

PIPING SYSTEMS FOR WATER & WASTEWATER TREATMENT APPLICATIONS



WATER & WASTEWATER TREATMENT SOLUTIONS

- Xirtec® 140 PVC
- Corzan® CPVC
- Duraplus™ ABS Industrial
- Duraplus™ Airline
- Guardian™ Double Containment
- CustomGuard® Double Containment
- Centra-Guard™
- IPEX Centurion®
- Corrosion Resistant Valves



We build tough products for tough environments®

IPEX Integrated Solutions for Water & Wastewater Treatment Plants

As one of the world's leading suppliers of industrial piping products; IPEX offers a comprehensive range of integrated solutions to meet the needs of water and waste water facilities.

Superior to the competition, the IPEX system consisting of Pipe, Valves, and Fittings (PVF) ensures uniform performance throughout.



- Non-corroding properties ensure long-term performance coupled with low maintenance costs
- Lightweight thermoplastics are cost effective and easy to install
- Ease of installation and repair of systems makes IPEX the supplier of choice amongst facilities Maintenance Personnel
- IPEX products are available through an extensive network of local distributors
- Local sales representation provides support where and when you need it
- Onsite training, prior to installation, ensures systems are installed without issue
- Responsive product support is provided by our team of applications engineers, material scientists, technical sales representatives, and chemists
- Tool rentals are available should you need to service or expand an existing system
- Limited lifetime warranty on our products ensures peace of mind for you and your facility maintenance personnel
- Ask your sales representative for case histories showing similar installations



CHEMICAL DISTRIBUTION

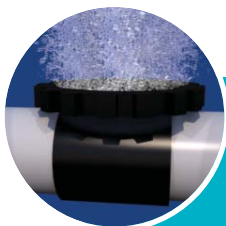
Xirtec¹⁴⁰ CORZAN[®] enpure[™]

The operation of any Water & Wastewater Treatment Plant depends on the successful transportation of chemicals from storage tanks to the points of use. The piping material selected must be resistant to the chemical being transported. Our PVF systems offer resistance to a broad range of chemicals.

Our products have been successfully used in the transportation of these and other chemicals:

- Iron compounds such as Ferric Chloride – Xirtec[®] 140 PVC, Corzan[®] CPVC
- Alum (Aluminum Sulphate) – Xirtec140 PVC
- Hydrogen Peroxide (odor control) – Corzan 50%, Xirtec 90% maximum
- Potassium Permanganate (iron magnesium removal) – Xirtec 140 PVC
- Sulphur Dioxide (dechlorination before discharge) – (140°F) Xirtec140 PVC
- Sodium Hydroxide (pH control) – (140°F) Enpure[™] PP, Xirtec140 PVC and Corzan CPVC
- Sodium Hypochlorite (liquid chlorine disinfectant) – Xirtec 140 PVC and Corzan CPVC

* Examples listed above are provided as a guide only. Please ensure suitability with each particular system.



