

About Xylem

Xylem (NYSE: XYL) is a leading global water technology provider, enabling customers to transport, treat, test and efficiently use water in public utility, residential and commercial building services, industrial and agricultural settings. The company does business in more than 150 countries through a number of market-leading product brands, and its people bring broad applications expertise with a strong focus on finding local solutions to the world's most challenging water and wastewater problems. Xylem is headquartered in White Plains, N.Y., with 2012 annual revenues of \$3.8 billion and approximately 12,900 employees worldwide. Xylem has been named to the Dow Jones Sustainability World Index for the last two years for advancing sustainable business practices and solutions worldwide.

The name Xylem is derived from classical Greek and is the tissue that transports water in plants, highlighting the engineering efficiency of our water-centric business by linking it with the best water transportation of all -- that which occurs in nature. For more information, please visit us at www.xylem.com.



| ECO CALCULATIONS REPORT | | | | |
|--|------------------|----------------|-------------|-------------|
| YSL, Inc. saved the following resources by selecting U2:XG paper with 30% post-consumer recovered fiber. | | | | |
| trees | energy | greenhouse gas | waste water | solid waste |
| 5 | 1.9 million BTUs | 1490 lbs CO2 | 2168 gal | 138 lbs |

U2:XG is FSC-certified, contains 30% post consumer recovered fiber, and is manufactured with electricity in the form of renewable energy.
U2:XG is manufactured by Appleton Coated www.appletoncoated.com



Aquaculture

TANK-BASED CAPABILITIES & SOLUTIONS



Xylem Global Headquarters
1133 Westchester Avenue
White Plains, NY 10604
T +1 (914) 323-5700
announcements@xylem.com

xylem.com/aquaculture

iPad, iPhone, and iPod are registered trademarks of Apple Inc. registered in the U.S. and other countries.



©2013 Xylem
Printed on recycled paper in USA
XAqua Tank-01 1213



Capabilities

Analytics

| | |
|---------------------------|--------|
| Sampling..... | 3 - 8 |
| Monitoring & Control..... | 9 - 10 |
| Flow..... | 11 |
| Level..... | 12 |

Data Management

| | |
|--|----|
| AquaManager..... | 13 |
| Data Manager..... | 13 |
| Feed Smart Software and AquaViewer..... | 14 |

Disinfection

| | |
|------------|---------|
| UV..... | 15 - 17 |
| Ozone..... | 18 |

Pumping

| | |
|---|---------|
| Flygt Centrifugal Pumps..... | 19 |
| Flygt Column Pumps..... | 20 |
| Flygt Propeller Pumps..... | 21 - 22 |
| Lowara End Suction Pumps..... | 23 - 24 |
| Goulds Water Technology Vertical Turbine Pump..... | 25 |
| Pump Controllers..... | 26 |

Heating and Cooling Exchangers

| | |
|-----------------|---------|
| Exchangers..... | 27 - 28 |
|-----------------|---------|



YSI is a world leader in water quality instrumentation for sampling, monitoring and continuous control.



WTW has provided outstanding leadership in the design and production of superior quality water testing instrumentation world-wide for over 55 years.



B+S celebrates 100 years at the forefront of measurement technology and is one of the world's leading manufacturers of digital refractometers.



MJK has been a strong partner in flow, level and control instrumentation since the seventies.



WEDECO is a leading global manufacturer of ultraviolet (UV) disinfection and ozone (O₃) oxidation systems.



FLYGT is a world leader in the design and manufacture of dry and submersible pumps, mixers and related intelligent control systems.



LOWARA is committed to studying, developing, manufacturing and distributing pumps and pumping systems for water technology applications.



GOULDS Water Technology is among the most widely recognized brands in the global pump industry and is the only manufacturer to make digital monitoring standard on every process pump.



Standard Xchange is a leading manufacturer of heat exchangers for all your heat transfer needs supplying heat transfer solutions worldwide for over 90 years.

Tank Based aquaculture

Welcome

Increased environmental regulations, decreasing clean water availability, and increasing costs (to name just a few) are impacting the sustainability of the aquaculture industry.

Tank based aquaculture, whether it's RAS or flow through, has it's own set of challenges as well.

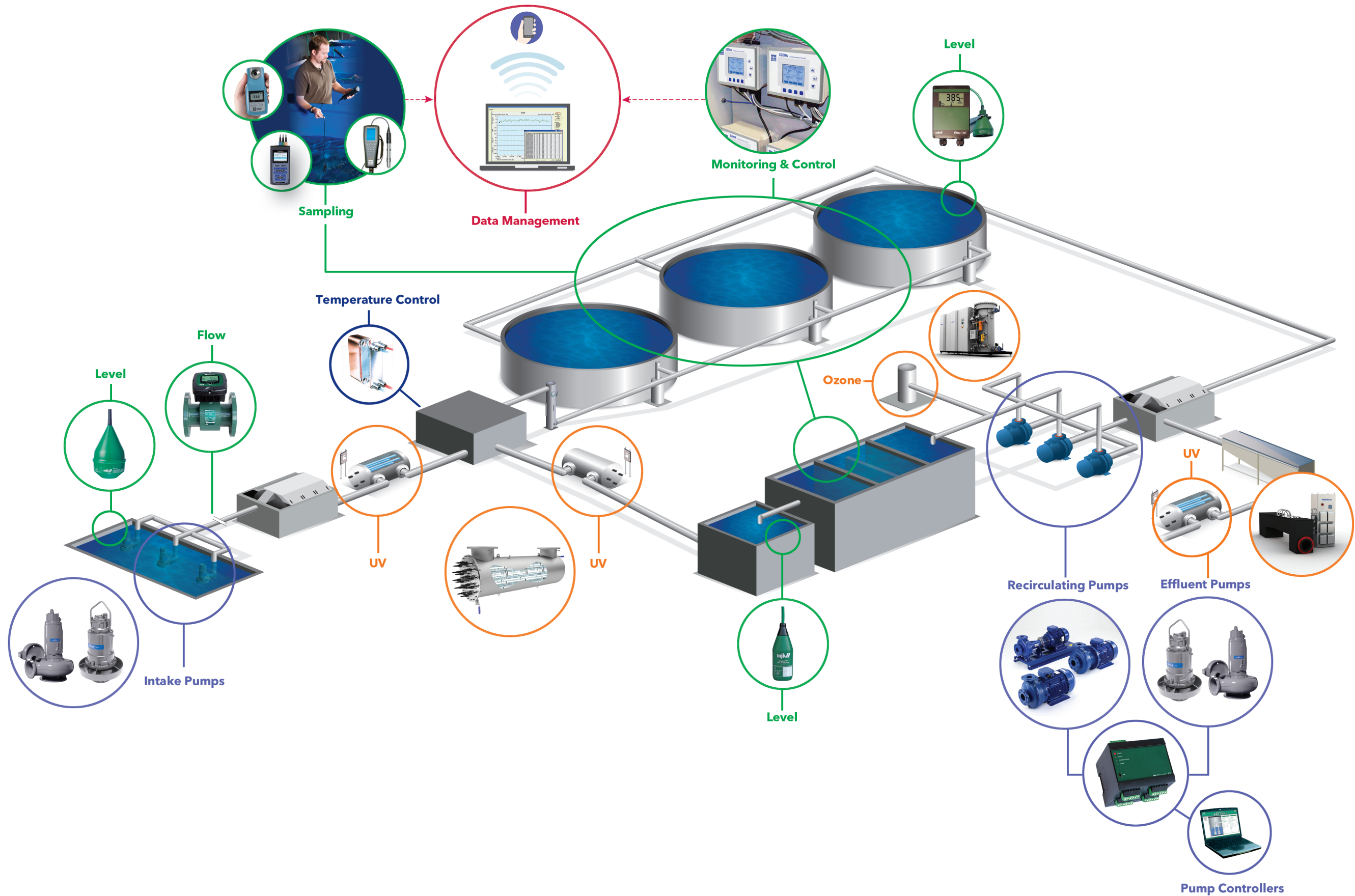
Xylem is here to help. The brand you trust for world-class water quality sampling instrumentation, pumping, disinfection, flow/level control, and customer service has expanded its Aquaculture capabilities and solutions offering.

