



Serving the Pacific Northwest

# PumpTech Pipeline Providing Knowledgeable Solutions

## Simpson Tacoma Kraft Mill - Chopper Pumps & Mag Drives

Steve Manwell, PumpTech Bellevue

PumpTech's industrial division works with more than 240 manufacturing and processing customers in WA, OR and ID. We provide specialty pumps, custom pumping skids, couplings, controls and a host of other products. The wood products and paper industry ranks among the largest and Simpson is one of our most valued customers.

Simpson is one of the oldest forest products companies in the NW and operates lumber production facilities in Tacoma, Longview and Shelton. Its Tacoma Kraft pulp and paper mill specializes in natural and white linerboard which is used in corrugated boxes and food packaging. It also produces papers that are used in grocery bags, shipping sacks and



meat wrapping paper. Yet another product is unbleached pulp via the Kraft process. In addition to all of the above, it also recycles over 500 tons of waste paper and boxes daily.

PumpTech works closely with Simpson's Maintenance Engineers to evaluate equipment options that will lead to reduced down time and maintenance costs. Two very

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## 46 Year Old Hydronix Station Still Pumping in Tillamook

Don Carlile, PumpTech Canby

When you think of Tillamook, the first thing that comes to mind is cheese. The Tillamook Creamery Association was founded in 1904 and is one of the oldest manufacturers of cheese and



butter products in the NW. But Tillamook is also home to one of the oldest Hydronix pump stations.

Hydronix began manufacturing packaged pumping stations in Portland in the fall of 1966. One of the first completed was installed in Tillamook in early 1967 and is still in service after forty six years. It was a 300 series underground, wet well / dry well combo fabricated out of epoxy coated steel. The picture on the left shows the man hole over the wet well and the access hatch to the dry well. Also pictured is Eric Manning, Wastewater Technician with the city of

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## King County Water District 111 Chemical Feed & Intertie Packaged Vault Systems

Jack Boyd, PumpTech Bellevue

Factory-Built Vaults insure consistent quality and save construction time as the modular system arrives with all equipment completely integrated. PumpTech offers single source responsibility for all our Turn-Key Factory-Built (TKFB) stations. From walk-in, above ground stations to below grade vault systems, TKFB systems are considered superior to 'stick-built' systems and each year more water purveyors and consulting engineering firms are choosing TKFB solutions. In the final analysis such stations offer value added solutions for sophisticated application requirements.



Roth-Hill Engineers have utilized a number of factory-built vault packages for applications along the I-5 Corridor.



King County Water District 111 has several in operation and recently added an intertie and a chemical feed station along 132nd Avenue in Kent, WA.

The term "intertie" is often seen in electric power transmission systems and is defined as an interconnection that permits the passage of power between two or more utilities. In hydraulic terms piping interconnections can provide similar operational results for water and wastewater applications. The Tacoma Intertie Station is a pressure reducing (PRV) vault connected off Tacoma's Pipeline 5 Transmission Main which serves many local water suppliers. The intertie vault includes an electronically controlled Cla-Val PRV and a smaller, parallel Cla-Val that is hydraulically



operated. The vault also includes a packaged hypo chlorination system. The first two pictures on this page show the intertie vault during transport and installation. The others show the interior components including the controls, Cla-Val's and the chemical injection system.



Nearby a larger station (26' x 12'), called Duberry Hill, has been added. Duberry is a below grade chemical feed station. The design required a fluoride dosing package and upfront provisions for a hypo generation packaged system to be added in the future. The station includes a second hatch with a lift that is used to lower chemical bags and/or equipment into the station for easy off-loading. Control valves also may be required at some future date and all provisions have been made to add a parallel set of valves with no station modifications required. (See Page 4



for photos of the exterior and interior of the Duberry vault.)

Both vaults are heated, have automatic ventilation, humidity control, duplex sump pumps and local controls with SCADA and telemetry features. L2 Systems provided the controls for these stations, and TMG Services provided the chemical feed equipment.

