Confined space entry presents significant hazards to municipalities working with below ground pump stations. The flooding of below grade stations can lead to an emergency service call and cause catastrophic damage of system equipment, often costing owners greatly for expedited repair or even replacement.

More importantly, confined spaces present health threats to entrants. Atmospheric conditions such as lack of oxygen, dense gases and additional dangers force operators to follow stringent guidelines when entering confined spaces to ensure adverse health consequences are avoided.

At Metropolitan, we believe upgrading below ground pump stations with above grade solutions most effectively protects both the investment of systems and the lives of equipment operators.

While eliminating confined space entry entirely should be the end goal, our above grade solutions can significantly reduce the frequency workers must enter confined spaces. With a comprehensive submersible pump retrofit, the need to enter confined spaces can be completely eliminated.

An illustration of our ability to retrofit below ground pump stations can be demonstrated by the work done in the village of Chicago Ridge, Ill. looked to Metropolitan Industries for an emergency solution.
Ill. Faced with severely damaged system equipment, including pumps and controls due to a below ground vault flood, the village turned to Metropolitan to provide a quick solution.

“During a heavy rain event, a sump pump situated in the pump station’s dry pit malfunctioned allowing sewage to flow from the wet well to the dry well, causing the dry well to flood,” said Metropolitan municipal salesperson Keith Girup. “Unfortunately, due to the dry well flooding, the customer’s investment, including pumps, controls and power distribution equipment, was completely submerged underwater and caused irreparable damage. An immediate emergency retrofit solution was required.”

In order to get the pump station up and running in an accelerated fashion, the village elected to bake dry the pump motors, which were eventually placed back into the below ground station. To reduce the occurrence of entering the below ground confined space and protect the investment of system controls, Metropolitan supplied the village with an above grade control traffic box.

Included with the traffic box package was Metropolitan’s new LMS II level management system. Completely off the shelf and designed to provide customers with vital SCADA features at a cost-effective price, the LMS II control package played a key role in supplying the village with a prompt solution.

Developed by Metropolitan’s research and development team, the LMS II is a menu-configurable, constant speed pump down level controller, allowing one to three pumps, single/dual level transducers, 0-20 mA flow meter input, and a completely redundant float backup controller. Seal fails and thermal inputs are available by default.

The LMS II can be accessed directly at a lift station on its easy-to-use color touch screen interface or controlled remotely via a laptop.

With the inclusion of an internet connection or cell modem, and Metropolitan’s MetroMail™ alarm-dialing system, users can receive alarm notification via any SMS text or email compatible device.

“In developing the LMS II, our goal was to create a standard program with options that covered 90 percent of all lift station applications,” said Metropolitan research and development manager Wayne Barkley. “This program gives us a systematic solution to designing lift station controls, eliminating much of the excessive labor associated with the design, engineering and programming of controls. Right out of the box, this system can serve many stormwater and sanitary stations with one program.”

Girup said the LMS II can fit a variety of lift station uses and is especially advantageous for consumers who seek to one day implement a master SCADA or building automation system. The LMS II is can also be used in commercial applications.

“Each LMS II unit can be defined as a distributed SCADA system, providing substantial benefits to owners who may have plans to one day build a centralized SCADA system with master computer,” said Girup. “The LMS II has the capability to communicate with owners via email and/or text message, and can also be viewed via the internet for current system information, as well as historical data trends. The LMS II allows for a phased distributed SCADA approach, which can ultimately be tied

Metropolitan’s new LMS II level management system contains a standard program to cover nearly all lift station applications.
October 11, 2012 proved to be a very busy, but enjoyable day at Metropolitan Industries as we held our 55-year Anniversary Celebration and Open House.

After months of preparation, we welcomed guests to tour our 100,000-square-foot facility to see our unique capabilities firsthand. Product displays and demonstrations from our residential, municipal, and commercial — plumbing and mechanical divisions were on hand, including new offerings such as the Ion® Endeavor and Ion® Gateway monitoring and alarm system.