Our focus is to help you solve these challenges by giving you the innovative, cost-effective products and services that make your job easier and improve the efficiency of your facilities.

For those new to Xylem, you may find that direct access to our employees – knowledgeable, customer-focused technical advisers who are here to help you find new and better ways to do your job – is a serious competitive advantage.

Thank you for your interest in Xylem and for reviewing our catalog. We encourage you to contact us with any questions, concerns, and comments.

 xylem.com/aquaculture



Analytics Sampling



Pro Plus
Multiparameter
Temperature

ProODO
Optical DO
Temperature



This Pro Plus was dragged 1/2 mile down a gravel road at an aquaculture facility off the back of an ATV. It's still in use today.

The **YSI Pro Plus** accommodates any combination of Pro Series sensor (parameter) and cable (parameter combination and length). This compact handheld includes simple calibrations, re-cal prompts, auto-stable indicators, and security passwords to help make your job easier.

The **ProODO®** is the best handheld optical dissolved oxygen instrument on the market. Its combination of versatility, field-worthy durability, and data management is second to none.

Both products share:

- Rubber, over-molded IP67 waterproof case (even without battery cover); floats
- 3-year instrument warranty; 2-year cable warranty
- Rugged, aquaculture-grade cables, sensors, and military-spec connectors
- Drop-tested 1 meter at all angles
- Scratch-resistant lens; viewable with polarized glasses
- 5,000 data sets in manual mode; up to 50,000 in continuous mode (depending on number of parameters)
- Interval or single-event logging
- Easily name folders and sites for data; search function
- Detailed on-screen Help function
- Multiple languages: English, Spanish, German, French, Italian, Norwegian, Portuguese, Japanese, Chinese
- Backlit display and keypad
- Detailed, recorded calibration data

YSI Pro Plus

- Auto-pH buffer recognition
- Single, dual or multiparameter: Temperature, DO, Conductivity, Specific Conductance, Salinity, TDS, pH, ORP/Redox, Ammonium, Nitrate, Chloride
- Polarographic or Galvanic DO options; DO range of 0-500%; 0-50 mg/L
- MCerts certified

YSI ProODO

- Optical, luminescent technology eliminates membranes
- Low maintenance - no anode or cathode
- No flow requirement /no interference from hydrogen sulfide or other gases
- Expanded DO range of 0-500%; 0-50 mg/L
- Fastest response times available

bit.ly/YSIProPlus
bit.ly/ProODO
bit.ly/IUseYSI



The **YSI Pro2030** dissolved oxygen/conductivity instrument provides DO readings automatically compensated for changes in salinity.

YSI Pro1030 measures pH or ORP/Redox in conjunction with conductivity, specific conductance, salinity, TDS and temperature.

All products share:

- IP67 waterproof rating
- 3-year instrument warranty; 2-year cable
- Quick Cal feature allows calibrations within minutes
- 50 data-set memory ensures data integrity
- Graphic, backlit display and glow-in-the-dark keypad
- Multiple languages

Pro2030

- Proven, super stable conductivity electrode
- Choose either Galvanic or Polarographic DO sensors

Pro1030

- Proven, super-stable conductivity electrode
- User replaceable pH or ORP sensors

The **YSI Pro20** dissolved oxygen meter fits the need for a true aquaculture-ready field meter that's simple, easy-to-use, and rugged. Measure DO with the rugged handheld and durable cables within seconds.

The **YSI Pro30** conductivity instrument fits the need for an accurate, easy-to-use conductivity, specific conductance, and salinity instrument.

YSI Pro20

- One Touch Cal allows calibrations within 3 seconds
- Choose either Galvanic or Polarographic sensors
- Quickest response times; easy to change PE cap membranes

