What Kind of Training and How Much?

by Dean K. Wilson, P.E.

I am the Executive Vice President of Research for a medium-sized venture capital firm. I am developing a business plan for a start-up fire alarm system installation, testing, and maintenance company. What role should the training of our technicians play in the successful development of this business? What kind of training should they receive? How much training should they receive? Where can they receive this training?

Training your personnel represents one of the most critical aspects of any successful fire alarm system installation, testing, and maintenance company. A great deal of lost revenue occurs when poorly trained technicians fail to install a fire alarm system properly. Similar losses occur when technicians do not swiftly and properly diagnose system failures, or when they fail to properly and efficiently test a system. In short, the failure to thoroughly train your technicians will doom your company to mediocrity or even failure.

You can divide training into several specific realms:

- **Knowledge of the Codes and Standards**. This includes the adopted building codes and fire codes enforced in the jurisdiction where you plan to do business. It also includes the appropriate Codes and Standards of the National Fire Protection Association—most importantly, NFPA 72-2013, *National Fire Alarm and Signaling Code*® and NFPA 70-2011, *National Electrical Code*®. Your technicians will also need to become familiar with certain fundamental aspects of the Testing Standards

for various fire alarm system components, including those testing standards

promulgated by Underwriters Laboratories Inc. and Factory Mutual Approvals.

- **Knowledge of basic electrical installation techniques.** Properly installing, testing,

    and maintaining fire alarm systems requires a thorough knowledge and practical

    hands-on application of basic electrical skills. This is the kind of training that your

    technicians can learn in electrical trade school or through a formal electrical

    apprenticeship program. While, for the most part, your technicians will deal with so-

    called "low voltage" electrical work, the kinds of skills that journeymen electricians

    acquire will significantly improve the quality of the mechanical and electrical work

    your technicians can consistently produce.

- **Knowledge of each fire alarm system component**. Your technicians must fully

    understand the equipment they install, test, and maintain. This will usually involve

    training by the manufacturer of the equipment or the distributor of the equipment.

    Such training will include understanding the environmental limitations placed on

    various components. It will also include a detailed understanding of how to

    troubleshoot problems with the components. And, it will include understanding any

    programming that allows the component to function properly for the particular

    application.

- **Knowledge of fundamental problem-solving and troubleshooting techniques**.

    An effective fire alarm system technician must possess a keen mind that has

    received training in the thought process necessary to synthesize information gleaned

    through testing into efficient problem-solving strategies. To some degree, a

technician can observe these skills in the field by watching more experienced
technicians. However, educational research suggests that a more effective approach
to such training takes place when a technician begins by learning first-order problem
solving skills and then observes how these skills might apply to actual field
experience. Thus, a combination of classroom training and on-the-job training will
produce the most effectively trained technicians.

- **Customer-service skills.** Your technicians will often become the primary individual
with whom your customers will have contact. If your technicians learn how to
approach their daily activities with a superior customer-service mindset, they will
contribute significantly to business retention and business development. Word-of-
mouth continues to offer one of the most effective ways of acquiring new customers.
When your technicians give your existing customers a consistent level of high-
quality customer service, each of those customers will tend to attract as many as five
additional customers through the positive way they talk about their experiences with
you. As Larry Wilson has stated in his world-renowned customer training program,
"People buy our product, not so much because they understand our product, but
because they believe we understand them." Training your technicians to
thoughtfully and carefully and deliberately deliver a high level of customer service
will virtually ensure your company with a steady stream of new business to build on
a foundation of satisfied and retained existing business.

How much should your train? You should train to the max! You should start by setting
significantly high goals for the initial training of your technicians. Then, you should set even higher
goals for the continual training of those same technicians.

Business process management guru, W. Edwards Deming, set forth the principal of "continuous improvement." In the fire alarm world, continuous improvement rests on the hallmark of routine testing of the fire alarm system to retain its baseline level of operational reliability. But, every bit as important is the continuous improvement of the technicians on whose shoulders the entire success of the fire alarm installation, testing, and maintenance business rests. Thus, giving your technicians opportunity to receive frequent training to hone their skills becomes extremely valuable and vitally necessary.

You can obtain the needed training from a variety of sources. I have already alluded to the fact that technicians can obtain basic electrical skills training from trade schools or formal electrical apprenticeship programs. Similarly, I have suggested that your technicians can learn about the components they will work with through training provided by manufacturers and distributors of those components.

A variety of eLearning programs exist in the area of problem-solving skills and customer service skills. Using such programs will allow your technicians to take this training on their own schedule. You may wish to supplement this eLearning with some formal presentation by skilled practitioners.

Your technicians can learn about the Codes and Standards from a variety of sources. The International Municipal Signal Association, itself, offers an excellent certification program for both interior fire alarm systems and municipal fire alarm systems. The National Fire Protection Association and Automatic Fire Alarm Association both offer excellent training programs in the Codes & Standards.