AERATION

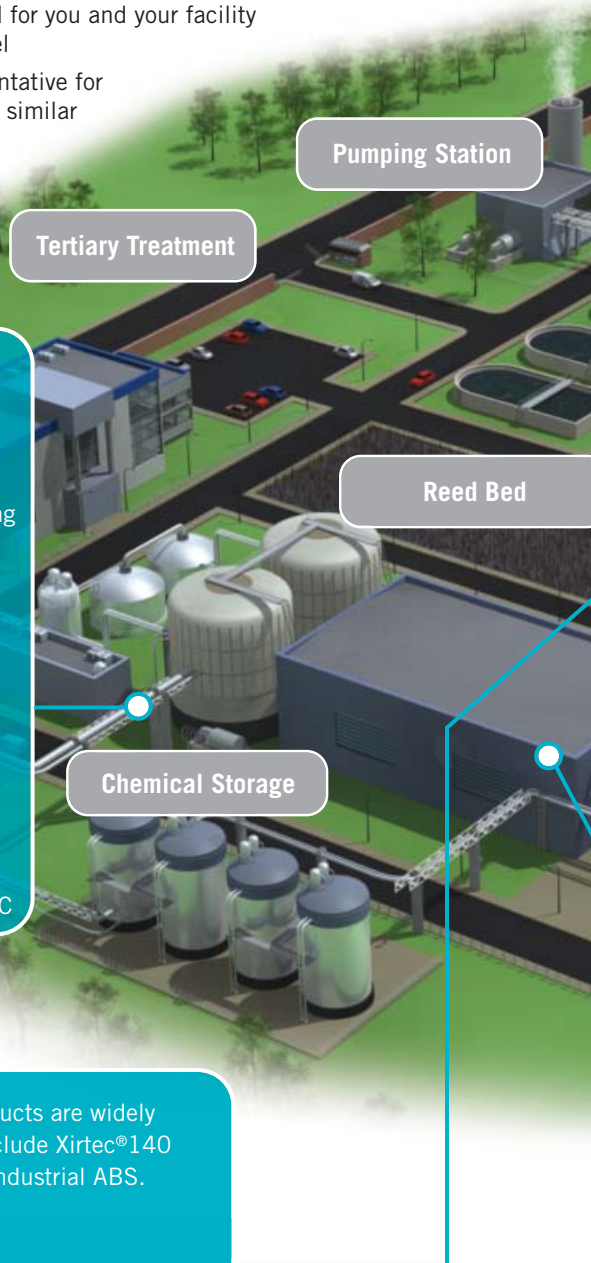
Throughout North America, our highly engineered products are widely used within the aeration process. Suitable products include Xirtec[®]140 PVC, Corzan[®] CPVC (warmer climate), and Duraplus[™] Industrial ABS.

Xirtec¹⁴⁰ CORZAN[®]

Xirtec 140 PVC offers an economical alternative to traditional materials used in the aeration piping process.

Duraplus[™]

Duraplus Industrial ABS offers additional impact strength and ductility even in cold weather environments.



EMERGENCY FUEL SUPPLY

CustomGuard® Centra-Guard™

CustomGuard® double containment piping systems are the ideal solution for the conveyance of diesel fuel. Our systems satisfy state and federal requirements; however, please check with your local regional authority for specific requirements.

- Minimize down-time, minimize risks, eliminate potential EPA issues, minimize replacement and maintenance costs
- Material take-off support
- Customized systems can be supplied as components or prefabricated systems
- Add additional peace of mind by utilizing our Centra-Guard™ automated leak detection system



CHEMICAL DISTRIBUTION – ADDED PROTECTION

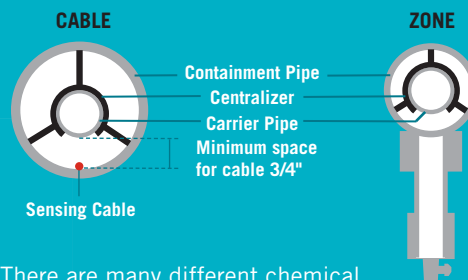
Guardian™

CustomGuard® Centra-Guard™

Double Containment piping has an inner and an outer barrier with an interstitial space that is monitored for leaks.



Electronic Leak Detection Options



There are many different chemical substances used throughout the treatment process; usually stored in above, or Underground Storage Tanks (UST). Almost all of these substances are classified by the EPA as hazardous.

- If buried, storage tanks and associated piping must be double contained
- If the tank is above ground and where 10% of the piping, by volume is below ground; the associated piping must be double contained
- If above ground and where less than 10% of the piping, by volume, is below ground these tanks and associated piping should be double contained. The primary reasons are as follows:
 - Local Regulations
 - State Regulations
 - Personnel Safety
 - Environmental Impact
 - Equipment Protection
 - Insurance Risk

TREATED/WASTEWATER DISCHARGE

IPEX CENTURION™ Xirtec¹⁴⁰

Once treated, the water can be discharged into the environment. IPEX PVC is the ideal solution for transporting treated water from the WWTP to the appropriate discharge point.

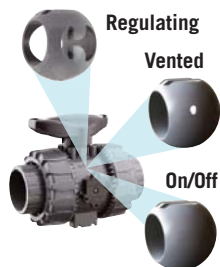
- IPEX PVC is available in sizes up to 60" diameter

FLOW CONTROL

CORROSION RESISTANT VALVES

IPEX offers one of the most comprehensive ranges of high quality, high performance thermoplastic actuated valves available today. Whether your valve is required for isolation, diversion, control, or throttling, IPEX has a solution to meet your needs.

