THE PUMPING WORLD'S ONE STOP SHOP!™

Metropolitan Industries, Inc.

Currents

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1957

2022

65 YEARS

CELEBRATING 65 YEARS OF GROWTH AND INNOVATION WHILE LOOKING FORWARD TO THE FUTURE

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YEARS

SOLVING PUMPING AND CONTROL SYSTEM CHALLENGES SINCE 1957

2022 is a milestone year for Metropolitan Industries, Inc.: we are celebrating 65 years of water innovations! A lot has changed since we started in 1957, but our commitment to providing innovative, specialized solutions to our partners and customers has remained the same. Now more than ever we wanted to take a moment to celebrate this incredible milestone and look forward to all the good things to come.

When we first began, we were little more than a home office repping various manufacturers throughout the Chicagoland area. Today we operate out of a 100,00 sq ft facility where we specialize in the engineering and manufacturing of custom packaged pump systems, fully integrated with our own manufactured controls. Under our roof, you'll find dedicated teams such as R&D, engineering, fabrication, and our own U.L. control panel shop. It is through the dedication and coordination of each team that we can maintain our vision of being a single-source provider for pumping-related equipment.

In 2009, we launched the revolutionary Ion Digital Level Control Switch. The switch measures water levels using strain gauge technology, eliminating the need for moving parts.

Marty Martinson and John Kochan, Sr. founded Metropolitan Industries in 1957 to provide specialized pump products and equipment.

This leaves less room for issues when compared to traditional float style switches. The introduction of the Ion switch quickly expanded into a full product line of sump pump and battery backup systems for the residential and commercial marketplace. In 2014, Ion Technologies was officially established as its own brand under the Metropolitan umbrella.

Our acquisition of Emecole Metro in 2016 expanded our influence into the concrete crack repair and basement waterproofing industry. We strive to provide solutions for all kinds of problems associated with water, and the inclusion of Emecole helps us maintain this vision. Emecole's products can also be used for repairing issues that occur in concrete lift stations, elevator pits, housed systems, and below-grade mechanical rooms.

Additionally, in 2016, we formally established MetroCloud, our dedicated cloud SCADA water and wastewater monitoring system which provides end-users with highly intuitive pump monitoring capabilities. MetroCloud gives municipal and building managers a cost-effective option with the capability to monitor and manage their pump systems from anywhere, providing enhanced control efficiency, security and reliability.

Most recently, Emmons Metro joined the family in 2019. Located in Albany, NY, Emmons provides an extensive supply of pumps, equipment, and controls for municipal, commercial, and industrial applications. Utilizing their 25 plus years of product and market expertise, combined with the added resources of Metropolitan, Emmons Metro is fully committed to providing their project partners and end-users with optimized solutions that solve the most dynamic water movement and management challenges.

Though we've grown and expanded our offerings over the years, we've remained true to our focus on providing premium service. We know that the combination of good products and great people have made us a success over the past 65 years. Regardless of the evolution of the world, industry, and company, we look forward to providing solutions to solve the most dynamic water challenges with the most advanced pumping systems on the market today.

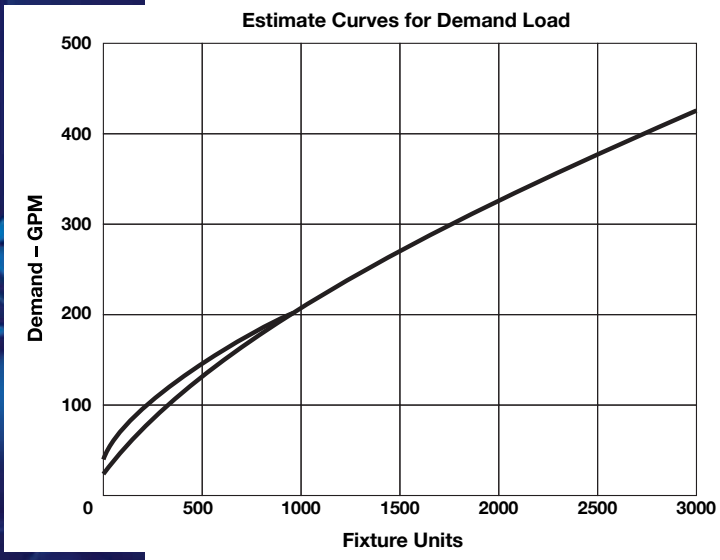
LESSONS LEARNED FROM UNPRECEDENTED DEMAND SWINGS