Outside, we were fortunate enough to have beautiful weather as we hosted tours of our Ion|StormPro® display trailer and “MetroGreen” energy-independent facility. Activities included a bags tournament, which began at 2:00 pm. The winning teams were awarded prizes.

Present for the Open House was the Metropolitan-sponsored Budd Road Boyz racing team, which brought its drag racing car and racing display trailer. Metropolitan’s own Dan Howorth (municipal sales) and Bob Svobada (fabrication department) are part of the team, and were happy to showcase their dragster to guests.

Following our Open House, we were pleased to welcome the Will County Governmental League, as it held its 2012 meeting at our facility. In attendance were over 80 people, including various politicians and firms that conduct business in Will County. Metropolitan employees were hosts, volunteering to assist attendees with anything they needed throughout the event.

Metropolitan would like to sincerely thank all who attended our Open House and the Will County Governmental League for choosing our facility for its recent meeting.
Load Sharing U.S. Patent Announcement

Metropolitan Industries Inc. is proud to announce that the company has been issued a system and method patent by the U. S. Patent Office (No. US 8,180,496 B2) which will allow dissimilar variable speed pumps to be controlled in a way never before possible. We have elected to market our programmable logic control systems utilizing this technology by using the term “load sharing.”

The development of load sharing should be very welcome news to anyone attempting to operate any liquid transfer or pressurization system through the use of dissimilar pumps or other challenging hydraulic scenarios. The load sharing process allows Metropolitan to manufacture specialized variable speed control systems for pumping applications which have multiple dissimilar pumps or pumps which need to operate together under varying hydraulic conditions.

Load sharing will eliminate conditions during which one or more pumps operate under high or extremely high energy load conditions, while other pumps within the system are extremely under loaded electrically. These operating conditions are undesirable because they typically cause the pumps to operate well outside of their zone of peak hydraulic efficiency. Load sharing, in essence, is a way of ensuring that all dissimilar pumps within a system tend to operate at peak hydraulic efficiency, regardless of the hydraulic load of the process they are feeding, the hydraulic conditions under which they are operating, and the varying load profile of each pump.

Load sharing defined:

Load sharing is a dynamically-equalizing process by which two or more dissimilar pumps, with dissimilar hydraulic characteristics or operating under dissimilar hydraulic conditions, are operated in unison to accomplish a common task, while drawing a commonality of electrical energy proportional to their individual load characteristics. The process is dynamic because the electrical power load of each pump on the system is continuously compared to the maximum load of the unit. In addition, the electrical power load of each individual pump is also continuously adjusted in proportion to each of the other units, so that the percent load of
each unit is proportionally matched by all other units. As such, each of the pumps on the system will very likely operate at rotating speeds which differ from one unit to the next, while attaining the exact same desired set point task.

**Common task clarified:**

The grouping of pumps must be programmed to accomplish the same set point task, whether the task is to maintain a common line pressure, maintain a common outlet temperature, maintain a common pumped water elevation or, in some instances, a combination of two of these tasks.

**Commonality of proportional energy explored:**

The load sharing program will adjust the speed of each pump individually while maintaining the common task set point(s), so that the power load (or kilowatt consumption) of each pump in the group is proportional to the load of all pumps in the group.

Example scenario: One 20 HP pump will operate at 10 BHP, while two 60 HP pumps each operate at 30 BHP. In this scenario, each pump in the system operates at 50 percent of its peak load. This process dynamically and continuously varies proportionally, as the demands of the pumped process changes.

**Real world examples:**

The load sharing process we’ve patented is designed to be very flexible, allowing the technology to be adapted to a variety of applications. The technology will provide us with the unique ability to tackle some of the most challenging hydraulic scenarios in the markets and industries we serve.

**Multiple pumps with dissimilar flow capabilities:**

One or more smaller jockey pumps (or lead pumps) can operate with one or more larger duty pumps (or lag pumps). Possible examples would be a water pressure booster system for a large commercial building or, potentially, a municipal water pumping station. Pumps of various rated flows can work together, each with a shared proportion of their rated horsepower.