Such forward system design insures that station modifications and any additional equipment that may



King County continues on [Page 4](#)

## Simpson Continues

successful options have been the installation of magnetic couplings and Vaughan chopper pumps.

Over the past few years Simpson has installed four magnetic couplings. The initial one was installed on the paper machine inching drive. Maintenance Engineer, Tom French, provided several examples of the benefits of magnetic couplings.



One of their large circulating pumps experienced surging due to its location in the process line. The surging resulted in coupling, seal, shaft and motor failures. After many attempts to resolve the problem they installed a MagnaDrive coupling and no failures have occurred.



A split case pump that provides lubricating water to the mechanical seals of two digesters was tripping its breaker due to high amps. The standard option would have been to install a larger motor but, the retrofit would have been difficult and the downtime was unacceptable. The MagnaDrive coupling was gapped to allow a small amount of slippage which resulted in a lower FLA and thus eliminated the tripping problem.



The photo to the right is the gear drive that powers the ash conveyor. A magnetic coupling provides a cushioned start that protects the motor when the belt is jammed or plugged.



It would not be unexpected that many of the pumping applications in a pulp and paper mill could be difficult at best. Many of the pumps installed in sumps tend to clog frequently due to the content of the pumpage. Over the past three years, ten problematic systems have been replaced with Vaughan chopper pumps. These pumps can handle difficult applications without clogging.

One of the more problematic applications was the ash pit. Wood waste is used to power the boiler and the abrasive ash is transferred for disposal via a conveyor

belt. Spillage is washed into the ash pit when it rains and is now removed via a chopper. In the past these pumps had a very short life, but the Vaughan chopper keeps on pumping.



Another is the stock chest sump. The pump in this sump recirculates the paper stock which has a consistency similar to that of oatmeal. This pump clogged continuously and since it was replaced with a Vaughan chopper there have been no clogs.



The bug pit collects process water from the clarifiers and uses a vertical Vaughan chopper to replace a non-clog that also clogged continuously. The chopper has not clogged in the three years since it was installed. In fact, they almost forgot it was there!



The chip pile sump collects rainwater and chips from the chip pile area. Wood chips are one of a chopper pump's favorite foods!



Simpson also replaced their plant sewage pump with a chopper. They almost forgot about this one too since it has not clogged in over three years.



In addition to working with the maintenance and operations personnel at Simpson, PumpTech also works closely with their purchasing department. Suzanne Klimek & Jackie White are purchasing agents at Kraft. Although reducing costs is a major goal, they also believe that their role is to partner with their vendors in order to provide the very best service for their plant operations and maintenance staff. Both Suzanne and Jackie give PumpTech a grade A for prompt quotes and on time deliveries. Jackie is a third generation employee and her father and grandmother still work for Simpson.

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## King County Packaged Vault Systems Continues

required as a system grows in size can be easily made. As with all factory-built systems where pumps, instruments, analyzers, electronic based controllers, telemetry and power panels are involved TKFB vaults insure a regulated environment that protects all of the equipment for added years of service.

As the station supplier, PumpTech provides single source responsibility for the integrated packaged system. Although we manufacture many of our own packaged stations, we



also represent Dakota Pump, a specialized fabricator of underground vaults, located in Mitchell, SD. Dakota has provided several large below grade Pump Stations for Tacoma BPU, as well as smaller control valve stations. PumpTech has partnered with Dakota to supply many recent applications in the Pacific Northwest over the past 7 years.

If you are considering an Above Grade or Below Grade Station, TKFB solutions offer several advantages. In addition to the QZCJ, UL listing for packaged equipment, TKFB solutions can save both time and money for the end user. They offer consistent quality and the added assurance of State Approved Structures. If they are below grade, climate control is standard feature.



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## Tillamook Hydronix Station Continues

Tillamook's Sewer Division. Eric is responsible for operation and maintenance of the station.

