- 10-minute weekly no-flow test for motor driven fire pumps
- 30-minute weekly no-flow test for engine driven fire pumps
- Annual performance tests
- Annual transfer switch test

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NFPA 25 Early Editions

1995

- Added exception for not meeting 150% of rated flow
- Added "Extra care must be taken where testing or maintaining electric motors"

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NFPA 25 Early Editions

2002

- Added parallel and angular alignment test
- Added "Legally required precautions to be taken when testing or maintaining electric controllers
- Added material regarding test results and evaluation

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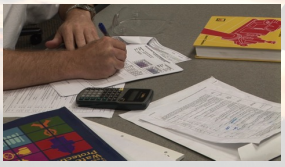
NFPA 25 Early Editions

2008

- Added test for electronic fuel management control systems
- Added additional material regarding test results and evaluation



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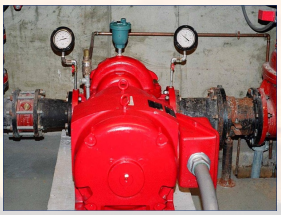
NFPA 25 2011 Edition

- Added allowance for negative suction pressure
- **No-Flow test for motor driven fire pumps changed from weekly to monthly**
- Any abnormal conditions must be reported to owner promptly



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NFPA 25 2014 Edition

- Added 70° F minimum temp for pump rooms having engines with no block heater
- **No-Flow test for motor driven fire pumps changed back to weekly for very tall buildings, limited-service controllers, vertical turbines, and ground level suction tanks that do not provide pressure of material value without pump.**
- **Test frequencies for both motor and engine driven pumps may be established by an approved risk analysis**
- Use of an automatic timer does not eliminate the requirement to have qualified personnel present during test

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NFPA 25 2014 Edition

- Added requirement for transfer switch test to be 10 minutes for utility supplied alternate power and 30 minutes for generator.
- Added requirement to test for diesel fuel degradation

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NFPA 25 2017 Edition

- Added extensive requirements for testing amps and voltage at electric motor controller
- Added requirement for wearing appropriate PPE when opening electric motor controller to verify alarm conditions
- Added specific reporting requirements (7 items)

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Reporting Requirements

- All raw data needed for a complete evaluation
- System demand as furnished by the owner
- Satisfactory or unsatisfactory pump performance
- Deficiencies along with recommendations for addressing
- Manufacturer performance data, actual performance, and the available pump discharge curves
- Time delays for starting, stopping, and power source transfer
- Comparison with previous results

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NFPA 25 2020 Edition

- **Removed all requirements for opening electric motor controller for inspections or testing**
- Added requirement to change fuel filters after no more than 50 hours of run time

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NFPA 25 2020 Edition

- Added requirements for remotely monitored automated testing
- Added flow testing requirements for variable speed controllers
- **Duration of test for alternate power supply (transfer switch) shortened to 2 minutes**
- Requirement to follow NFPA 70E or equivalent added

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Pump Performance and Evaluation

- Pump performance cannot be met by increasing the pump speed beyond the rated speed
- All of the following must be met for acceptable test results'
  - Meets the flow and pressure of the most demanding system
  - Supplies 100 percent of rated flow
  - Net pressure is a least 95 percent of **one** of the following:
    - Original certified curve
    - Original unadjusted field test curve
    - Curve from pump nameplate
  - Required flow is met at no less than the lowest permissible suction pressure

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Pump Performance and Evaluation

- If all of the previous requirements are met, the pump is not required to tested beyond rated capacity if suction pressure does not permit to do so
- Motor voltage readings between 5 percent below and 10 percent above at acceptable

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Pump Performance and Evaluation

- The following actions are required
  - Owner must be notified in writing of all unacceptable test results
  - An investigation must be made into the cause of unacceptable results
  - Failure to meet the maximum system demand is an **impairment**
  - Excessive vibration, excessively worn, or loose components are **deficiencies**
  - Degraded performance that delivers system demand is a **non-critical deficiency**
  - Owner must be notified in writing upon completion of corrective actions

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Summary

- Fire Pumps are considered an acceptable water supply
- Reliability of engine vs motor drivers
- ITM requirements have expanded significantly since the first edition of NFPA 25 in 1992
- Compliance challenges with weekly/monthly no-flow testing
- Annual performance test evaluation and reporting

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Questions or Thoughts

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FOR CEU CREDIT:

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  - ✓ Survey link is emailed to attendees with scanned badges
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Thank you!