By: John Bray

With the many facets it takes to maintain commercial buildings, it takes a devoted type of worker with the right acumen to successfully pull it off. A key trait is the ability to adapt quickly when a problem or disruption arises.

The most jarring example inevitably stems from the pandemic's early days and the massive shifts in occupancy within many buildings and facilities. Large commercial and residential properties faced several challenges, including one challenge many didn't expect: changes to the management and maintenance of their water supply (and, ultimately, water infrastructure as a whole). While most of the world was at home, residential buildings needed to accommodate higher, often unprecedented water use. Inversely, hotels that once saw 80 percent or more average occupancy dropped to only a few guests at most, leaving countless taps, fixtures, and booster systems unused. Stadiums and other large venues faced similar issues.

As the world continues to inch closer towards full normalcy, now is the time to assess the key takeaways so that we all remain fully prepared for when the next problem or disruption occurs – whether from pandemic resurgence or because of some other unworldly circumstance. Regardless, accommodating unprecedented shifts in demand isn't as easy as simply turning a valve or flicking the lights off and walking away. There's a lot to consider when it comes to adjusting to changing water needs at your facility, and the top three most important considerations are pressure, sanitation, and temperature control.



In 1940 Roy Hunter, at the request of the US Department of Commerce, prepared a report detailing "The Methods for Estimating Loads in Plumbing Systems". This report includes a graphical curve engineers still use to estimate load demands in various commercial, institutional, and industrial plumbing systems.

Pressure: Under, Over, and Just Right

Pressure is a significant challenge as it impacts all areas of your water infrastructure, especially in large commercial and institutional plumbing systems. Water systems are sized based on the number of fixture units in a particular building. Engineers used a graph known as the Hunter's Curve to estimate load demands in various plumbing systems. This chart is used as a reference to estimate the peak demand flow in plumbing systems based on typical profile use in the types of buildings that the chart identifies. At the start of the pandemic, many buildings experienced drastic and even extreme changes to their usage demands for the first time. We still rely on water pressure to supply water to every fixture, but pressure also helps some newer valves function properly. This doesn't mean, however, that higher pressure is always the answer.

Buildings that experienced a dramatic drop in use — such as hotels, restaurants, and stadiums — suddenly had more than enough pressure, but this can be detrimental. If pressure remains high, leaks, gasket blowout, and fixture damage can occur. Inversely, an increase in the work-from-home population and a decrease in going out in the evenings left large, multiunit dwellings struggling to keep up. Without adequate pressure, basic functions such as turning on a tap stopped working as planned and crucial sanitation functions — flushing a toilet or doing laundry — were interrupted. In addition to this presenting a health risk, it can also become a legal issue depending on building codes in your area.

Buildings with old, constant speed booster systems (especially those with out-of-date logic controls) faced the biggest challenge. While newer booster systems and programmable logic controllers allow for easy adjustment, landlords and owners with older equipment had no way to accommodate. In these cases, mandated water metering was the easiest option for reducing the risk of equipment damage.