The station was designed by CH2M Hill in Corvallis and was specified around the "Compak" system that was manufactured by Cornell Pump Company in the sixties. The Hydronix 300 series met the specification and was selected for the installation. The pictures on this page show the entry area and several views of the interior of the station.



The original Allis Chalmers pumps remained in service until last year.

Although they were still operational, replacement parts became an issue so they were replaced in late 2012.



PumpTech purchased Hydronix in 2001 and produces its packaged systems in its Canby manufacturing facility. Many of the original stations are still produced, however, all have been reengineered to meet current codes and higher efficiency standards. They also offer more options and are available with PumpTech's iRover, on site and off site monitoring system. All Hydronix packaged systems are designed by PumpTech's engineering staff and are UL, QCZJ listed. For more information on our Hydronix offerings, contact your local PumpTech office.

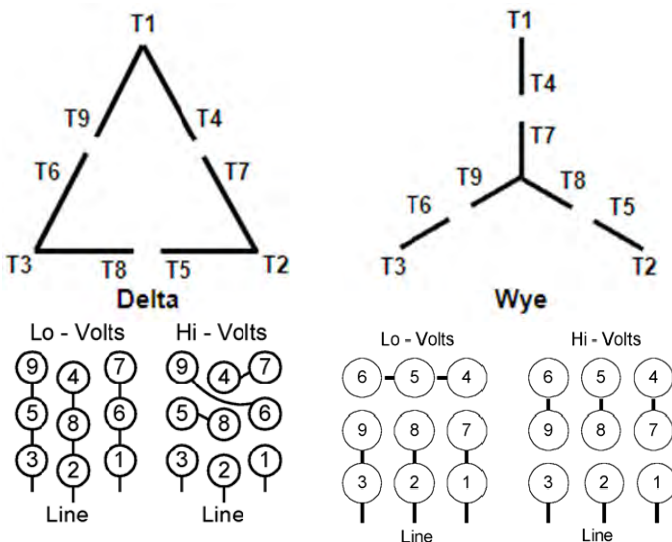
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## Pump Ed 101 – 9 Lead, Dual Voltage Motor Connections

Joe Evans, PumpTech Education & Training

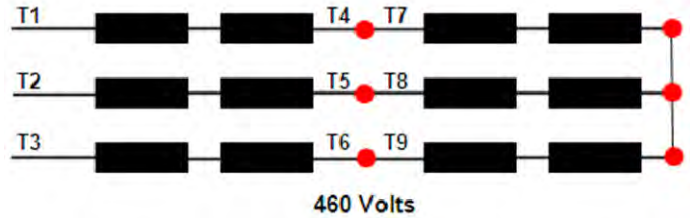
How do those pesky connections on 9 lead, three phase motors allow operation at both 230 and 460 volts? Do they just double the winding resistance for the higher voltage? Although that may sound like a reasonable answer, it just won't work. There has to be something else going on.

The windings of dual voltage motors may be connected in a wye or delta configuration. That decision is made by the manufacturer and is related to the manufacturing process. As a rule of thumb, smaller motors are often wound and connected in a wye configuration while larger ones will be delta connected. The upper portion of figure below shows the two winding schemes with each of the leads labeled T1 through T9. The lower portion shows the



wiring diagram that would be shown on the motor nameplate. The high voltage (460V) connections are the same for both wye and delta. T4 is connected to T7, T5 is connected to T8 and T6 is connected to T9. Incoming power is then connected to T1, T2 and T3. These connections place the phase windings in a simple series circuit. Trying to visualize the low voltage connections is difficult at best, so let's look at them in a different way.