You should seriously consider having your technicians obtain formal certification—either

from IMSA or through the National Institute for Certification in Engineering Technologies

(NICET).

Finally, the *Code* **requires** training. NFPA 72-2013, *National Fire Alarm and Signaling*

Code®, states the following:

10.5.1 System Designer.

10.5.1.1 Fire alarm system and emergency communications system plans and specifications shall be developed in accordance with this Code by persons who are experienced in the proper design, application, installation, and testing of the systems.

10.5.1.2 State or local licensure regulations shall be followed to determine qualified personnel. Depending on state or local licensure regulations, qualified personnel shall include, but not be limited to, one or more of the following:

> (1) Personnel who are registered, licensed, or certified by a state or local authority
> (2) Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction
> (3) Personnel who are factory trained and certified for fire alarm system design and/or emergency communication system design of the specific type and brand of system and who are acceptable to the authority having jurisdiction

10.5.1.3 The system designer shall be identified on the system design documents.

10.5.1.4 The system designer shall provide evidence of their qualifications and/or certifications when required by the authority having jurisdiction.

10.5.2 System Installer.

10.5.2.1 Fire alarm systems and emergency communications systems installation personnel shall be qualified or shall be supervised by persons who are qualified in the installation, inspection, and testing of the systems.

10.5.2.2 State or local licensure regulations shall be followed to determine qualified personnel. Depending on state or local licensure regulations, qualified personnel shall include, but not be limited to, one or more of the following:

> (1) Personnel who are registered, licensed, or certified by a state or local authority
> (2) Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction
> (3) Personnel who are factory trained and certified for fire alarm system installation and/or emergency communications system installation of the

specific type and brand of system and who are acceptable to the authority having jurisdiction

10.5.2.3 The system installer shall provide evidence of their qualifications and/or certifications when requested by the authority having jurisdiction.

10.5.3* Inspection, Testing, and Service Personnel. (SIG-TMS)
Personnel, either individually or through their affiliation with an organization that is registered, licensed, or certified by a state or local authority, shall be recognized as qualified and experienced in the inspection, testing, and maintenance of systems addressed within the scope of this Code.

A.10.5.3 It is not the intent to require personnel performing simple inspections or operational tests of initiating devices to require factory training or special certification, provided such personnel can demonstrate knowledge in these areas.

10.5.3.1* Inspection Personnel. Inspections shall be performed by personnel who have developed competence through training and experience acceptable to the authority having jurisdiction or meet the requirement of 10.5.3.3.

A.10.5.3.1 Inspection personnel knowledge should include equipment selection, placement, and installation requirements of this Code and the manufacturer's published documentation.

10.5.3.2* Testing Personnel. Testing personnel shall have knowledge and experience of the testing requirements for fire alarm and signaling equipment of this Code acceptable to the authority having jurisdiction or meet the requirement of 10.5.3.3.

A.10.5.3.2 Testing personnel knowledge should include equipment selection, placement, and installation requirements of this Code and the manufacturer's published documentation.

10.5.3.3 Service Personnel. Service personnel shall be qualified in the maintenance and servicing of systems addressed within the scope of this Code. Qualified personnel shall include, but not be limited to, one or more of the following:

(1)* Personnel who are factory trained and certified for the specific type and brand of system being serviced

   A.10.5.3.3(1) Factory training and certification is intended to allow an individual to service equipment only for which he or she has specific brand and model training.

(2)* Personnel who are certified by a nationally recognized certification organization acceptable to the authority having jurisdiction

   A.10.5.3.3(2) Nationally recognized fire alarm certification programs might include those programs offered by the International Municipal Signal Association (IMSA), National Institute for Certification in Engineering Technologies (NICET), and the Electronic Security Association (ESA). NOTE: These organizations and the products or services offered by them have not been independently verified by the NFPA, nor have the products or

services been endorsed or certified by the NFPA or any of its technical committees.

(3)* Personnel, either individually or through their affiliation with an organization that is registered, licensed, or certified by a state or local authority to perform service on systems addressed within the scope of this Code

A.10.5.3.3(3) Licenses and certifications offered at a state or local level are intended to recognize those individuals who have demonstrated a minimum level of technical competency in the area of fire alarm servicing.

(4) Personnel who are employed and qualified by an organization listed by a nationally recognized testing laboratory for the servicing of systems within the scope of this Code

10.5.3.4 Programming. Personnel programming a system shall be certified by the system manufacturer.

10.5.3.5 Evidence of Qualification. Evidence of qualifications shall be provided to the authority having jurisdiction upon request.

As you can see from these requirements, NFPA 72-2013 requires training of each person who may have a role in the design, installation, testing, or maintenance of a fire alarm system. These requirements simply serve to reinforce the point I have already made: "Training your personnel represents one of the most critical aspects of any successful fire alarm system installation, testing, and maintenance company."

You do well to make training a key priority in your business plan for any fire alarm company into which you will place your investment capital.

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