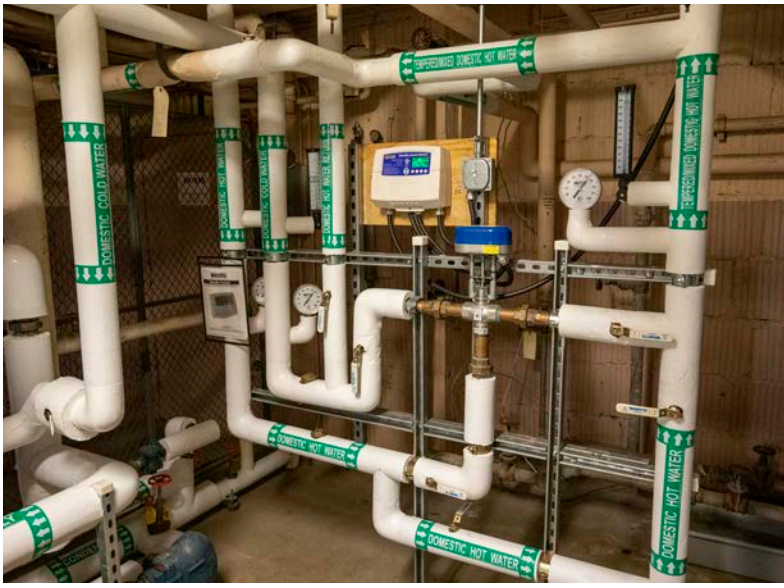
A Steady Flow for Sanitary Systems

Along with flush valves no longer functioning if pressure falls too low, wastewater systems are susceptible to blockages if an extended shutdown occurs without necessary preparation. This may not cause any immediate issues but can lead to significant problems over time.

For example, when restaurants or dining halls (such as those on university campuses) shut down systems that normally would have a large regular flow of water in the sanitary system changed to very little or no flow at all. Fats, grease, and normal solids found in these types of systems would settle out in the piping. When use returned to near normal levels, these solids obstructed lines could lead to back-ups and pump damage or failure. For older pumps sitting in wet wells, removing blockages becomes a costly, time consuming, and hazardous process. The easiest way to mitigate potential issues is by running hot water to flush the system and regularly verifying the operation of all pumps. Fortunately, modern equipment is designed for easy maintenance and greater control.

Self-priming pumps are designed for easy cleaning and sit above rather than in the well. Similarly, intelligent/connected pump controllers, such as Metropolitan's LMS II and the Ion IntelliPump, allow you to quickly assess pump status and even receive alerts if issues occur.

Metropolitan Industries' boosters, self-priming pumps, and temperature control systems implore state-of-the-art technology, making the management of water systems easier.



Staying Out of Hot Water with Fixed Temperatures

Pressure can affect hot water by eliminating the balance necessary for temperature-actuated shower valves to function properly. Maintaining a steady temperature in your water supply remains crucial for human health, as well.

At first, it may seem wasteful to heat water if there's no one to use it. After all, wouldn't it be more environmentally friendly to power down and save energy? The short answer: No. Letting your water sit as part of a green initiative simply creates the perfect breeding ground for legionella and other bacterial growth. Legionella already exist in our potable water supply but are contained with treatment and temperature. When water sits, especially in the warmer months where it can remain in a tepid range (~90 degrees), bacteria develop and the entire system will likely need to be treated and flushed, eliminating any of the cost and environmental savings that might have been achieved.

A master mixing valve allows you to store water at a hotter temperature to eliminate bacterial growth (~140 degrees) and help prevent contamination. These mixing valves should be left on despite downtime and, with a valve such as our MetroMix, you can schedule temperatures based on use, allowing you to save money and the planet without risking health issues.

We won't try to argue that there's an upside to the extended bouts of downtime many industries have seen. However, the lessons learned as a result are important and leave business better prepared for the future. We were here to help when this all started, and we'll still be just one phone call away the next time the unexpected occurs, but with the above in mind and the right equipment in place, you might not need to pick up the phone.

Key Issues to Address in the Crawl Space Prior to Encapsulating

By: Martin Hawrysko

The removal of loose wires and excess debris across the crawl space floor is one of the several measures that should be addressed prior to encapsulating a crawl space.

