Corrosion Solutions
for Fire Sprinkler Systems

setting the standard in corrosion control

Engineered Corrosion Solutions

ISO 9001:2015 CERTIFIED COMPANY

PRI Registrar
PERFORMANCE REVIEW INSTITUTE

Why ECS?

- All products sold direct to fire sprinkler contractors, not through distributors
- All dry/preaction equipment installed in riser room
- Superior customer service and support
- Shortest lead times
- No nitrogen storage tank or compressed air dryer required
- Patented "Fill & Purge" breathing method of nitrogen inerting
- All ECS vents are equipped with a quick connect or camlock for ease of service

Dry Pipe and Preaction System Solutions

Advanced**IQ** Nitrogen Generators

Contains cULus Listed Open Type Industrial Control Panel | Meets Canadian Standard CSA C22.2 No. 14-13

FM APPROVED CE

Wall Mount Nitrogen Generator
AG-675 | AG-950 | AG-2000 | AG-3500
Up to 3,500 Gal.

Stand Alone Nitrogen Generator
AG-6500 | AG-11000 | AG-18500 | AG-25000
Up to 25,000 Gal.

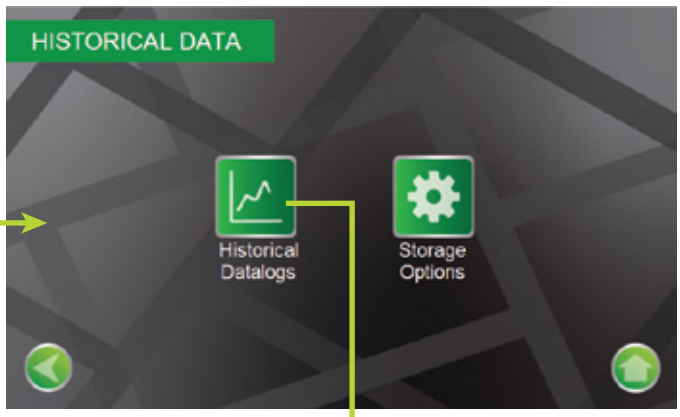
Available Models & Specifications	WALL MOUNT				STAND ALONE W/ SEPARATE AIR COMPRESSOR			
	AG-675 PGEN-3 (Legacy)	**AG-950** PGEN-5 (Legacy)	**AG-2000** PGEN-10 (Legacy)	**AG-3500** PGEN-20 (Legacy)	**AG-6500** PGEN-30 (Legacy)	**AG-11000** PGEN-40 (Legacy)	**AG-18500** PGEN-50 (Legacy)	**AG-25000**
Total System Capacity	675 gal	950 gal	2,000 gal	3,500 gal	6,500 gal	11,000 gal	18,500 gal	25,000 gal
Single System Cap. @ 40 psi(1)	240 gal	240 gal	800 gal	800 gal	1,150 gal	1,440 gal	2,025 gal	2,900 gal
Single System Cap. @ 20 psi(1)	530 gal	530 gal	1,800 gal	1,800 gal	2,300 gal	2,880 gal	4,050 gal	5,800 gal
Air Compressor	Integral	Integral	Integral	Integral	Separate	Separate	Separate	Separate
Size (in) (H x W x D)	37x25x9	37x25x9	40x29x12	40x29x12	53x25x9(2)	53x25x9(2)	53x29x14(2)	53x29x14(2)
Weight	125 Lbs	125 Lbs	208 Lbs	220 Lbs	152 Lbs(2)	152 Lbs(2)	250 Lbs(2)	250 Lbs(2)
Electrical	120VAC 6 Amps	120VAC 6 Amps	200-240VAC 12.5 Amps	200-240VAC 12.5 Amps	120VAC(3) 2 Amps	120VAC(3) 2 Amps	120VAC(3) 2 Amps	120VAC(3) 2 Amps