YSI Pro30

- Proven, super-stable conductivity cell built into the cable
- Quick Cal recalls previous cal values

bit.ly/Pro20DO
bit.ly/Pro20Cal
bit.ly/Pro2030
bit.ly/Pro30



Pro2030
DO
Conductivity
Salinity
Temperature

Pro1030
pH or
ORP/Redox
Conductivity
Temperature

Pro20
DO
Temperature

Pro30
Conductivity
Salinity
Temperature

YSI Professional Quick Selection Guide

| | Professional Plus | ProODO | Pro2030 | Pro1030 | Pro20 | Pro30 |
|---|-------------------|--------|---------|---------|-------|-------|
| Temperature | • | • | • | • | • | • |
| Dissolved Oxygen | • | • | • | • | • | • |
| Conductivity | • | • | • | • | • | • |
| Specific Conductance | • | • | • | • | • | • |
| Salinity | • | • | • | • | • | • |
| TDS | • | • | • | • | • | • |
| pH | • | • | • | • | • | • |
| ORP (mV)/Redox | • | • | • | • | • | • |
| Ammonium | • | • | • | • | • | • |
| Chloride | • | • | • | • | • | • |
| Nitrate | • | • | • | • | • | • |
| USB | • | • | • | • | • | • |
| Upgradeable Software | • | • | • | • | • | • |
| Memory: 5000 data sets w/ GLP) | • | • | • | • | • | • |
| Memory: 50 data sets | • | • | • | • | • | • |
| DO Cap Membranes | • | • | • | • | • | • |
| Optical DO | • | • | • | • | • | • |
| Detachable Probes | • | • | • | • | • | • |
| Interchangeable Cable Lengths | • | • | • | • | • | • |
| Backlit Display + Keypad | • | • | • | • | • | • |
| Backlit Display + Glow in the Dark Keypad | • | • | • | • | • | • |
| GLP File System | • | • | • | • | • | • |
| Barometer | • | • | • | • | • | • |

EcoSense. Sometimes your budget won't allow for a premium instrument with more features. So you need a basic instrument to do your job without sacrificing data quality. Our EcoSense line of products is simple, easy to use, and straight-forward.



pH100A

An economically priced, reliable instrument for the measurement of pH and temperature. Use with the standard pH electrode or with the flat glass electrode to prevent damage in harsh applications.

DO200A

Economical, fast dissolved oxygen measurements with screw-on cap PE membranes that require low stirring. Uses same electrochemical DO technology as other YSI models.

EC300A

Measures conductivity, salinity, TDS, and temperature in a simple, compact handheld.

pH10A

The perfect instrument for economical spot sampling of pH and temperature. Quickly calibrate with up to 3-point auto-cal. User-replaceable electrode.

ORP15A

Offers accurate, low-cost measurement of ORP/Redox (absolute and relative mV) and temperature. User-replaceable electrode.

EC30A

Measures conductivity, TDS, and temperature with an easy, user-replaceable electrode ensuring the instrument is always ready. User-replaceable electrode.

9300 and 9500 Photometry

The 9300 and the 9500 both feature a graphic, backlit display; on-screen instructions; a waterproof case; various-diameter sample tube holder; multiple languages; 100+ test options; and direct reading concentrations.

Parameters include hardness, ammonia, nitrate, nitrite, pH, copper, ozone, chlorine, alkalinity, and more.

The 9500 has additional features that include a waterproof USB that can also be used for power, 500 data-set memory, and several user-selectable options.



pHotoFlex STD

Ideal solution for quick, simple, accurate colorimeter measurements for approximately 85 tests

YSI pHotoFlex Portable Colorimeters

These rugged, waterproof, multiparameter colorimeters are ideal for the field. The instruments feature a large, backlit display, waterproof rating, data logging with the ability to export data to a computer using LSdata software, user-defined programs and a 2-year warranty.

- Calibration adjustment for selected methods
- Data storage; 100 data sets with pHotoFlex STD and 1,000 data sets with pHotoFlex pH
- Large, easy to read backlit LCD display
- IP67 waterproof case; easy to hold or set on a benchtop (lab station also available)
- Flexible, fixed adapter for various cell types features a flip design to accommodate a variety of heights and diameters; it is also attached to prevent it from being lost
- ~138 tests (pHotoFlex pH); ~85 tests (pHotoFlex STD)
- PC connectivity to manage data (optional LSdata software) and update firmware or methods; barcode compatibility
- pHotoFlex pH offers a BNC connection in order to take pH measurements directly and to measure the pH dependent parameter NH₃



The pHotoFlex pH colorimeter allows for the connection of an external pH sensor. Not only does this allow for pH measurements but also a true ammonia reading directly compensating for accurate pH and temperature readings. **No other colorimeter has this capability.**

pHotoFlex pH

Ideal solution for quick, simple, accurate colorimeter measurements for approximately 138 tests

The **WTW MultiLine** systems with intelligent, digital sensors (IDS) for pH, ORP/Redox, dissolved oxygen and conductivity revolutionize multiparameter measurement. The signal processing is located in the sensor, and the measuring signal is transmitted to the meter without interference and in a clearly identifiable manner via thin, high-strength cables. A wide range of sensors are available for virtually any aquaculture setting.

The MultiLine meters include:

3 models with one, two, or three universal channels measure every parameter either sequentially or simultaneously. Every model possesses a brilliant color graphic display, two USB interfaces (USB-A and Mini-USB), and rechargeable batteries that can be charged directly in the device.



Multi 3410

- 1 Channel
- 3 Parameters
- High resolution color graphic display
- Simple data transmission to USB stick



Multi 3420

- 2 Channels
- 3 Parameters in any combination
- High resolution color graphic display
- Simple data transmission to USB stick



Multi 3430

- 3 Channels
- 3 Parameters in any combination
- High resolution color graphic display
- Simple data transmission to USB stick

IDS Sensor Advantages

- Measuring signals converted into interference-free data in the sensor.
- All sensor, instrument, and user data are available for automatic documentation.
- Calibration data are independently stored in the sensor.
- Measuring, calibration and additional data can be transmitted



Turb 430

With the WTW turbidimeters Turb 430 T and Turb 430 IR, the user has the choice to perform nephelometric measurements at 90° scattered light, according to the application and standard required.

The Turb 430 IR meets the DIN 27027/ISO7027 requirements, the Turb 430 T those of US EPA 180.1. The measuring range is from 0 to 1100 NTU/ FNU and is identified automatically. Accurate measurements in the lower range are easily achieved.

- menu driven 3-point calibration with standards set (0.02, 10, and 1000 NTU)
- easy to use interface
- up to 1000 data sets with ID
- download data with LabStation



- Ergonomic IP65 rated design
- Precise digital readout
- Single or dual scale models
- Salinity temperature compensation
- Unique "AG Test Mode"
- Certificate of calibration



OPTi Digital Handheld Refractometers

OPTi refractometers are available in a number of formats including two single scale seawater models displaying results in PPT or SG and as a dual scale model comprising both aquaculture scales.