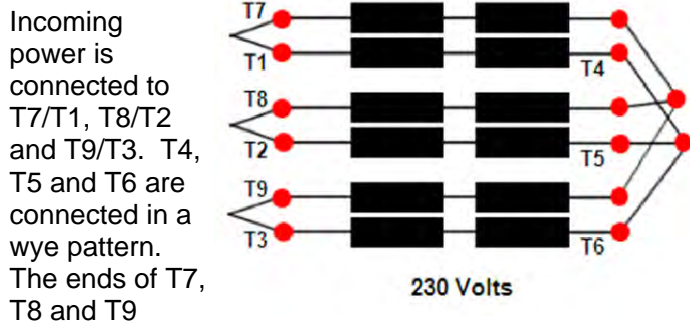
The figure at the top of the right hand column shows the high voltage (460V) wye connection and the nine leads are connected in the same way as above. Each incoming phase voltage passes through two windings, each consisting of two coils. Incoming power is connected to T1, T2 and T3 and the ends of each are connected together to form a wye pattern. Let's



assume that the resistance in each of the two windings is 10 ohms. The resistance in a series circuit is simply the sum of the resistances so the total resistance for each phase is 20 ohms. If we neglect power factor and use Ohm's law to compute the current in the circuit we obtain:

$$I = V / R = 460 / 20 = 23 \text{ amps}$$

The figure below shows the connection scheme for a low voltage (230V) Wye. It uses the connections shown for the "Lo Volts" in the Wye figure in the left hand column.



Incoming power is connected to T7/T1, T8/T2 and T9/T3. T4, T5 and T6 are connected in a wye pattern. The ends of T7, T8 and T9

remain in their original Wye connection. Each phase still has two windings but they are now parallel instead of in series. The resistance in a parallel circuit is quite a bit different than that of the series circuit and has been known to cause headaches! The resistance seen by each phase is the reciprocal of the sum of the reciprocals of the resistances.

$$R = 1 / (1/R1 + 1/R2)$$

If you do the math [1 / (1/10 + 1/10)] you will find that the resistance is just five ohms or one fourth that of the series circuit. Using Ohm's law to compute the current we obtain:

$$I = V / R = 230 / 5 = 46 \text{ amps}$$

This is exactly what you would expect for a motor of the same HP running at half the voltage. By doubling amperage at 230 volts, the output in watts and HP remains the same as that produced by half the amperage at 460 volts.

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## PumpTech Adds Constant-Chlor To Its Line of Disinfection Equipment

Jim Joyce, PumpTech Bellevue

PumpTech recently became a distributor for the Constant-Chlor dry tablet, chlorine feeders that are manufactured by Arch Chemical, a division of Lonza Group Ltd. The addition of Constant-Chlor adds a 4th disinfection technology to our bulk liquid hypochlorite, UV and on-site chlorine generation systems.



The Constant-Chlor feeders range in size from 50 to 400 pound capacity systems, with custom sizes available. This system utilizes the patented Constant-Chlor Plus dry

calcium hypochlorite briquette and patented spray technology to produce and maintain a fresh and consistent concentration of hypochlorite solution. Combined with the rugged Grundfos dosing pumps these systems can accurately feed hypochlorite solution for disinfecting either water or wastewater. The Constant Chlor systems are compact, include spill containment, and can be installed where bulk liquid chlorine or on-site generation may not be suitable or cost effective.



Constant Chlor systems are available in a variety of configurations for both chemical capacity and controls. One of the control options is PumpTech's iRover remote HMI control system and is installed on the demo unit seen on the left. For more information or a demonstration, contact your local PumpTech branch.

## Canby Manufacturing - Hydronix & MeterMan

It has been a busy spring for our Hydronix manufacturing facility in Canby. Lots of packaged systems including self priming lift stations, booster skids and custom designs have been built and shipped.



Recently, PumpTech's Industrial division received and order for over 90 centrifugal pump skids for a new food processing plant in the NW. They will be a mix of Cornell food pumps, Vaughan choppers, SIHI multistage and



Goulds water pumps. The photos show several skids under construction plus some of the pumps, motors and base plates awaiting assembly. All of the base plates, coupling, and belt guards are 304 welded stainless steel.



Not only does MeterMan manufacture metering pump systems for our industrial and municipal customers, it also acts as a subcontractor for several companies. These customers resell or integrate our products into their own products and services. The photo below is a caustic skid built for GE.