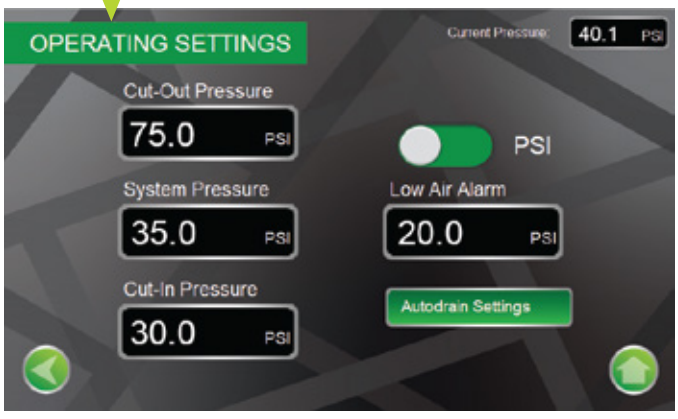
NOTES:
(1) Single system capacity based on 30 min. fill requirement of largest single sprinkler system; a secondary air compressor with normally closed isolation valve can be used to meet fill requirement for larger individual systems
(2) Size and weight of nitrogen generator only, does not include separate air compressor
(3) Power requirement for stand alone nitrogen generator only, does not include separate air compressor power requirements, options include: 200VAC/230VAC/460VAC 3 phase
(4) Lead time refers to time from order receipt to shipment from ECS facility, does not include shipping time
(5) All nitrogen generators include 1 year manufacturer's warranty per ECS terms and conditions

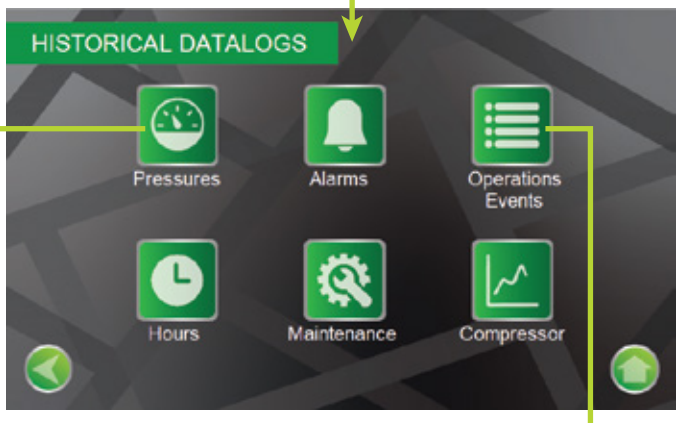
AdvancedIQ Nitrogen Generator User Interface

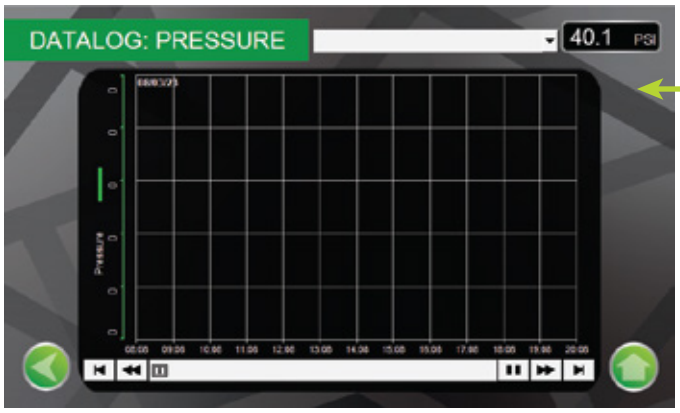
The AdvancedIQ HMI display screen allows for easy operation and complete control of the nitrogen generator.

Home Screen
(on Nitrogen Generator Cabinet Door)







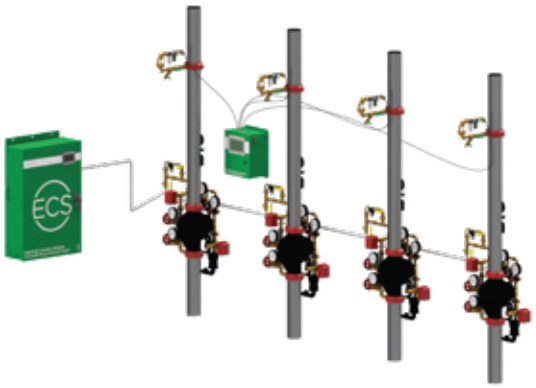


AdvancedIQ Vent Controllers

- AVC-6 can control up to six (6) dry/preaction zones from one device
- AVC-2 for smaller applications, can control up to two (2) dry/preaction zones from one device
- Automatic vent shutoff based on system purity
- Continuous monitoring of system purity and pressure with access to data logs via touchscreen interface or included USB drive