**Multiple pumps with dissimilar performance characteristics:**

One or more pumps with “steep” curve characteristics can operate with one or more pumps with “flat” curve characteristics. This is the perfect process control in a scenario where one or more multi-stage pumps need to operate in conjunction with one or more single-stage pumps.

**Multiple pumps, at different geographic locations, feeding a common process:**

A municipal pumping station at the east end of town can operate in unison with another pump station at the west end of town. Load sharing is a great solution, especially if the pump stations are at different elevations. Managing this type of application is also enhanced if the water main friction loss profiles are also very different at each end of town.

**Multiple pumps, with different suction pressures, feeding a common process:**

An exceptionally difficult process-control scenario can be overcome with relative ease. A municipal pumping application, including two or more gravity tanks at varying elevations, feeding a multiple pump system, with a single set point pressure, is an excellent application for load sharing technology.

**Multiple pumps with dissimilar motor sizes:**

By the nature of the pumps described, many of the scenarios mentioned above will inherently include pumps with various motor sizes. Load sharing will allow all of these systems to operate at their proportionally equal power load, which in itself will tend to ensure operation within the peak efficiency range of their individual performance curves.

Make no mistake: This process program is extremely unique and will be a very valuable asset to our clients while operating their most challenging pumping applications.

For more information regarding load sharing and any potential projects which may benefit from the process, please contact Metropolitan Industries senior systems engineer Brendan Bates at 800-323-1665 or sales@metropolitanind.com.
THE PUMPING WORLD'S ONE STOP SHOP! ™

At Metropolitan Industries, broadening our horizons has never been a foreign concept. Over the past year, we’ve partnered with new businesses and added new team members to enhance our ever-growing services and capabilities.

Perhaps nothing is more reflective of our commitment to meeting the highest of industry standards and adapting to serve the most complex needs of our customers than the expansion of our commercial division.

Due in large part to the division’s expansion, Metropolitan Industries is now equipped with the sales, service, engineering and fabrication prowess to serve a wide range of mechanical heating applications.

A case study depicting one of our many new abilities can be portrayed by a project completed for a local educational institution. Faced with an aging steam bundle used to heat a domestic hot water storage tank, the customer and project contractor turned to Metropolitan for a specialized solution of engineering and supplementation of equipment.

“We were contacted by the project contractor to supply a replacement steam bundle to be used in a tank heater application, which is primarily used during the winter months and provides domestic hot water to the institution’s athletic center, and food and sciences building,” said Metropolitan mechanical salesperson Mike Temes. “Because this storage tank fed two very critical facilities, it was imperative that the replacement steam bundle be sized accordingly to meet the domestic water demand.”

In order to supply the solution most resourcefully, Metropolitan conducted a field visit to appropriately size the steam bundle to be placed in the domestic hot water storage tank. Temes said Metropolitan’s engineering expertise played a decisive role in not only supplying the correctly-sized heat exchangers, but doing so while minimizing the time associated with delivery and installation.

“During the field visit, our engineering division was able to acquire all of the information needed to properly size the steam bundle without having shut down the system, drain the domestic hot water tank, and remove the existing steam bundle,” said Temes. “This radically reduces the time typically spent with the replacement of steam bundles. This was advantageous for our customer not only because the new steam bundle was needed quickly, but also because additional funds related to the labor required to remove the existing steam bundle twice were not incurred.”

Temes said the domestic hot water storage tank required only one day of shutdown for installation and that the new steam bundle transitioned into the domestic hot water storage tank with little to no manipulation.

At Metropolitan it is always of absolute priority to provide our customers with equipment that meets all specifications and industry standards. In supplying the custom-sized steam bundle, Temes said this case was no different.