Its compact design make the OPTi ideal for rapid, precise measurement of seawater concentration across a wide range of aquaculture applications

Analytics Monitoring

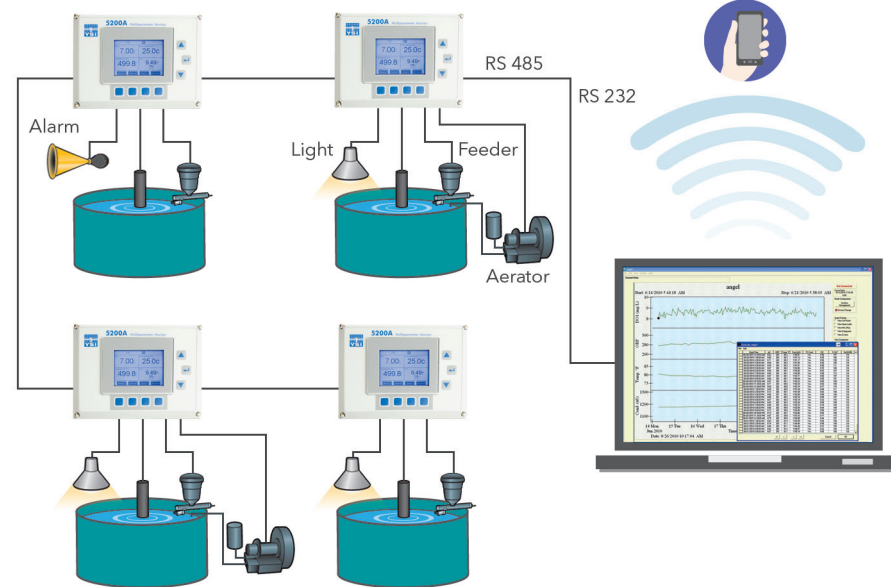


Designed specifically for aquaculture systems, the 5200A integrates process control, feeding, alarming, and data management into one product. Multiparameter functionality for DO, temp, pH, ORP, conductivity, and automatic salinity compensation. Plus, two configurable inputs for additional sensors and management.

- Ethernet TCP/IP or wireless communications – optional
- Event logging records calibrations, high and low conditions, and more
- Conditional feed timer with Feed Smart™ software included
- Networking capability; can be integrated with 5400 and 5500D monitors
- Flexible dosing and control software
- SMS and e-mail alarming
- Graphic interface function for quick, reliable system-status checks
- Plug-and-play – easy to install, setup, and maintain
- Photo period management
- Control parameters with set points, dosing, or PID functions



Access data remotely via iPod, iPhone, or iPad with the AquaViewer app.



There are many possibilities for connecting the monitors. This is one example of four monitors individually monitoring and controlling four tanks with direct PC connection. E-mail and SMS alarming is available from network-connected PC running AquaManager.

Outputs/Timers (included)

- 4 each 10 amp 115 VAC relays (5 amp 230 VAC)
- 4 timers – 10 cascading events with start/duration setting
- 1 Feed Smart channel
- E-mail and/or SMS alarming up to 3 e-mails with Ethernet module or up to 10 e-mails with AquaManager
- Local alarm; configurable to relay

Inputs (included)

- DO, pH, ORP, conductivity, temp
- 2 user-configurable inputs, digital or analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)*

Need a Continuous MultiDO Monitoring and Control instrument designed specifically for aquaculture systems? Easily manage a full-scale farming operation, or just one tank, from anywhere in the world.



5400 and 5500D Access data remotely

- Ethernet TCP/IP or wireless communications – optional
- Event logging records calibrations, high/low conditions, and more
- Conditional feed timer with Feed Smart software included
- Networking capability up to 32 instruments per communications port or can be integrated with 5200A, 5400, or 5500Ds
- Graphic interface function for quick, reliable system status checks
- Plug-and-play – easy to install, setup, and maintain
- Flexible monitoring and control software
- E-mail and SMS alarming
- Photo period management
- Control parameters with set points, dosing, or PID functions



The YSI 5400 Continuous Monitor for dissolved oxygen – along with AquaManager software – integrates process control, feeding, alarming, and data management into one product.

Outputs/Timers (included)

- 8 relays 10 amp 115 VAC (5 amp 230 VAC)
- 4 timers – 10 cascading events with start/duration setting
- 4 Feed Smart channels
- E-mail and/or SMS alarming up to 3 e-mails with Ethernet module or up to 10 e-mails with AquaManager
- Local alarm; configurable to relay

Inputs (included)

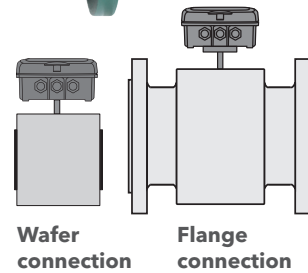
- 4 DO probe inputs
- 4 user-configurable inputs for temp; analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA) or digital*
- 2 user-configurable inputs, digital or analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)*

*User-configurable inputs can be used for additional sensors like DO, pH, TGP, ORP, photo period, etc. Some sensors require an additional transmitter.



The YSI 5500D Optical DO Monitoring & Control instrument continuously monitors your farming operation's water quality for dissolved oxygen using optical DO technology. Choose 1, 2, or 4 DO channels.

bit.ly/RASntrate



MagFlux Flowmeters are manufactured with carbon steel and stainless steel for flange or wafer connections and lining in hard or soft rubber and PTFE/PFA.

MagFlux Flowmeters are designed with the latest microprocessor technology to ensure accurate measurements.