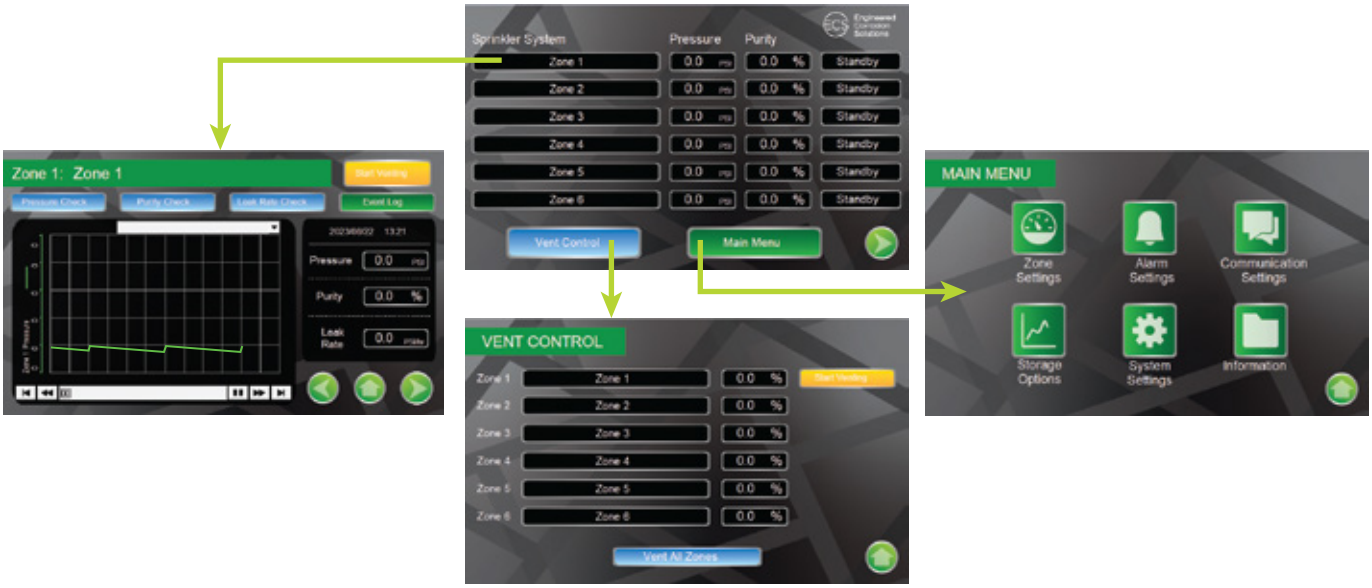
ECS AdvancedIQ Vent Controller (AVC-6)

ECS AdvancedIQ Vent Controller (AVC-2)

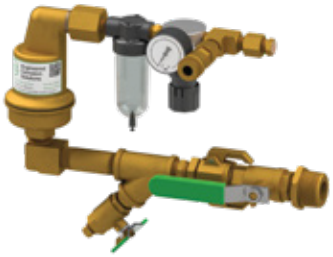


AVC-6 installation on four (4) systems

Home Screen AVC-6 (on Cabinet Door)



Dry Pipe Vents

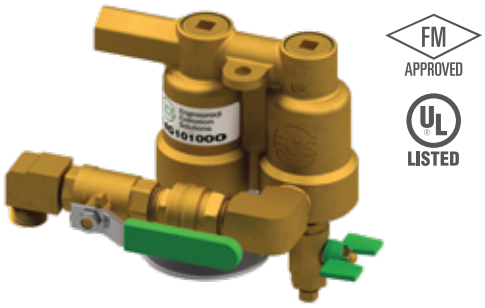


ECS Protector Vent (PAV-D/DQ)

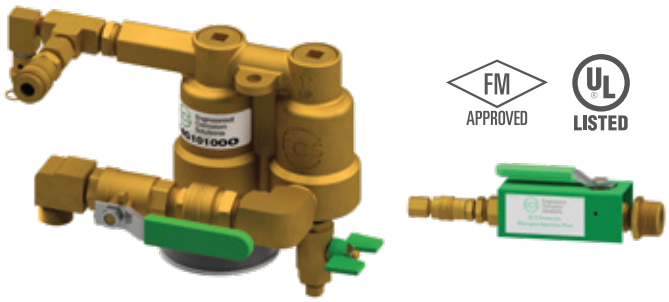
ECS Protector SMART Vent (PSV-D)