“Many times, customers seeking to replace heat exchangers that have aged 25 or 30 years may not be aware of state codes that have been implemented since the existing heat exchangers were last installed,” said Temes. “It’s not always as simple as replacing existing steam bundles with new models of the previous kind utilized. At Metropolitan, we consider it a commitment to our customers to monitor all industry standards to ensure all equipment we supply is approved by any and all engineering criteria, and delivers peak performance at a competitive price.”

Metropolitan provides shell and tube heat exchangers that can be customized for a number of applications including domestic hot water, process heating and cooling, condensers, heat recovery,
steam to water, water to water, and more. Single and double wall configurations are available in materials including copper, 90/10 cupro-nickel, 304/316SS, carbon steel and specialty metals.

An additional related offering is our plate and frame heat exchangers, which can be designed in multiple configurations for applications including HVAC, domestic hot water, chillers, milk processing pasteurization, domestic heating, brewing, heat recovery, and more. Single and double wall configurations, wide-gap plate designs, and brazed and welded plates are available.

In conjunction with our engineering, service and fabrication departments, Temes said the mechanical heating proficiency Metropolitan has acquired will allow us to design, manufacture, and provide innovative and multifaceted mechanical heating equipment to new bases of customers.

“Because we have so many exceptional capacities under one roof, the amount and type of intricate mechanical equipment we can now produce as single-source suppliers is nearly limitless,” said Temes. “From heat transfer systems to boiler feed systems, we guarantee our customers will receive the very most out of their mechanical heating systems.”

For more information, please contact Mike Temes at 815-886-9200, ext. 252 or sales@metropolitanind.com.

**Metropolitan Adds Two Product Lines**

Metropolitan Industries is pleased to announce it has reached mutual agreements with LAARS Heating Systems Company and M&G DuraVent on the representation and distribution of the LAARS and DuraVent product lines. Metropolitan will represent LAARS in northwest Indiana, northern and central Illinois, and all of Missouri.

A subsidiary of the Bradford White Corporation, LAARS specializes in high-efficiency residential and commercial boilers, combination boilers, water heaters and pool heaters. LAARS offers a full line of residential and commercial products designed to fit a variety of applications.

A member of the M&G Group, DuraVent has consistently been recognized as innovators in the venting industry. DuraVent venting products and related accessories are engineered to provide safe and high-quality performances in residential and commercial uses.

“The partnerships we have established with both LAARS Heating Systems Company and DuraVent illustrate our dedication to expanding our capabilities to serve more diverse customer needs than ever before,” said John Kochan Jr, CEO of Metropolitan Industries. “Both LAARS and DuraVent have displayed a strong commitment to adjusting to industry standards to ultimately provide technologically-advanced and superior equipment. We believe these partnerships with benefit all involved in the short and long-term futures.”

LAARS products, including the 95+ percent thermal efficient NeoTherm boiler, are now available from Metropolitan.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Dates Available</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential-Commercial - Plumbing Applications:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 CEUs (IEPA, ILDPH), 4 PDHs</td>
<td>4/17</td>
<td>8:30 am - 1:30 pm</td>
</tr>
<tr>
<td>Commercial-Plumbing - Sump &amp; Sewage Systems:</td>
<td>5/15, 11/20</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>Commercial-Plumbing - Water Systems:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booster Systems:</td>
<td>10/2</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>4 CEUs (IEPA), 4 PDHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Saving Strategies:</td>
<td>5/1, 10/23</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>4 CEUs (IEPA), 4 PDHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Discussion of Pressure Reducing Valves:</td>
<td>6/19, 12/4</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>Municipal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upgrade Your Existing System Today:</td>
<td>10/16, 11/13</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>4 CEUs (IEPA), 4 PDHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCADA 101:</td>
<td>4/24, 9/19, 12/11</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>4 CEUs (IEPA), 4 PDHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial-HVAC System Improvements:</td>
<td>5/29, 9/25</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>4 PDHs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basics of Steam/Heat Transfer Applications:</td>
<td>6/5, 8/28, 11/6</td>
<td>9:00 am - 2:00 pm</td>
</tr>
<tr>
<td>4 PDHs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Future dates to be added!