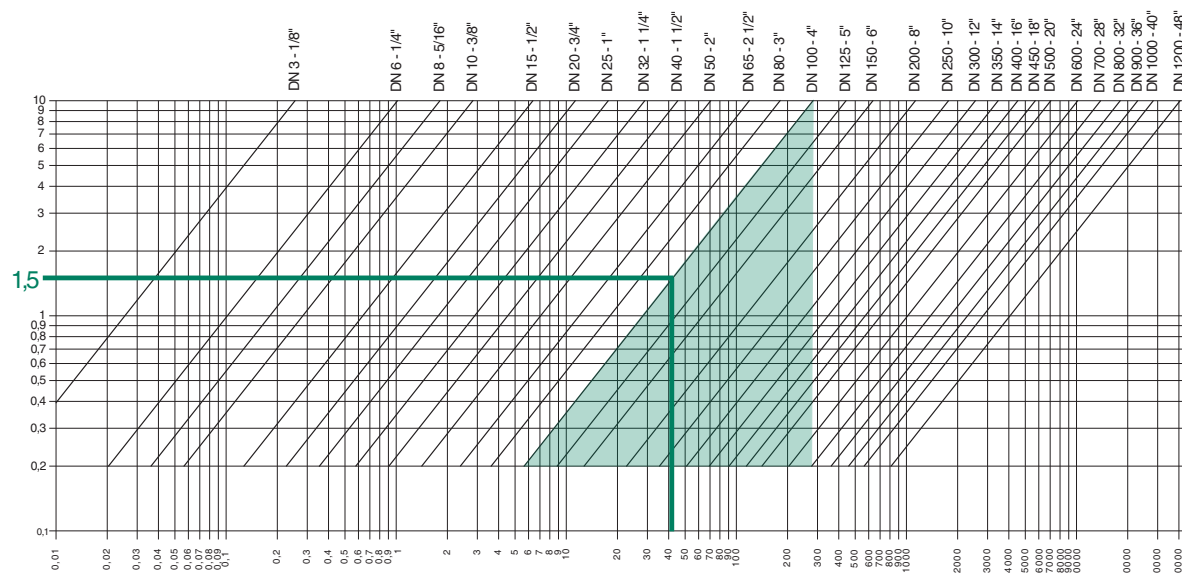
The display can be mounted locally on the sensor, remotely on a wall or mounted in a panel door. A single display can operate up to 4 flow converters and sensors.

MagFlux Flowmeters, Converters and Displays are supplied with a technically advanced enclosure made of glass reinforced polycarbonate providing maximum protection in harsh environments.



- 0.25% accuracy over the full range from 0.2 m/sec to 10 m/sec
- Velocity range from 0.2 - 10 m/s / 0.6 - 30 ft./s
- DN15 to DN1400 / 1/2" to 54"
- Remote display up to 1,000 m from sensor
- IP67 or IP68 / NEMA 4, NEMA 6P
- Selectable flow direction
- Built-in data logger with graph and 160,000 log points
- Automatic electrode cleaning
- Profibus and Modbus communications
- Built-in length only 5 times sensor diameter

Flow/Velocity Graph (metric)



Level Float Switch 7030

Alarm or simple on/off level measurement control. The MJK Float switch 7030 belongs to a new generation of float switches where the mercury switches used previously have been replaced with up-to-date environmentally friendly materials making it ideal for aquaculture systems.

- Rugged level switch
- 12, 20, or 30m high flexible cable
- Output: 250 V AC/16 A micro switch



Expert Hydrostatic Level Transmitters

MJK water level transmitters are designed for immersion in open tanks, wet-wells, and tank-based systems and designed to withstand rough conditions, large concentrations of biofouling, and suspended solids.

The level transmitters have a sturdy design with housing in re-enforced plastic or stainless steel. Cables are insulated with PUR, and steel reinforced to achieve very high tensile strength. Sensing membranes are made with either ceramic or stainless steel. Outputs are analog two-wire 4-20 mA, voltage or digital Modbus RTU.

- 0.1% / 0.25% measurement accuracy and long time drift accuracy
- Ranges from 30 cm to 300 m
- Analog 4-20 mA output or digital Modbus output
- Can be re-scaled from a standard PC
- Any cable length available



Shuttle Ultrasonic Level Transmitter

Shuttle Ultrasonic Level Transmitters

Shuttle is an advanced microprocessor based ultrasonic level meter with an intelligent, precise measuring system utilizing the latest hardware and software technology.

- Sensors with 3°, 6° and 7° ultrasonic sound beam angle
- 2 output relays for level/system alarm or pump control
- 0.1 to 25 m measuring range
- 4 - 20 mA output with zero and span adjustment
- Easy to read LCD-display. Level indicated with both a bargraph and reading of mm, cm, m, ft and in; digital readout either relative level or absolute level
- Learning function allows the Shuttle to learn how the tank is arranged with piping, pumps and other items that might disturb the measurement. The system ignores turbulence and electrical interference, so even a slow moving mixer can pass through the ultrasonic beam without any influence on the measurement.

Data Management



Free Data Manager Software for the Pro Plus and ProODO

- Easy-to-use software to manage all data studies
- View, print, and export data
- View and print GLP data
- Quickly configure one or multiple instruments
- Conduct real-time studies at your facility
- Included with purchase of a YSI Pro Plus or YSI ProODO meter



Example of Data Manager screen showing tabular and graphical data

bit.ly/DataMan

AquaManager Software*

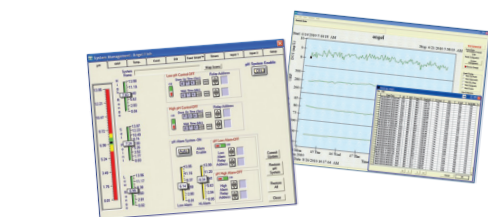
AquaManager desktop software (optional) allows you to control and set up any instrument on the network to view data, set alarming options, and change relays or set points depending on application – conveniently from one central location.

Instantly see an overview of your facility, manage parameter set points, and manage your data in order to make informed operational decisions in real time.

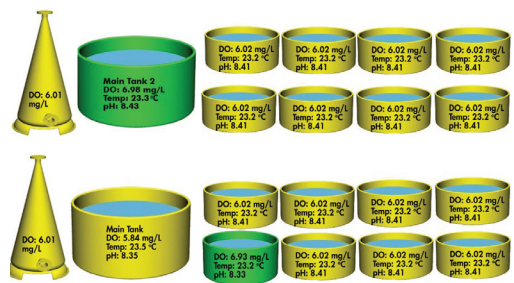
The facility-mapping feature provides an immediate overview of all ponds or tanks indicating their current state.

All parameter and system settings can be managed from the desktop with the AquaManager software.

*Applies to the 5200A, 5400 and 5500D monitors



Example of the 5200A system management screen showing set points for pH. The 5400 and 5500D set points screen looks similar. You can view your data instantly in tabular or graphical formats.



In order for issues at your facility to be quickly identified, a visual map can be created to look like your facility. When displayed on a monitor, anyone can see where and when maintenance or action is needed. Real-time data is continually displayed.

