

by Michael J. Joanis, P.E., *Director of Contractor Services/Chief Engineer*



From Michael J. Joanis: Damon Pietraz is the president of Underwood Fire Equipment, Inc. He is an experienced fire pump professional with a demonstrated history of working in the mechanical and industrial engineering industry. Damon is also an NFPA 20 and NFPA 25 technical committee member. Underwood Fire Equipment has served the fire pump industry for over 30 years. Through innovative designs, experienced support, and a diverse network of

suppliers, they meet individual project's needs worldwide. Their products include a variety of brands of fire pumps, control panels, valves, diesel and electric engines, piping, and fiberglass storage tanks for installation projects and repair. They offer emergency fire pump trailer rentals and fabricate pump houses and skid units in-house. Underwood provides expert field technicians to handle testing and maintenance on all types of projects including high-rises, healthcare facilities, big-box warehouses, and industrial and manufacturing plants.

Connectivity: The Future of Fire Protection

By Damon Pietraz

Once you opened this magazine today, we instantly became connected. As a newer member of this organization, I've recently made many new connections with members through the NFSA Fastestwater Forum. Or maybe we've connected through email, LinkedIn, or other electronic platforms.

This concept of fluent remote connectivity goes well beyond business networking. It is common in healthcare, security, and even the industrial field to remotely monitor lift stations and cooling towers. If companies and their employees rely so heavily on remote connectivity to maximize their capabilities, then why isn't this same standard applied to fire safety as well?

Imagine a fire pump system that could be fully monitored and tested remotely with a multifaceted network of sensors that is applied to various components in a fire pump room. With this technology, they'll collect all the necessary data and relay it to a fire pump expert like me, who will be able to read suction PSI or check a flow meter's GPM from behind a desk anywhere across the world. This information can then be recorded so a building owner will have a better picture of what to expect when they turn a pump on, even if its last run was a month prior. Fire safety experts will be able to read transmitted data and interpret it to determine when and why a fire pump started, how long it ran, what parameters were in or out of range, and if a field technician is necessary to examine the system onsite.

Now imagine if this remote connectivity in a pump room were the standard. How much more reliable and efficient would fire pump testing and maintenance be? How many more properties would be properly maintained and protected? How many more lives saved if this dream became a reality? This is my goal and I believe we, as a community, can achieve it through connectivity.

Technologically progressive monitoring of fire pump systems isn't an entirely new concept. Michael Pietrangelo, Director of

Marketing for Tornatech, and I recently discussed this topic. "Remote access to fire pump controllers has been a topic of discussion for many years," He declared after I explained my mission, "The discussion has been based around 'is it necessary?', and yea, I think it's necessary."

Tornatech is an international fire pump controller conception and manufacturer. Their fire pump control panels are listed by UL and approved by FM. They are also built-in accordance with NFPA 20. When it comes to the topic of connectivity in fire safety, Underwood Fire and Tornatech share a similar mindset. Pietrangelo continued, "This discussion keeps going, I think eventually there could be kind of a solution or definite requirement. We're just going to keep working on it until we come up with that definite solution."

Although these ongoing conversations haven't been all optimistic. Some have resulted in perceived obstacles when it comes to achieving remote connectivity in fire suppression. One of the first is more research into identifying attributes that would maximize the benefit to both fire safety suppliers and end users. Additionally, overcoming the NFPA 20 limitations in this area by working with the technical committee to shape codes that will be consistent and attainable. Finally, planning and engineering the physical attributes that aren't already in conception, regarding technology, that would meet the needs of both providers and customers.

From a fire suppression expert's perspective, it's easy to understand why information gathering would be beneficial, we don't often hear the opposite side's perspective. Fire marshals and building owners, for example, both have a hand in maintaining the fire pump systems. Insurance companies review fire pump testing data to ensure equipment was properly tested and operating functionally

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for claims. There are many pieces down the line that information gathering with an expedited process and data storing would be beneficial. We need to hear from the consumer standpoint what critical components and information would make this project more substantial to them. As Pietrangelo said, “Our technology is there. Now we’re trying to figure out what’s required in the market and put the two together to eventually have something.”