- Valve types include ball, butterfly, diaphragm, check, and specialty
- Material options such as PVC, CPVC, PP, PVDF, and ABS make our corrosion-resistant valves ideal for use in a wide variety of WTP and WWTP applications



Odor Control

Primary Clarifier

Aeration Tank

Secondary Clarifier

Effluent Discharge

Pumping Station

Water Inlet

SALES AND CUSTOMER SERVICE

U.S. Customers call IPEX USA LLC.

Toll Free: (800) 463-9572

www.ipexamerica.com

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by the IPEX Group of Companies include:

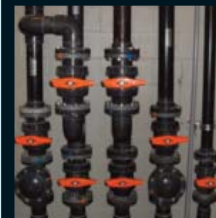
- Electrical
- Telecommunications and utility
- Industrial process piping
- Municipal pressure and gravity flow
- Plumbing, DWV and water supply
- Irrigation
- Electrofusion PE for gas and water
- Industrial, plumbing and electrical cements
- PVC, CPVC, PVCO, ABS, PE, PEX, PP and PVDF pipe and fittings

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A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.



IPEX Industrial Case Study

Water & Wastewater Treatment Applications

Dallas' Elm Fork Water Treatment Plant is Fit for the Future with IPEX Piping Systems



Funded through water and wastewater revenues rather than tax dollars, Dallas Water Utilities maintains three water treatment plants and nearly 5,000 miles of water mains to deliver 900 million gallons per day (mgd) of potable water from six different reservoirs to millions of customers in the City of Dallas and surrounding communities.

While the city currently has enough water to meet its needs, Dallas Water Utilities knows that even with conservation and reuse, additional water supply will be needed by 2035. To prepare for the city's future water needs, an improvement plan was approved that included renovating the Elm Fork Water Treatment Plant (EFWTP).

Elements of the EFWTP upgrade included improvements to chlorine and ozone destruct unit systems that involved new bulk chlorine storage tanks, evaporator units, chlorinators, ejectors and transfer, booster and recirculation pumps. The plant's East Chemical Building was also expanded to house a third 90-ton chlorine railcar and a new electrical and control room. All associated thermoplastic piping systems for the upgrades were also a part of the extensive project.

With chlorine, ferric sulfate and caustic soda all used in the water treatment process, the piping systems needed to be of the highest quality with plenty of options to meet various requirements for chemical resistance and leak prevention throughout the plant. Fortunately, piping systems from IPEX provided the quality, breadth of product and available options to effectively meet the plant's day-to-day operations.

“I would definitely consider specifying IPEX again in the future. The range of material, fittings and valve options to choose from really helps to meet the specific needs of any project.”

Shela Chowdhury, JQ Infrastructure

In all underground areas, the piping for the EFWTP upgrade was required to be double contained to protect against leaks. The IPEX Guardian™ Vinyl double containment piping system was selected as the system



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See Next Page

The compact VXE and VX ball valves offer an innovative floating ball flow control system that features a full-port, bi-directional double block design.



of choice. The Guardian double containment systems were comprised of approximately 2000 feet of 6-inch Xirtec®140 Schedule 80 PVC carrier inside 10-inch Xirtec140 Schedule 80 PVC containment. Another nearly 2500 feet of larger diameter 10-inch carrier inside 16-inch containment and 8-inch carrier inside 12-inch containment were also deployed.

For underground ferric sulfate piping for transfer of chemical from bulk storage tanks to day tanks, the Guardian double containment systems consisted of 360 feet of 4-inch Corzan® CPVC carrier inside 8-inch Corzan CPVC containment.

To reduce system installation and maintenance costs, the IPEX Guardian system features a patented Centra-Lok™ design, reducing the required joints by 40-60% compared to traditional double containment systems. And less joints means less potential for problems and greater overall system integrity. The Guardian system is also available in spool piece fabrications according to specific application designs.

“Larger diameter double containment systems are not as common and can be tricky to install. The IPEX Guardian system was good to work with and the system passed pressure testing better than what we expected,” said Mike Hughey with Archer Western, a member of the Walsh Group that specializes in general contracting and construction management. “We asked our IPEX sales representative, Bob Dragisic, for training on joint installation and ended up learning about a better solvent cement for the joints that would also be suitable for all piping on the project.