By now, there is a general understanding that excess moisture, the entry of soil gases (including radon), and mold growth compromises the air quality within a crawl space. Health experts and building scientists agree that as compromised crawl space air circulates upward, it will negatively impact the air quality throughout the entire home. The encapsulation of a crawl space, which involves the installation of a highly durable and moisture resistant wall and floor liner, is one of the most effective ways to protect against such consequences.

As a manufacturer of professional grade waterproofing products, Emecole Metro is a prominent supplier of encapsulation materials for contractors servicing wet and musty crawl spaces. Our selection of liners, seaming tapes, and installation accessories, as part of the EmeSeal System, are relied upon to transform wet and musty crawl spaces into dry and healthy spaces in homes throughout the United States and Canada. To ensure that a home experiences the full benefits of an encapsulated crawl space, there are some preliminary measures that should be completed to ensure no issues later compromise the sealed system. Such pre-measures generally are not included in a contractor's quote for the encapsulation and instead are likely to be listed as separate line items.

Basic Measures to Complete Prior to Encapsulating the Crawl Space

Prior to encapsulating a crawl space, any debris or existing storage should be removed to ensure that movement around the crawl space is not restricted. This also includes any hanging hazards, such as dropped or loose wires or ductwork that otherwise may get in the way or potentially become a safety hazard. Loose wires or ductwork can be secured to floor joists using zip ties.

Crawl spaces with dirt or stone surfaces should be smoothed as flat as possible. Contractors may use a rake or a come-along to remove any dips or valleys that otherwise can collect water. Removing any differences in the surface level will make it easier to move around the crawl space during the installation as well as after.

It is recommended to inspect for any opening or gaps that may exist in the crawl space. These should be repaired to prevent unwanted entry from pests, water, soil gases, or hot/cold air (depending on outside temperature at the time).

Lingering Water & Moisture Issues to Address Prior to Encapsulating the Crawl Space

If standing water is a reoccurring problem in the crawl space, it might be necessary to consider adding a sump pit and sump pump – or to replace an existing sump pump if unable to keep up with the amount of incoming water. Any improvements to an existing sump pump or pit should also include the installation of a sealed sump pit cover that bolts to the floor, providing an additional stopgap against the entry of moisture and soil gases. An additional option for severe standing water problems may also be to install an internal drainage system.

Issues with standing water or excess moisture may eventually lead to mold growth. Crawl spaces are an ideal breeding spot for

mold due to their low air flow and high humidity. Mold may be present even without being visible (musty smells are usually an indicator). Since mold has an immediate effect on air quality, it is vital to clean and disinfect any visible growth by spraying or fogging within a contained environment to effectively kill any spores circulating within the air.

While addressing standing water, contractors encapsulating crawl spaces using the EmeSeal System have the option to install EmeSeal Drain Fabric or Emecole Metro's Dimple Board under the liner. Either option allows for water movement below the liner surface, eliminating pooling that otherwise may become problematic over time.

Any cracks that have developed in poured concrete walls should be addressed. The most effective way to repair these cracks is the low pressure crack injection process, which completely fills cracks to ensure they no longer allow in water or soil gases. For cracks in concrete block, contractors may consider tuckpointing or drain tile systems as a means to stop or minimize the entry of water.

Cracks may also have developed in crawl spaces with concrete floors. Just as with concrete walls, cracks in concrete floors should be properly filled to protect against water and soil gas entry. If water is regularly rising through concrete floor cracks, that may indicate a problem with water table drainage. This is another potential issue to be mindful of and addressed.

A Successful Dry and Healthy Environment

Regardless of what pre-encapsulation measures may be necessary for a particular crawl space, Emecole Metro's concrete repair and waterproofing products provide contractors a one-stop shop to successfully address lingering issues involving concrete, water intrusion, and humidity. The selection of available liners, from 10 mil to 250 mil, within the EmeSeal System allow contractors to successfully encapsulate crawl spaces to meet each customer's specific requirements.