Wet Pipe System Solutions

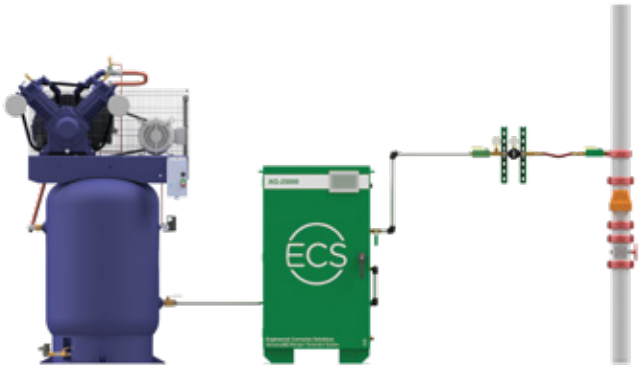
The 2016 Edition of NFPA 13 requires a means of venting air on all wet pipe fire sprinkler systems.



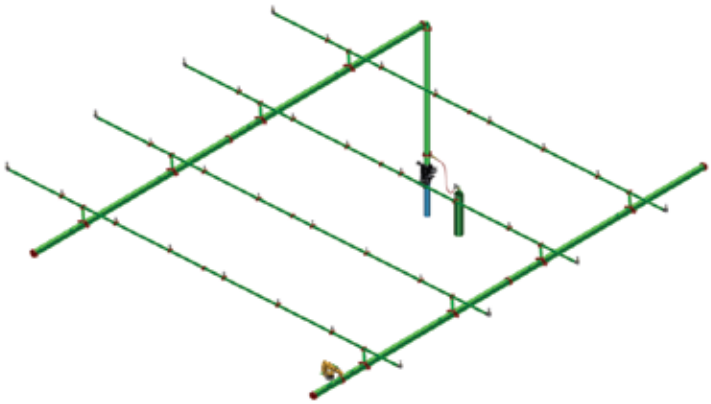
ECS Ejector Automatic Air Vent
(PAV-W)



ECS Protector Nitrogen Inerting Vent
(PAV-WN)

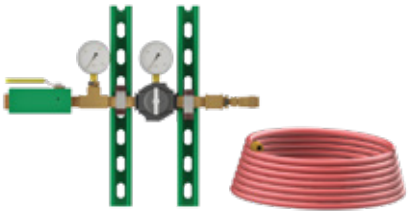


Sprinkler System with Nitrogen Generator
(Vent placed at furthest point on the system)



Sprinkler System with Nitrogen Cylinder
(Vent placed at furthest point on the system)

Wet Pipe Accessories



ECS Nitrogen Inerting Manifold
(NIM-1)

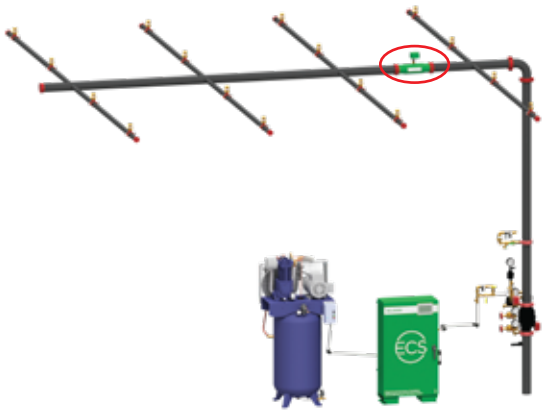
ECS Nitrogen Inerting Start-up Kit
(NISK-1)

ECS Remote Inerting Station
(RIS-1)

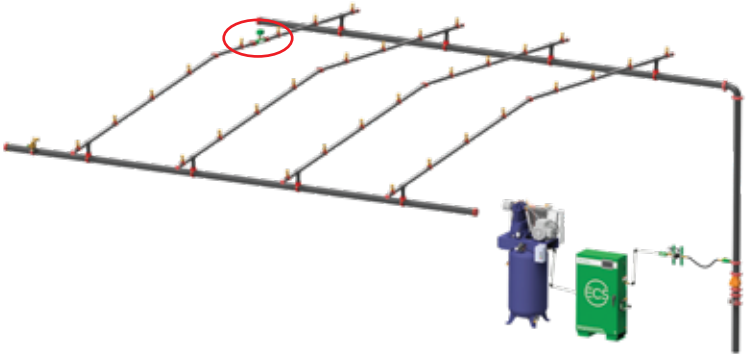
Monitoring Devices

ECS In-Line Corrosion Detector (ILD)