Throughout the underground double containment piping systems, leak detection stations were deployed at various low points to provide the ability to check for potential leaks.

To control flow for redundancy and enable isolation of piping sections for maintenance, the EFWTP used IPEX VXE and VX Series Ball Valves in several different supply areas and branch points throughout the plant. The compact VXE and VX ball valves offer an innovative floating ball flow control system that features a full-port, bi-directional double block design. Their true union style allows the valves to be easily removed from the piping system and fully serviced. Available in both PVC and CPVC for use throughout all areas of the plant, the valves offer a threaded seat stop carrier that provides improved seal integrity under tough service conditions and a removable handle that also functions as a tool for ball seat adjustment.

For use with the ball valves, IPEX EasyFit SXE Series True Union Ball Check Valves were used to ensure reliability by enabling positive shutoff in both vertical and horizontal installations in the presence of back pressure.



IPEX PVC & CPVC systems were painted brown with latex paint for chemical identification and UV protection.

“IPEX offers high quality valves and flanges that I would definitely recommend. Plus, they were the only supplier that could meet the specification on some of the valves,” says Hughey. “Due to the need for consistency, we were also able to get IPEX specified for some of the valves that they were not originally specified for.”

Shela Chowdhury, one of the project’s yard piping designers with JQ Infrastructure, the civil engineering firm for the EFWTP project, had never worked with IPEX products before and was ultimately impressed with the company’s responsiveness, material options and range of pipe, fittings, and valves.

“IPEX had the material compatibility we required for some of the chemicals used at the treatment plant,” says Chowdhury. “I would definitely consider specifying IPEX again in the future. The range of material, fittings and valve options to choose from really helps to meet the specific needs of any project.”

With the first phase of construction nearly complete at the EFWTP, the City of Dallas has several additional improvements planned over the next few years for biological active filtration to meet regulatory requirements and rehabilitate a deteriorated pump station to further improve reliability. With IPEX Guardian double containment, Xirtec140 pipe, fittings, and valves in place, the plant is well equipped to move forward with additional improvements and continue to deliver water to the growing Dallas population.

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IPEX Industrial Case Study

Water & Wastewater Treatment Applications

IPEX Thermoplastic Piping Systems Deliver Potable Water and Conserve Groundwater in Sugar Land, Texas

Founded as a sugar plantation in the mid 1800s, Sugar Land is one of the most affluent and fastest-growing cities in Texas, having grown more than 158% in population over the last decade. With such development, it's no wonder that the City of Sugar Land needed a better way to provide potable water to support the population while reducing dependence on the existing groundwater withdrawal method that



The City of Sugar Land Surface Water Treatment Plant delivers 9 mgd of potable water to residents.

had been contributing to flooding problems in the region. In fact, the Fort Bend Subsidence District mandated reduction of groundwater use by 30% in 2013 and 60% by 2025.

After nearly a decade of planning, the City recently approved the construction of a new \$69 million surface water treatment plant in the Gannoway Lake area adjacent to Kempner High School. Expected to be operational in late 2013, the Sugar Land Surface Water Treatment Plant (SWTP) will utilize raw water from Oyster Creek, a local creek that parallels the Brazos River, to produce 9 million gallons per day (mgd) of drinking water. From retention ponds, to pump stations, treatment and filtration, the surface water from Oyster Creek will ultimately be turned into potable water for Sugar Land residents—all through a complete

thermoplastic piping system from IPEX – comprised of single-wall and double containment polyvinyl chloride (PVC) and chlorinated polyvinyl chloride (CPVC) pipe, fittings and manual and automated thermoplastic valves.

At the new Sugar Land SWTP, water from four retention ponds is pretreated and then pumped to the treatment facility where coagulation and flocculation systems treat the water and remove suspended solids, sediment and turbidity. The water then flows to a low-pressure membrane ultra-filtration system that removes any further organic molecule contaminants to create potable water that goes through a final granular activated carbon system prior to distribution.

Anywhere the chemical treatment system flows underground from storage or pump systems, double containment pipe and fittings are required to prevent any possible leaks or spills into the surrounding groundwater. For the double containment, the Sugar Land SWTP used the



The IPEX Guardian™ Vinyl double containment system was required for underground runs, which transitioned to IPEX single wall PVC and Corzan CPVC inside the facility.