From a supplier standpoint, the national standardized codes for fire pump connectivity, or lack thereof, are a largely perceived hurdle. As a long-standing member of the National Fire Protection Association (NFPA) 20 technical committee. Representing the industrial maintenance sector, we oversee the Standard for the Installation of Stationary Pumps for Fire Protection. As it stands now, connectivity is only addressed in an annex, one that lays out many points including equipment, information technology, and cyber security, which are common concerns amongst industry leaders when discussing this topic as well. With the necessary fire pump technology, will the connection be achieved through a firewall? Will building owners accept the exposure risk? How do we lessen our vulnerability to accidental or malicious third parties? These are the answers we need or rather the jumping-off points for a discussion with area experts that I would like to have soon.

A First Step

A first step could be to have a private communication system unique to the fire pump room remote monitoring as the technology piece. As Pietrangelo pointed out, “If it’s an electrical fire pump, it needs its own dedicated service so a communication system would kind of go along with that.” It could even go much further than that as we’re assuming there are options here we haven’t even explored. The current code does not mandate the necessity to have required tools such as ethernet cables and hardlines in a fire pump room. Thankfully, as a member of the NFPA 20 committee, I have a voice where I can advocate for such necessary changes when the direction is apparent.

However, as this has been a long-term discussion, there is much to consider in terms of progress toward this concept that is already completed or ongoing. Organizations like Tornatech have already begun taking preparatory steps to start implementing connectivity components into their products. As Pietrangelo expressed, the technology is there, they are simply waiting for the remaining pieces to take shape before continuing their process. He says Tornatech “welcomes any type of technology or innovation opportunity. To have that discussion I think that’s what makes us get out of bed in the morning. We’re ready to be part of the discussion and see where we can take it.”

They are not alone in wanting to be part of an innovative conversation. Over the years at conventions, meetings, and networking events I have participated in many confabs with a variety of businesses interested in, or already attempting to achieve the same level of connectivity as well. The interest from suppliers is out there, we just need to find a path for them to travel.



In 2022, an annex section added to NFPA 20 called the Modbus Register. This system standardizes the classification of fire pump system events through numerical coding. It is a well-planned and meticulous addition to the code that will be greatly beneficial when universally utilized. One day, when an alarm triggers and the control panel says “42071-D8”, anyone with the credentials to remotely connect to the pump room will be able to tell you it’s a low-pressure suction alarm, thanks to this new classification register. This inclusion does two very beneficial things for connectivity: it creates consistency on a universal level and streamlines the planning of viable content for software used in connectivity.

One of the largest resources to support this vision’s success is right in Underwood Fire’s facility. We’ve created The Lab, a state-of-the-art training facility housing three separate complete fire pump systems featuring split-case, in-line, and jockey pumps, electric and diesel engines, a variety of valves, meters, switches, a backflow preventer, fuel tank, and additional attributes contributing to safe and reliable testing simulation. The motivation for creating The Lab was to offer the ability to promote an acute understanding of fire pump systems that would increase the protection of lives and property and offer a space to develop products and services that would forward that reach. The Lab will undoubtedly offer a controlled and secure environment to execute the testing for remote connectivity products and processes down the line.

The necessity to progress fire pump connectivity has been here for some time. Now the urgency to take our opportunities and progress fire safety to society’s standard expectation of technology and communication is here. The interest and support in the fire safety community are apparent. While there are hurdles to overcome from answering questions to influencing change, I believe there is nothing this community can’t overcome together.

My voice could be instrumental in progressing this concept forward and I want to use it to represent this organization. Take this opportunity and give me your input, share your ideas, and help innovate connectivity in fire protection. Let’s take this discussion back to where it began, on the Fastestwater Forum, and work together with a larger voice to save life and property. •