- Provides continuous real-time corrosion monitoring
- Matches size, schedule, and material of system piping
- Provides 360˚ surface area to detect internal corrosion
- Thin wall section that is monitored by an UL Listed/FM Approved pressure switch



Dry Pipe/Preaction Sprinkler System



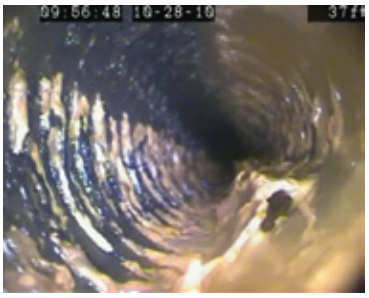
Wet Pipe Sprinkler System

ECS Consulting Group

An engineer from our consulting team will perform a thorough review of the system risk factors and leak history to determine the best assessment strategy. Using data collected from comprehensive video scoping, pipe sample analysis, system design, leak history, and our expert experience, ECS determines the following:

- Root cause of corrosion and system leaks
- Exact amount of metal loss
- Estimated remaining service life
- Clear recommendations for system repair and remediation and corrosion prevention

Branch line at 16ft with no corrosion, water filled with no air-water interface

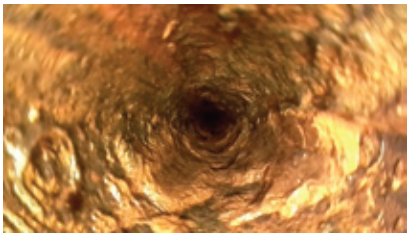


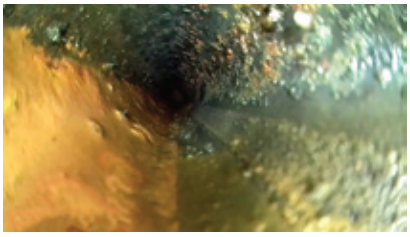
Same branch line at 37ft with significant corrosion deposits, clear air-water interface

Why perform an ECS Corrosion Assessment?

The corrosion assessment combined with surgical pipe replacement and a corrosion control program can save up to ***80% of total system replacement costs*** and significantly extend the useful life of the existing sprinkler system.

Corrosion Assessment Report





- Technical summary of corrosion and risk factors
- Images from interior of sprinkler pipe with commentary
- Images of unique, observable evidence
- Design and maintenance considerations specific to your facility
- Root cause of corrosion and what factors contributed to the current condition.

- Remediation Recommendations Based on Your Long-Term Strategy
  - Surgical pipe replacement
  - Corrosion control
  - Design modifications

- Annotated sprinkler drawing with recommendations and photos – allowing you to communicate remediation steps to contractor with minimal overhead.

- Post assessment support from ECS Engineer available.
  - Meetings with contractor to communicate scope of work
  - Meetings with owner
  - Post construction verification that scope of work was completed correctly

Pipe Sample Analysis

Can be performed as a stand alone project or in conjunction with an assessment. Pipe sample analysis are performed at our laboratory to determine the following:

1. Root cause of corrosion
2. Existing wall loss
3. Remaining service life

Before Media Blasting

After Media Blasting

Case Study

Cold Storage/Freezer Application

Project Background

A cold storage facility in the food service industry was originally built in 1992. Wayne Automatic Sprinkler Corporation located in St. Louis, MO has been contracted for the facility fire sprinkler inspection and service. As part of the quarterly maintenance procedures, Wayne Automatic Sprinkler routinely inspects the supervisory gas supply line and preaction system mains for ice plugs.

The preaction system was maintained with a legacy Dry Air Pac™*. Ice was continually found in the air supply line during the quarterly inspections. Not only was ice present in the air line at the freezer penetration, it also occasionally caused a total blockage in the preaction air supply line. These ice plugs resulted in frequent supervisory low air signals. The fire alarm control panel was programmed to receive the supervisory low air signals as alarm signals which resulted in the facility's horns and strobes being activated and the fire department being dispatched.