IPEX Guardian™ Vinyl double containment system. The Guardian system was comprised of both Xirtec®140 Schedule 80 PVC and Corzan® Schedule 80 CPVC carrier and containment pipe and fittings, ranging in size from 1/2-inch carrier inside of 2-inch containment to 2-inch carrier inside of 4-inch containment.



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See Next Page



IPEX Corzan® CPVC pipe, valves and fittings are used in areas transporting highly-corrosive chemicals.

To control flow throughout various areas of the SWTP, a variety of IPEX ball valves are utilized. IPEX EasyFit VXE Series Ball Valves were used for smaller pipe diameters of up to 2 inches, while VX Series Ball Valves were used for larger pipe diameters of up to 6 inches. These compact ball valves feature a full-port, bi-directional double blocking design. Their true union style allows the valves to be easily removed from the piping system and fully serviced. Available in both PVC and Corzan CPVC for use throughout all areas of the Sugar Land SWTP, the valves offer precise machined ball and stem components that provide improved seal integrity under tough service conditions. The ball valve handle also functions as a tool for ball seat carrier adjustment.

“While we’ve installed piping for many years, double containment was somewhat new to me,” says James Schmerber, project manager with LEM Construction who provided design assistance and installation services for the new treatment plant. “IPEX set up demonstration training for our crews, and we found that the system was ultimately as easy to install as single-wall PVC and CPVC piping systems from IPEX.”

IPEX Guardian double containment systems offer a complete selection of pretested modular components which are extremely easy to install. Compared to conventional double containment piping systems, the patented Centra-Lok™ design reduces the number of overall joints by up to 60% and the number of field joints by up to 10%. Since joints are always the most common source of premature failures and leaks, it is easy to realize the immense impact the Centra-Lok design has on maintenance, repair and installation costs.

Areas within the treatment facility, including the chemical and membrane areas, consist of IPEX single-wall Xirtec140 PVC and Corzan CPVC pipe, valves and fittings.

“The treatment chemical specification originally called for all PVC, but due to the chlorine dioxide, sodium hypochlorite and sodium chlorite chemicals used in the treatment process, IPEX application engineers recommended Corzan CPVC for those areas,” says Schmerber. “The change in material, along with delivery times on some fittings and numerous inspectors on the site, caused some project and schedule challenges. However, Robert Dragisic, our IPEX regional sales manager was always easy to get a hold of, and he was extremely helpful in coordinating the chemical compatibility analysis and getting us the product we needed. It was nice to have such great customer service and one point of contact.”

For areas in the chemical treatment system requiring remote operation, the Sugar Land SWTP deployed electric actuated IPEX VKD Series Ball Valves with integrally molded mounting features that allow an actuator to be directly mounted on the top of the valve. These features also permit easy removal of the actuator from the valve for maintenance purposes. IPEX’s comprehensive line of pneumatic and electric actuated valves allow an operator to control a near infinite number of valves/functions with speed and precision, from a centralized remote location.

“In the membrane filtration area, we installed solenoid valves from IPEX for precise control in automated applications,” says Schmerber. “We also used IPEX sediment strainers to remove any solids and impurities.” IPEX Solenoid Valves are 100% duty cycle solenoid valves with an innovative lever-shutter design that offer precise control and high-cycle service. IPEX RV Sediment Strainers help protect critical pipeline components with a clear construction that enables easy inspection of the screen while in service and reduces operating costs with a bottom-entry design that enables maintenance on the valve while in-line.

For more than 20 years, IPEX has offered one of the most comprehensive lines of single wall and double containment pipe, valves and fittings—all engineered and manufactured to strict quality, performance and dimensional standards. With all the corrosion resistance and installation benefits, combined with the performance and longevity of easy-to-use valves, the thermoplastic piping system from IPEX at the newly constructed Sugar Land Surface Water Treatment Plant will reliably do what it is intended to do—deliver potable water to the surrounding community for many years to come while shifting them away from reliance on precious groundwater.



IPEX manual VXE, VX and electric actuated VKD Series Ball Valves were used throughout the facility to control flow as needed.