Feed Smart (included)* Conditional feed timer around the clock

Feed Smart software can be used as a basic feed timer or conditional feed timer. Manages feed delivery based on user-selectable inputs for the number of daily feedings, daily feed weights, total biomass, and feed conversion ratios (FCRs) along with parameter control based on water quality values which reduces, or stops, feeding as water quality deteriorates.

- Saves money on feed
- Eliminates excess food deteriorating water quality
- Feed when fish want to eat
- Increase yields
- Interfaces with most auto feeders
- Increase feeding daily based on FCR
- Select when to feed – time periods and days of the week (up to 100 times daily)

The YSI AquaViewer App displays real-time sensor and aux data acquired from YSI 5200A, 5400 and 5500D instruments. Data can be displayed from virtually anywhere using Wi-Fi connectivity over both LAN and WAN networks.

- Colors are used at App instrument and sensor screens which provide a quick visual regarding node system conditions. Red indicates an alarm condition, yellow indicates a control condition and green (at sensor screen) and black (at instrument screen) indicate an acceptable operating range node system condition.
- The setup screen is straightforward to configure.
- Communication occurs either by directly connecting to YSI instrument via Xport device or via communication connection to a PC running AquaManager PC software.

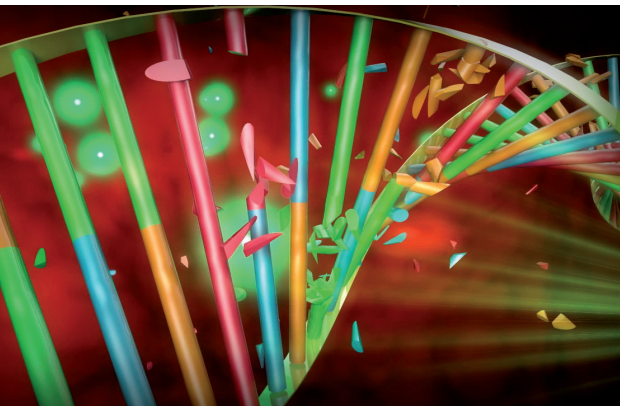
The user guide includes:

- System/User requirements;
- App screen descriptions;
- Configuration/Operating instructions



The YSI AquaViewer App displays real time sensor and auxiliary data acquired from YSI continuous monitoring aquaculture instruments - 5200A, 5400 and 5500D. Never be in the dark again in regards to your facilities water quality conditions.

Disinfection Treatment UV



Energetic UV light, with a main wavelength at 254nm, effectively inactivates most fish pathogens in a fraction of a second without using chemicals or producing harmful by-products.

Disinfection without Chemicals

Ultraviolet (UV) light is the aquaculture industry's most preferred disinfection method against pathogens like ISA, and Aeromonas Salmonicida in land based fish farms or live haul to protect livestock. UV disinfection is free of any harmful by-products and preserves the natural chemistry, taste and odor of the water with no negative effects on the livestock or environment.

Advantages of water disinfection with WEDECO UV systems

- UV lowers the level of fish pathogens without adding any chemicals, without the risk of overdosing, without the formation of any by-products being harmful for fishes and the environment. Furthermore UV helps to reduce vaccination of the fish.
- UV disinfected water supports higher fish growth rates, reduces mortality, and reduces chemical loads in the effluent.
- WEDECO UV solutions are available for all types of water no matter what corrosion, humidity and water temperature.
- Simplicity of operation: Equipped with sophisticated monitoring and control features WEDECO UV systems are easy to operate. In addition UV avoids chemical handling.
- Low life-cycle costs with OptiDose sensor-based UV dose control and high-efficient UV lamp technology, and reduced and easy maintenance effort
- Proven disinfection performance by 3rd party validation and Norwegian Veterinary Institute (NVI) approval
- Easy integration by Xylem's outstanding support and easy uplink to superior M&C systems.

WEDECO offers a broad portfolio of UV solutions specially designed for the aquaculture industry. A huge reference base all around the globe and systems with validated disinfection performance according to the Norwegian Aquaculture Disinfection Regulation demonstrate the capability of WEDECO UV systems.

UV Systems for Water Intake and Recirculation

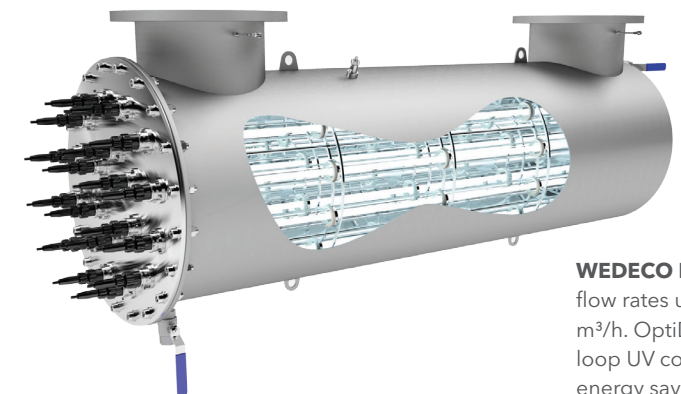
- Closed reactor UV systems for pressurized flows up to 2,500 m³/h
- Salt water/seawater resistant reactors made of SS Duplex or Polyethylene
- High efficient, long-lasting ECORAY UV lamp technology for reduced energy consumption
- 3rd party proven disinfection performance

UV Systems for Well-Boats and Applications with Space Constraints

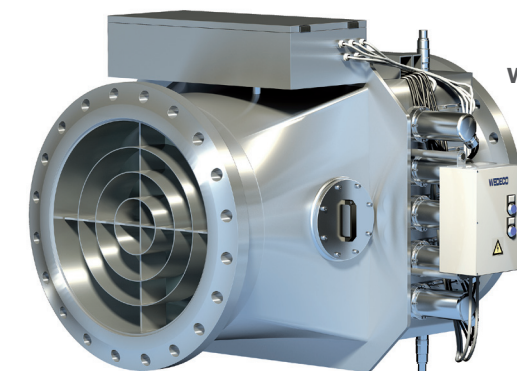
- Highly compact UV systems for flows up to 4,100 m³/h
- Seawater resistant reactor and automatic wiping system
- 3rd party proven performance



WEDECO A/B PE Series for small flows up to 375 m³/h. The reactors are made of marine grade HDPE.



WEDECO BX Series for flow rates up to 2,120 m³/h. OptiDose closed-loop UV control allows energy savings up to 20% by adjusting the output to match water quality and flow in real-time.