Ensuring that the above measures are completely followed will ensure that the overall crawl space encapsulation job is a success, resulting in a dry and healthy environment throughout the entire home.

The Emeseal Crawl Space System features a variety of manufactured liners, developed to address problems associated with moisture and soil gases. Our selection includes liners for floors, walls, combo liners, and more.

Protecting your basement from flooding is as

1

Our line of storm and sewage pumps is built with the highest quality components to ensure the utmost durability and reliability. We offer pumps for a variety of residential and light commercial applications. Our pumps are relied upon by plumbers and homeowners to meet the most demanding storm and sewage water challenges.



2

Our pump control products feature Ion Digital Level Sensors in place of standard float switches. The sensors feature solid state sensing technology with no moving parts to wear or fail. We offer a variety of switches and controllers that can control multiple pumps, monitor precise water levels, alert to problems, and more.



3

Our battery backup systems use an inverter, allowing the pump to bypass the battery and run off standard AC electricity when there is power. When power is lost, the inverter will convert the DC battery to AC, running the pump at its highest capacity during the duration of use.



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Ion Cloud Smart Valve™

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Remotely monitor and control your water usage from your smart device. The Ion Cloud Smart Valve™ is capable of detecting water flow as low as 0.018 gallons per minute. Prevent property damage by automatically shutting off the water when a leak is detected.

Patent Pending, Patent No. US 10,526,772, US 9,989,394, & CA 2,841,432

AGING COLLECTIONS SYSTEM GETS A LIFT WITH METROCLOUD SCADA

By: Emily Shoop

Like many municipal organizations, Lake in the Hills Sanitary District (LITHSD) was dealing with aging infrastructure. As equipment fails, municipalities are left with the choice to replace the equipment or upgrade their systems with more efficient, reliable, and secure equipment. As a leader in providing innovative and cost-effective solutions, Metropolitan Industries, Inc. can help municipalities upgrade their infrastructure.

LITHSD reached out to us about infrastructure upgrades since we have been working with them for several years. They knew we have the capabilities to work with municipalities to create a custom solution to their problem that works with their budget and timeline. When talking about upgrading their older lift station controllers, we suggested that they upgrade to our LMS II lift station level management controller, which utlizes cloud SCADA. MetroCloud is Metropolitan's secure and dedicated cloud SCADA water and wastewater monitoring service. At the time, LITHSD's systems utilized an older SCADA system that was costly to maintain and had unreliable communications.

Even with the drawbacks of an old SCADA system, we understand cloud SCADA can seem like a big undertaking to those who may feel skeptical, so we invited LITHSD to attend one of our cloud SCADA seminars hosted on-site at Metropolitan's headquarters. At our seminars, end-users can learn about the benefits of MetroCloud and participate in live demonstrations. Our training seminars are free of charge and satisfy IEPA credit requirements for water system and wastewater operators. After the seminar, LITHSD was ready to begin upgrading their system.

We started by upgrading one lift station to the LMS II and MetroCloud. Starting with one of their smaller systems on the cloud allowed the district to test it out. The district quickly saw the benefits of MetroCloud compared to their old system. "It only took us a couple of weeks to convince us that MetroCloud was way nicer than any system we previously had," said Mike Nelson, Assistant District Manager of LITHSD. The district found MetroCloud much easier to use, and it provided more detailed information on their system. After experiencing the benefits of MetroCloud firsthand, the district was ready to upgrade its remaining lift stations. Over the course of a little more than a year, Metropolitan upgraded six lift stations for LITHSD, and also included the implementation of MetroCloud at their wastewater treatment plant, which included a variety of rehabbing and replacing controls for several processes at the WWTP.