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IPEX Industrial Case Study

Water & Wastewater Treatment Applications

IPEX Guards 137 Million Gallons a Day at the Lakeview Wastewater Treatment Plant



Originally built in the late 1950s to handle an average flow of 2 million gallons per day (mgd), the G.E. Booth (Lakeview) Wastewater Treatment Plant (WWTP) is a key facility for the Region of Peel. In 2009, the facility underwent a \$260 million expansion to treat 137 mgd from the more than 1.3 million residents and 90,000 commercial businesses in the eastern section of Mississauga, Brampton, Bolton, and Caledon East.

Now expected to effectively meet the area's waste water treatment needs until at least 2031, the expanded Lakeview WWTP includes a new headworks facility, enhanced nitrification, a new biosolids handling facility and additional incinerator capacity. Upon completion of the project, Lakeview became the largest perforated-plate screening facility in North America and the largest fluidized-bed biosolids incineration facility in the world.

At the Lakeview facility, wastewater flowing through eleven primary sedimentation tanks is mixed with ferrous chloride at aeration tanks to solidify and remove excess phosphorus. After secondary clarifiers

“We chose the PVC Guardian™ double containment system because it offered the corrosion resistance we needed, and it was the most cost-effective option.”

Vlad Petran,
Manager of Wastewater Treatment

remove the additional solids from the wastewater, the wastewater is further disinfected before it flows over weirs and eventually discharges into Lake Ontario. The diffusion pipe system reaches more than 1.25 kilometers from the shore to the lake bottom. To ensure safety and reliability, the chemical feed system that transports the ferrous chloride diluted with carrier water is double contained to prevent any possible leaks or spills.

“The chemical feed system is a long system of pipes running through underground tunnels, and ferrous chloride is a very corrosive chemical,” explains Vlad



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See Next Page

IPEX Double Containment Systems

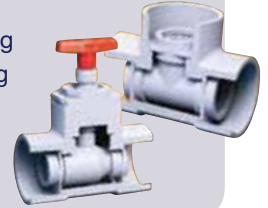
Xirtec[®]140

Guardian[™]

- Available in schedule 40, schedule 80 and SDR 1/2" through 24" sizes
- Completed systems of vales, pipe and fittings
- Easy to install



- Available in schedule 40 and schedule 80 1/2"-12" carrier and 2"-18" containment sizes
- Patented Centra-Lok[™] Design – minimizing potential for failures and leaks and reducing installation and maintenance costs
- Easy to install



Petran, Manager of Wastewater Treatment, Capital Works, Region of Peel, and former senior project engineer with AECOM Canada Ltd.* that designed the system. "Any leaks can create a safety hazard, as well as potentially cause damage to the concrete structure or other systems running through the tunnels. Using a double containment



system ensures a spill-free system for better reliability."

During the initial design phase of the Lakeview project, IPEX worked with designers to introduce its Guardian[™] Vinyl double containment

system. The Guardian system is comprised of 2" Xirtec[®]140 Schedule 80 PVC carrier pipe inside a 4" Xirtec140 Schedule 40 PVC containment pipe. To reduce system installation and maintenance costs, the Guardian system features a patented Centra-Lok[™] design that allows the system to be installed with full 20-foot lengths, while keeping the carrier pipe perfectly centered inside the containment piping. The system is also available in spool piece fabrications according to specific application designs.



"We chose the PVC Guardian double containment system because it offered the corrosion resistance we needed, and it is was the most cost-effective option," says Petran. "IPEX also worked with us to find the most economical way to design the system with expansion joints to accommodate the seasonal temperature changes in the tunnels. We also liked the fact that IPEX provided a local technical sales representative to work closely with us and the contractor."

Maple Reinders Constructors Ltd. of Mississauga, ON did the Guardian system installation. Maple Reinders is an award winning contractor with offices located across Canada. Project Manager Lyndon Grovum of Maple Reinders coordinated onsite training by IPEX for piping installers to emphasize proper solvent welding and other installation procedures prior to the job.

Visual leak detection stations were created using clear PVC S40 pipes.

"The plant operation staff was concerned about detecting any leaks in the system. To provide extra peace of mind and a worry-free system, IPEX provided clear tubes at visible low points in the system where potential leaks would be noticed," says Petran. "These detection points are inspected on a regular basis. The system is working as intended—we have not experienced any leaks since the system was installed in 2009."