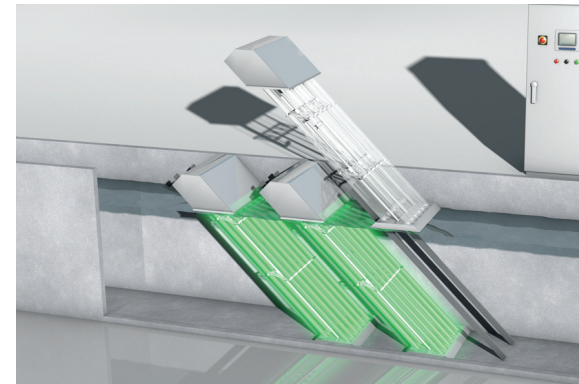


WEDECO Quadron

Disinfection Treatment UV

UV Systems for Effluent Water

- Open channel solutions for unlimited flows
- Salt water/seawater resistant channels made of marine grade Polyethylene for flows up to 250 m³/h
- High efficient, long-lasting ECORAY UV lamp technology for reduced energy consumption
- Optional with OptiDose automatic UV dose control and chemical free wiping system for peak efficiency and prolonged service intervals
- 3rd party proven disinfection performance



WEDECO Duron utilizes a vertical incline design, combined with new higher powered Ecoray lamps of 600 W. A minimum number of lamps are needed minimizing the space required for the Duron solution as a whole.

WEDECO TAK Smart is a cost-effective, fully packaged open channel UV solution that can be customized with various options including wiping system and OptiDose UV control.



Ozone

Ozone Oxidation

The use of ozone is the most effective method for providing high-quality water for fish farming. As the strongest, technically producible oxidizing agent it fulfills further functions apart from disinfection, which cannot be treated with other methods or only with difficulty. During the treatment process, ozone is usually consumed completely and breaks down again into oxygen.

Effective bacterial and viral removal

Improved COD removal via production of biodegradable substances

Increased removal of color and nitrite

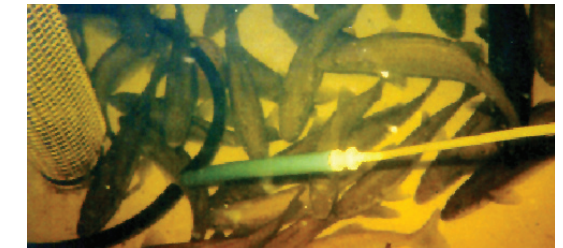
Removal of undesirable taste and odor compounds

Increased suspended solids removal across filter

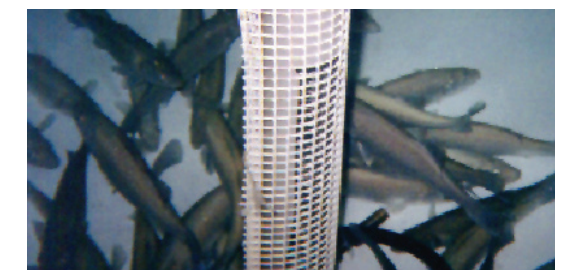
WEDECO has been engineering and manufacturing ozone systems of all sizes for over 30 years. WEDECO generators have an exceptional quality and service with global reach, resulting in products with low energy consumption, compact design, low installation and maintenance requirements, low investment and operating costs, highest reliability, and safe operation.



WEDECO OCS (left) and SMOevo (right) ozone generators are designed to meet the customer's requirements to have a ready-to-install and easy to operate ozone unit with a high reliability.



View of fish tank before (top) and after (bottom) ozone treatment.



Pumping



The Flygt 3000 series is a submersible centrifugal pump which covers flow capacities ranging from 0 to 3000 l/s and discharge heads from 5 to 130 m. Its clog-free hydraulic is designed to transport water from virtually any source.

The submersible advantage enables you to minimize the total cost of ownership by reducing energy consumption, minimizing construction and service cost.

Beside the submersible installation on a discharge connection or a hose, the 3000 series can also be dry installed on a base frame or in special execution suspended on a flooding platform.

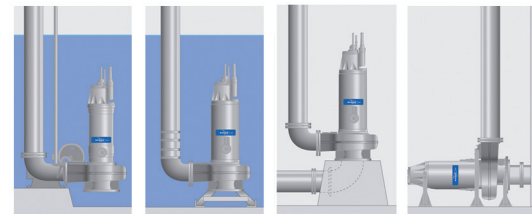
For installation in sea water, Xylem offers these pumps with a well approved corrosion protection system, and fish friendly zinc anodes.

Key features are:

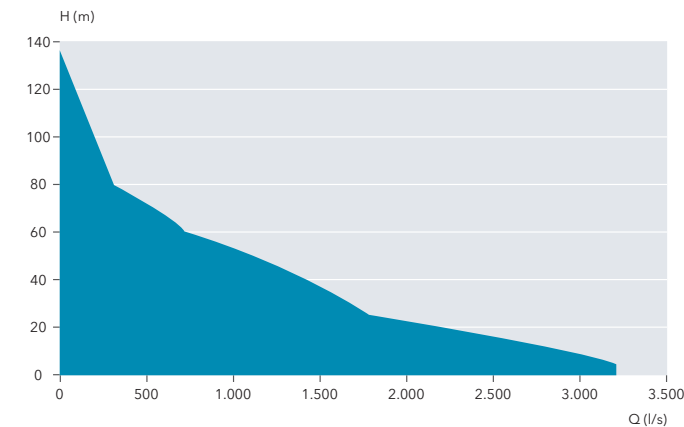
- Sustained high efficiency
- Self-cleaning capabilities
- Compact, modular design
- No separate lubrication system
- Low noise and vibration levels
- Flood-proof pump stations
- Quick and easy installation
- Minimal station superstructure
- Reliability, easy to service



Installation Examples



3000 Series Performance Fields



3000 Series Pump Installed

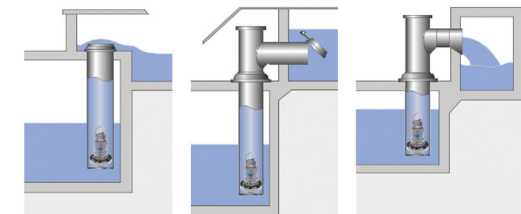
The Flygt LL 3000 series is a submersible mix flow pump which covers flow capacities ranging from 70 to 2200 l/s and discharge heads from 2 to 38 m. The hydraulic is designed to transport river or sea water.