Existing Lift Station Controllers that needed replacing were upgraded to our standard LMS II controller. The LMS II level management system is a pre-programmed level controller with a color touch screen operator interface. The system allows users to alter pump options, transducer options, and more,

Five lift stations that service Lake in the Hills Sanitary District. Systems are custom built to meet the specifications of each site. Each system arrives at the site pre-wired, pre-tested, and ready to go.

providing access to SCADA features. The system is a menu-configurable, constant speed or variable speed compatible, pump-down level controller, allowing for the control of one to three pumps, with optional pre-programmed configurations for single and dual-level transducers, 0-20 MA flow meter input, and a completely redundant float backup controller.

As LITHSD upgraded its lift stations to MetroCloud, they were immediately able to enjoy the benefits it has to offer. Their old SCADA system did not provide detailed information on the overall operation of their system or any specifics on alarm conditions. Any time an alarm went off, the old SCADA system did not indicate what the cause may be. Someone would have to go to the site to diagnose the problem and decide what to do to fix it. With MetroCloud, they can remotely see what is happening with their system, determine a course of action, and even make certain adjustments without physically being on-site, saving time and money. "It makes my life so much easier as a maintenance guy," said John Caccamo, Maintenance Supervisor.

The information available with MetroCloud can help municipalities be proactive to potential problems. The district was able to see that a pump at one of their lift stations was beginning to pump fewer gallons each day. They were able to diagnose that the pump was starting to plug. By monitoring their system through MetroCloud, they saw this and fixed it before it became a problem.

LITHSD reduced their monthly SCADA costs by 97% when they switched to MetroCloud away from older hard-wire telephone lines. In addition to lower communication costs, now they have even more systems tied into the cloud, which provides a more robust overview of their entire system. By reducing the cost of SCADA, customers can use those funds towards other infrastructure improvements. And MetroCloud does not charge for regular software and system upgrades to our SCADA systems, assuring all of our users get all security patches, software updates, and new features for free. Since there are zero on-site servers, we maintain all of these updates, leaving operators to focus on operating their systems.

Upgrading to MetroCloud saved Lake in the Hills Sanitary District significant money on their SCADA costs and made it easier to monitor and operate their system. Municipalities can upgrade their aging infrastructure without breaking the bank and have peace of mind that Metropolitan will be there to assist them throughout all stages of their infrastructure upgrades. "It works wonderfully– it's just been awesome," said Tamara Mueller, District Manager & FOIA Officer.

For more information on MetroCloud, visit our website www.metrocloud.us

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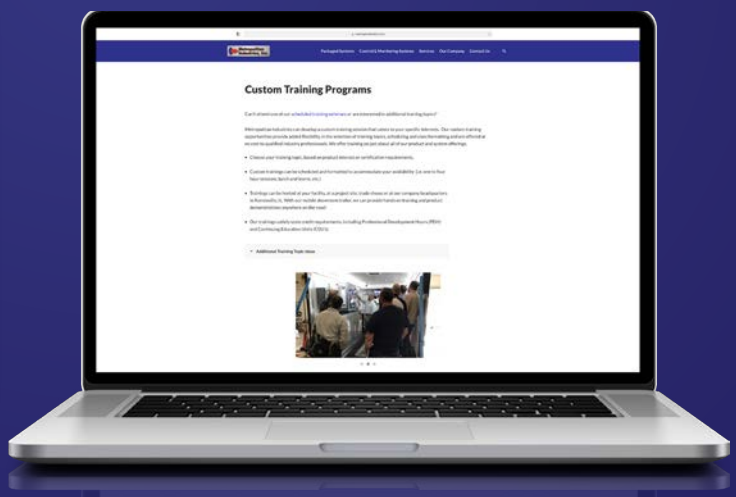

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Our trainings satisfy state credit requirements, including Professional Development Hours (PDH) and Continuing Education Units (CEU's). All seminars are conducted at our facility in Romeoville, Ill. All courses are free of charge and lunch is always provided.