For more than 20 years, Guardian systems from IPEX have been the benchmark in double containment piping in North America. With all the corrosion resistance, performance and longevity benefits of Xirtec140 PVC, the Guardian Vinyl double containment system improves overall safety at the Lakeview WWTP, while ensuring reliable service to the surrounding community for the life of the system.

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IPEX Industrial Case Study

Water & Wastewater Treatment Applications

IPEX Double Containment PVC System Protects Chemical Lines at North Toronto Wastewater Treatment Plant



Originally commissioned in 1929, the North Toronto Wastewater Treatment Plant is one of four wastewater treatment facilities operated by the City of Toronto. Located in the Don Valley, the plant currently serves a population of about 55,000. The facility operates at a rate of about 7.5 million gallons per day (mgd) with major treatment processes that include screening and grit removal, primary treatment, secondary treatment, phosphorus removal, effluent disinfection and dechlorination.

Before being discharged into the Don River, final effluent at the North Toronto plant is disinfected with sodium hypochlorite and dechlorinated with sodium bisulphate. The end result is a high-quality effluent that has consistently surpassed the requirements of the Ontario Ministry of the Environment (MOE). To ensure safety and reliability, the systems that transport the sodium hypochlorite and sodium bisulphate are double contained to prevent any possible leaks or spills.

"The Don River is a sensitive waterway and ecosystem, and the MOE has ordered all facilities in the area

"We have confidence in the Guardian™ product, and IPEX has also been easy to work with. They were very involved, even coming onsite to provide product demonstration and training."

Buddhika Liyanage,
Resident Engineer with AECOM

to use sodium bisulphate to bring chlorine down to safe levels," explains Umberto Lafarciola, Mechanical Foreman with Malfar Mechanical Inc., a Woodbridge, Ontario-based mechanical contractor that installed the piping on the project. "In the plant's containment area, piping from the pump stations delivers the disinfection and dechlorination chemicals, and we needed to use a double containment system due to the corrosive nature of the chemicals."

For the double containment system, the North Toronto plant used the Guardian™ Vinyl double containment



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See Next Page

IPEX Double Containment Systems

Xirtec[®]140

Guardian[™]

- Available in schedule 40, schedule 80 and SDR 1/2" through 24" sizes
- Completed systems of vales, pipe and fittings
- Easy to install



- Available in schedule 40 and schedule 80 1/2"-12" carrier and 2"-18" containment sizes
- Patented Centra-Lock[™] Design – minimizing potential for failures and leaks and reducing installation and maintenance costs
- Easy to install



system from IPEX. The Guardian system is comprised mostly of 2" Xirtec[®]140 Schedule 80 PVC carrier pipe inside a 4" Xirtec140 Schedule 40 PVC containment pipe. Some portions of the system also used 1" Xirtec140 Schedule 80 PVC inside a 3" Xirtec140 Schedule 40 PVC. To reduce system installation and maintenance costs, the Guardian system features a patented Centra-Lok[™] design that allows the system to be installed with full 20-foot lengths, while keeping the carrier pipe perfectly centered inside the containment piping. The system is also available in spool piece fabrications according to specific application designs.

"Guardian double containment was specified due to the corrosive nature of the sodium bisulphate. We believe that PVC provides excellent resistance to the chemicals," says Buddhika Liyanage, resident engineer with AECOM, a global provider of professional technical and management support services to environmental, energy, water and government facilities. "We have confidence in the Guardian product, and IPEX has also been easy to work with. They were very involved, even coming onsite to provide product demonstration and training."

Onsite training by IPEX was arranged for Malfar piping installers to emphasize proper solvent welding and other installation procedures prior to the job. "IPEX has always been responsive to our needs, and it gives me peace of mind to know that they will be there onsite when we need technical support and training," says Lafarciola. "For the North Toronto plant, the Guardian system performed perfectly. We haven't had any leaks or failures."

For more than 20 years, Guardian systems from IPEX have been the benchmark in double containment piping in North America. With all the corrosion resistance, performance and longevity benefits of Xirtec140 PVC, the Guardian Vinyl double containment system improves overall safety at the North Toronto Wastewater Treatment Plant, while ensuring reliable service to the surrounding community for the life of the system.



IPEX double containment ball valves were used.