Project Overview

Project Type:
Large Warehouse Facility

Sprinkler System:
One (1) preaction system covering the freezer area, maintained with a legacy Dry Air Pac™

Nitrogen Introduced:
2017

Annual Maintenance Cost:
$300 Nitrogen Generator vs. $2,300 Dry Air Pac™ (Based on manufacturer's suggested maintenance and average U.S. sprinkler fitter labor rate)

Nitrogen Generator	Dry Air Pac™
Eliminate Ice Plugs | Eliminate Corrosion Minimal Maintenance | Supply Many Systems	Ice Plugs Possible | No Corrosion Protection Extensive Maintenance | Limited Volume Per Unit

Dry Air Pac™ Replaced

In the fall of 2017 Wayne Automatic elected to install an ECS Nitrogen Generator after struggling with poor performance of the Dry Air Pac™ for years. This picture was taken before commissioning prior to the line being cleared of ice during a quarterly inspection. Frost and ice had formed near the entry to the freezer area in the air line. There was an approximate 20% blockage in the air supply line before commissioning of the nitrogen generator.

The preaction system was initially filled and then maintained with high purity nitrogen. Seven (7) months after the commissioning of the nitrogen generator, no ice buildup has been found in any of the nitrogen supply lines or preaction mains. Both the building owner and the fire sprinkler service provider are pleased with the results.

* General Air Products asserts that it owns trademark rights in Dry Air Pac™. ECS does not claim to own any rights in that mark.

Case Study

DPNI - Data Center in Missouri

Project Background

The 100,000 square foot data center was originally built and opened in 2002 with double interlock preaction fire sprinkler systems to protect the data halls. Galvanized steel piping was used for all of the preaction fire sprinkler systems. After 8 years of service leaks began to develop in the 3" galvanized schedule 10 main piping. All of the leaks occurred within the main line piping under accumulations of trapped water. The metal loss was characterized by highly localized attack with many deep singular round bottomed pits beneath the trapped pools of water.

Based on the history of leaks occurring in the facility, ECS was contracted to identify the root cause of the corrosion and develop a corrosion control strategy to prevent future leaks.

Project Overview

Project Type:
Mission Critical Data Center

Location:
Missouri, USA

Sprinkler System:
100,000 sq. ft. facility 5 Galvanized Preaction Systems

Nitrogen Introduced:
1st quarter of 2011

System Information

Water Supply
- Municipal water supply with fire pump

Fire Sprinkler System Design Configuration
- Five (5) preaction risers protecting the data center
- "Tree" type fire sprinkler design configuration

Fire Sprinkler Piping Materials
- Rolled groove schedule 10 galvanized main piping
- Threaded Schedule 40 galvanized branch lines

Results

Despite the significant damage found during the assessment, no fire sprinkler system piping was replaced within the facility prior to the installation of the ECS nitrogen generator system. Under a nitrogen atmosphere the corrosion in the fire sprinkler system piping would be stopped, even in locations with trapped pools of water. Since repair of initial leaks and installation of the ECS Nitrogen Generator there have been no recorded additional leaks within the preaction fire sprinkler systems in the facility.

Case Study

WPNI - Large Manufacturing Warehouse

Project Background

The one million square foot building was built in the 1960's and protected by twenty-five (25) overhead wet pipe sprinkler systems that had been renovated several times. The wet pipe systems were characterized by several elevation changes and large pockets of trapped air. The majority of damaged piping was found at the air/water interface. Many of the sprinkler mains contained large amounts of corrosion by-product (iron oxide) solids from the black steel piping.

The building had a long history of leak repairs (averaging one leak every two weeks) and some of the systems were completely replaced over time. Based on the leak history, ECS was contracted to provide a corrosion assessment to determine the root cause of corrosion and the extent of damage within the existing sprinkler piping.