The one on the left at the bottom is one of several "Liquitote" skids built for Neptune Chemical Pump Company. They will be used in a project for Mustang Fuel. The photo on the right shows several water treatment skids under construction for GE. These will be used in a water treatment facility that they are supplying for Panda Energy.



MeterMan systems that are equipped with our touch screen HMI can also take advantage of our iRover on site and off site, remote monitoring & control system.

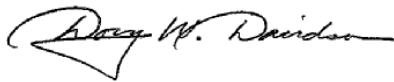


## PumpTech PumpChat - From the Presidents Desk - Doug Davidson -Bellevue

As I fly back from Denver where I and three other PumpTechians (Scott Bush, Jim Joyce & Matt Browne) attended the National AWWA convention, I am reminded of the importance of these functions. For example, while there we heard that the EPA just announced a study projecting that the country needs \$384B in water system upgrades to assure safe drinking water past 2013. The technical sessions provided us with information on the most prevalent issues in our industry as well as innovative solutions. These gatherings also provide an opportunity to connect with our customers and manufacturers.

At PumpTech we take our role seriously when working with our water and wastewater community as evidenced by the list of conventions and short schools that we attend (see the list and accompanying booth photos). We not only exhibit at these functions but Joe Evans, who works out of our Canby Oregon office, presents one or more technical sessions. We recently developed a three hour technical presentation on vertical turbine pumps that we are excited to begin delivering. Ed Smith, Joe Evans and myself are certified to give this presentation and it is eligible for CEU's in Washington, Oregon and Idaho.

The AWWA ACE convention in Denver wraps up our spring trade show season, however, just ahead on our calendar is our group working session to prepare for WEFTEC in Chicago in October. It just goes to show that the season is never really over, but we do get a break from the travel. Wishing you all a well deserved summer break.



### PumpTech Shows & Conferences through June

- NWFPA - Portland
- ERWOW - Yakima
- AWWA Short School - Eugene
- ORWEF - Oregon City
- AWWA/PNCWA - Pendleton
- WASWD - Yakima
- AWWA - Spokane
- SWIOS - Boise
- PEO Conference - Grants Pass
- WWCPA - Spokane
- WWSS - Lynnwood
- AWWA ACE - Denver



### Moore, Oklahoma Tornado

On May 20th, Chris Suskie, PumpTech's Canby Operations Manager, was making calls with Bertrem Products, our Hydronix distributor in Oklahoma. They were just 10 miles north of Moore at the time the tornado struck and were pelted with one inch hail as the tornado passed. The next morning Bertrem filled their truck with twenty cases of bottled water and donated it to the Moore water plant. Great timing Chris!



## Hello's & Goodbye's at PumpTech

**Alana Barakat** has joined the Canby branch as Associate Project Manager for our Hydronix and MeterMan, packaged systems divisions. She has a BS degree in Biology from OSU and nine years of experience in project and program management. Prior to joining PumpTech Alana worked as a program manager for Merchandise Technology Inc (MTI), a manufacturer of power and loss prevention equipment for the retail



market. She resides in Portland and enjoys biking, hiking and Cuban salsa dancing in her spare time. Welcome to PumpTech Alana!

**Sandi Winterton** retired in April after seven years with PumpTech. She held the position of Sales Support in our Canby branch and produced submittals and IOM's for all of our bid jobs. In retirement, Sandi plans on spending lots of time with her grandkids. Goodbye Sandi and thanks for your years of service!



## PumpTech Pipeline - Summer 2013

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### Upcoming PumpTech Participating Events

- 6/27 King County PNWS-AWWA Training - Bellevue
- 8/20-21 OAWU Conference - Seaside
- 8/27-29 ERWOW Conference - Tulalip
- 9/5 ERWOW Training - Spokane
- 9/10-12 Southern Oregon Short School - Table Rock
- 9/16-18 PNCWA Conference - Bend
- 9/25-27 WAWSD Conference - Pasco
- 10/5-9 WEFTEC - Chicago
- 10/8 ERWOW Training - Wenatchee