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2027 Training Schedule

WEBINARS

1/6	Updates to NFPA 20
1/20	Calculating Pressure Reducing Hose Valves
2/3	Consumer Alert: Nitrogen in Sprinkler Systems
2/17	Reviewing Hydraulic Calculations
3/3	Updates to NFPA 13, 2028 Ed.
3/17	Updates to NFPA 13R & 13D, 2028 Eds.
4/7	Topic Coming Soon
4/21	NFPA 25: Roles & Responsibilities
5/5	Standpipe Flow Test Procedures
5/19	Storage 101
6/2	NFPA Technical Meeting - Voting Guide
6/16	Topic Coming Soon
6/30	Topic Coming Soon
7/7	Updates to NFPA 14, 2027 Edition
7/21	Adjacent Hazards & Design Methods
8/4	Acceptance Testing
8/18	Modifications to Existing Systems
9/22	Topic Coming Soon
10/6	Seismic 101
10/20	Proposed Updates to NFPA 25, 2029 Ed.
11/3	Evaluating Fire Pump Flow Tests
11/17	Top 10 Tech Reviews
12/1	Designing Water Storage Tanks
12/15	Pump Room Layout

PROGRAMS

Feb 9 - Mar 5 Apr 20 - May 14 Aug 3 - Aug 27** Oct 26 - Nov 19	Beginning Design School*
Apr 26 - May 7 Nov 1 - 12	Intermediate Design School*
Feb 8 - 10** Apr 12 - 14 Jul 12 - 14 Oct 11 - 13	Sprinkler Hydraulics Calculations Workshop
Apr 19 - 21 Oct 18 - 20	Advanced Hydraulics Calculations Workshop
Feb 11** Apr 30 Jul 23 Sep 24	Introduction to the Fire Sprinkler Industry
Mar 1 - 3 May 17 - 19 Aug 16 - 18 Oct 18 - 20**	NFPA 25 Essentials Workshop
Jun 7 - 10 Sep 20 - 23	Experienced Inspector Skills Lab
Mar 4 - 5 May 20 - 21 Aug 19 - 20 Oct 21 - 22**	NFPA 25 Fire Pump Workshop
Spring Summer Fall	ITM Inspector Development Program* *This program is 20 months.*

** Hybrid course **At General Air Products Lab, Exton, PA*

AFSA46

September 8-11	Manchester Grand Hyatt San Diego, CA

For More Details Visit:
firesprinkler.org

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Dates subject to change. Programs subject to minimum registrations.

rev 9/14/2026

Virtual Instruction Path (VIP)

for Sprinkler Fitting Apprentices

Level 1 - Begins January 2027

Level 2 - Begins February 2027

Level 3 - Begins January 2027

Level 4 - Begins March 2027

www.firesprinkler.org/VIP

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HANDS-ON WORKSHOPS FOR 2027

FEATURING AFSA'S TRAINING LAB

NFPA 25 Essentials Workshop

Mar | May | Aug | Oct

Description: Understand roles, responsibilities, and NFPA 25 ITM procedures through hands-on testing of wet systems, dry systems, and fire pumps.

NFPA 25 Fire Pump Workshop

Mar | May | Aug | Oct

Description: Develop practical NFPA 25 fire pump ITM skills, including no-flow and full-flow testing, water supply graphing, and performance evaluation.

Introduction to the Fire Sprinkler Industry

Feb | Apr | Jul | Sep

Description: This course is designed for those new to the industry. An introductory, wide-ranging 8-hour course that provides a broad overview of core fire sprinkler industry concepts for those new to the field.

Experienced Inspector Skills Lab NEW

Mar | Sep

Description: Take your ITM expertise beyond the basics. Designed for experienced technicians, this course combines focused classroom instruction with hands-on system lab training to strengthen your application of current NFPA 25 inspection, testing, and maintenance requirements. Refine fire sprinkler testing practices, improve documentation, deliver more consistent service, and help reduce liability while reinforcing knowledge commonly covered on certification exams.

Learn more about AFSA's fire sprinkler lab featuring functional risers, a spray room, fire pumps, and an interactive classroom.

firesprinkler.org/lab