Project Overview

Project Type:
Aerospace Manufacturer

Location:
Los Angeles, CA

Sprinkler System:
1 million sq. ft. of coverage area, 25 wet pipe risers, average size 1,500 gallons

Nitrogen Introduced:
October 2010

System Information

Water Supply

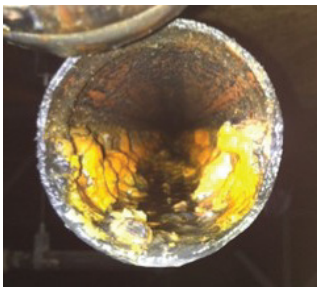
- Municipal drinking water feeding a 200,000 gallon fire water storage tank

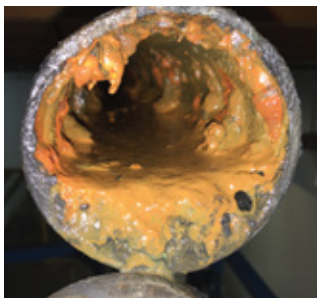
Fire Sprinkler System Design Configuration

- Fire water loop serving large campus of buildings with fire pump and jockey pump
- External wet pipe risers using a "tree" type fire sprinkler design configuration

Fire Sprinkler Piping Materials

- Threaded schedule 40 black steel piping
- Repair and replacements of piping over 40 year period
- Old and new pipe patchwork throughout the facility





Results

Since the facility was treated with nitrogen in 2010, there has only been one (1) reported leak. The routine service maintenance personnel did not follow the protocol to maintain a nitrogen atmosphere and allowed oxygen to enter – resulting in a leak. The system was re-treated with nitrogen and no additional leaks have been reported.

Contact Us

Great Lakes
Indiana, Kentucky, Michigan & Ohio
Mike Taylor
mtaylor@ecscorrosion.com
M 314.443.7850

Mid-Atlantic
Delaware, District of Columbia, Maryland, Pennsylvania, Virginia & West Virginia
Landen Smith
lsmith@ecscorrosion.com
M 314.402.7916

Midwest
Illinois, Iowa, Minnesota & Wisconsin
Brad Wood
bwood@ecscorrosion.com
M 314.681.6424

Northeast
Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island & Vermont
Canada: Ontario & Quebec
Kevin Curran
kcurran@ecscorrosion.com
M 314.402.5590

Northwest
Alaska, Idaho, Montana, North Dakota, Oregon, South Dakota, Washington & Wyoming
Canada: Alberta & British Columbia
Steve Brown
sbrown@ecscorrosion.com
M 253.985.0155

Southeast
Alabama, Florida, Georgia, North Carolina, South Carolina & Tennessee
Patrick Tosti
ptosti@ecscorrosion.com
M 314.223.3351

Southwest
Arkansas, Louisiana, Mississippi, New Mexico Oklahoma & Texas
James McKey
jmckey@ecscorrosion.com
M 206.605.8722

West
Arizona, California, Hawaii & Nevada
Mike McCasland
mmccasland@ecscorrosion.com
M 817.456.4803

West Central
Colorado, Kansas, Missouri, Nebraska & Utah
Sebastian Hommes
shommes@ecscorrosion.com
M 573.308.9836

Inside Sales
Bill Morgan
wmorgan@ecscorrosion.com
D 314.384.4102

Rick Eaton
International Accounts Coordinator
reaton@ecscorrosion.com
D 314.384.5411

Stephan Cook
scook@ecscorrosion.com
D 314.744.5955

Project Management
Bo Minner
bminner@ecscorrosion.com
D 314.415.1382

Mason Middleton
mmiddleton@ecscorrosion.com
D 314.370.6900

Enterprise Sales Team
Nathan Barger
nbarger@ecscorrosion.com
M 314.615.4447

Mike Munoz
mmunoz@ecscorrosion.com
M 925.315.1945

International

Western Europe
Belgium, Netherlands & Luxembourg
Robert Bender
rbender@ecscorrosion.com
M +31 6 24949354

Our Mission

We are not your typical company. We think differently. We are innovators at the intersection of risk management and fire protection who set out to become the world's best. Our laser focus on the industry is the reason why we're the leader in corrosion control solutions and services.

As an organization, we've spent the last 20+ years working to understand corrosion in fire sprinkler systems. Each employee at ECS adds a unique perspective and skill set that has created an unequaled knowledge base. The culmination of our work and innovation means that we don't settle for the status quo in addressing the lifecycle needs of your fire sprinkler system. Our technical background and extensive corrosion science experience allows us to provide services that are simply unmatched by other providers in the industry. We are invested in the long-term success of our partners.

We realize that our success is tied to yours.

Contact Us

+1 314.432.1377

www.ecscorrosion.com

insidesales@ecscorrosion.com