Like all Flygt submersible column pumps, the LL 3000 pumps enable the construction of low-cost pumping stations that do not require any superstructure. The pump is completely submerged in the discharge column, which makes it less complex to install and allows the motors to run cooler and more quietly than non-submersible wet pit pumps.

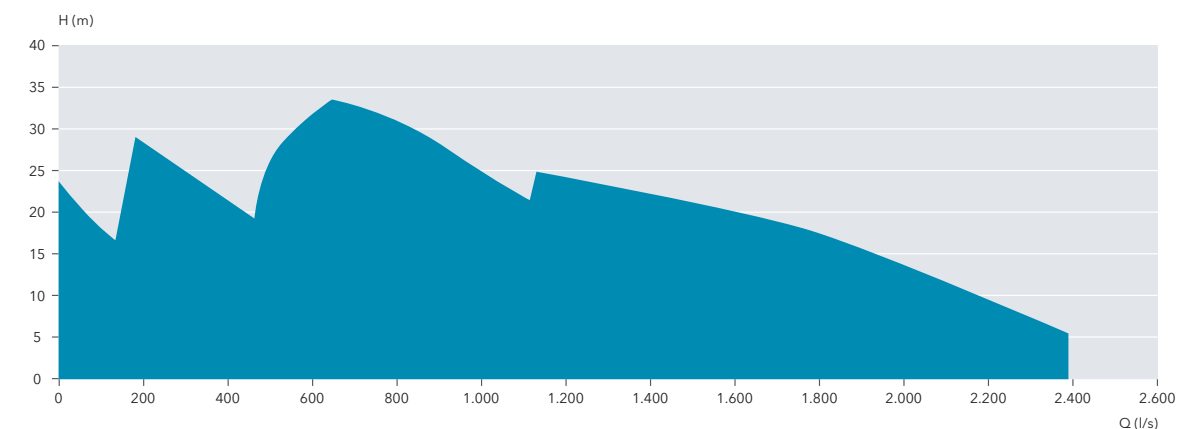
For installation in sea water, Xylem offers these pumps with a well approved corrosion protection systems, fish friendly zinc anodes, and column pipes made of GFK.

On special request, Xylem also offers this pump for an inclined or horizontal installation. **Key features on page 19.**

Installation Examples



LL 3000 Series Performance Fields



Pumping



The principal benefit of the Flygt PP 4600 ultra-low-head, high-flow pump is its efficient flow generation and its low specific energy consumption.

These propeller pumps have a proven history of successful installations worldwide wherever there is a need for large flows up to 1500 l/s and low heads up to 2 m.

Its installation is extremely simple as they are just flange to the discharge pipe or to a flap valve.

Xylem also offers complete packages with lifting davits and guide bars to enable easy service.

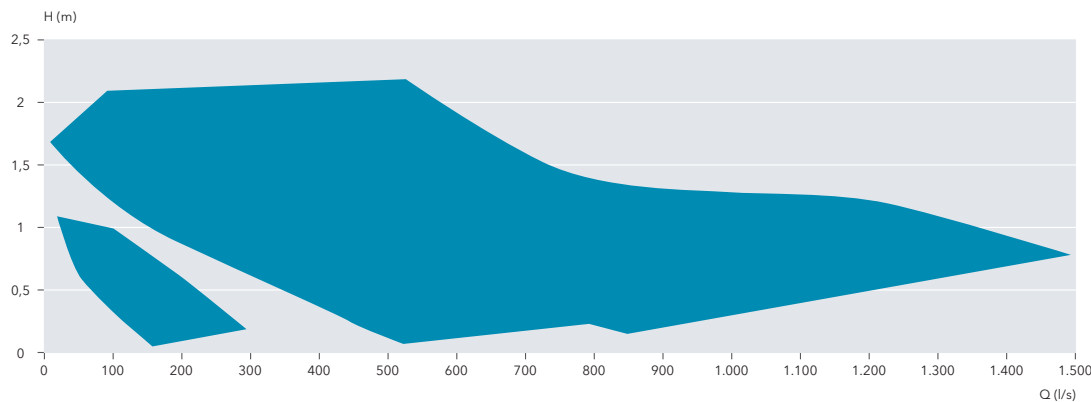
Key features are:

- Sustained high efficiency
- Self-cleaning capabilities
- Compact, modular design
- No separate lubrication system
- Low noise and vibration levels
- Flood-proof pump stations
- Quick and easy installation
- Minimal station superstructure

Pump with Vortex Protection Shield



PP 4600 Performance Fields



The Flygt PL 7000 series is the perfect choice to transport large volumes of fluid at low heads. Its high-efficient self-cleaning propeller hydraulic covers flow capacities ranging from 270 to 7000 l/s and discharge heads from 1 to 12 m. The hydraulic is designed to transport river or sea water.

Like all Flygt submersible column pumps, the PL 3000 pumps enable the construction of low-cost pumping stations that do not require any superstructure. The pump is completely submerged in the discharge column, which makes it less complex to install and allows the motors to run cooler and more quietly than non-submersible wet pit pumps.

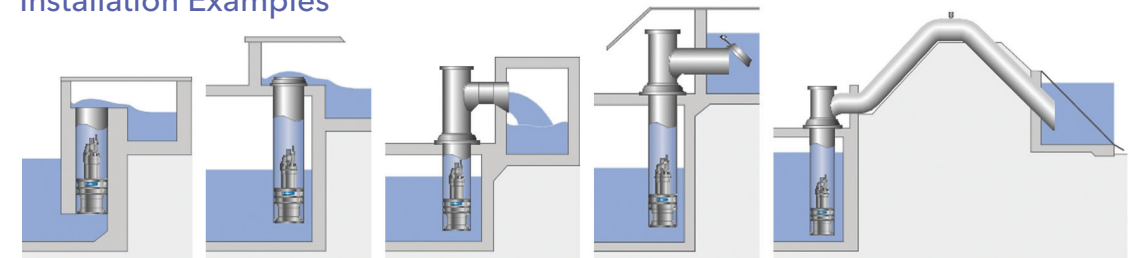
For installation in sea water, Xylem offers these pumps with well approved corrosion protection systems, fish friendly zinc anodes, and column pipes made of GFK.

On special request, Xylem also offers this pump for an inclined or horizontal installation. Key features on page 21.

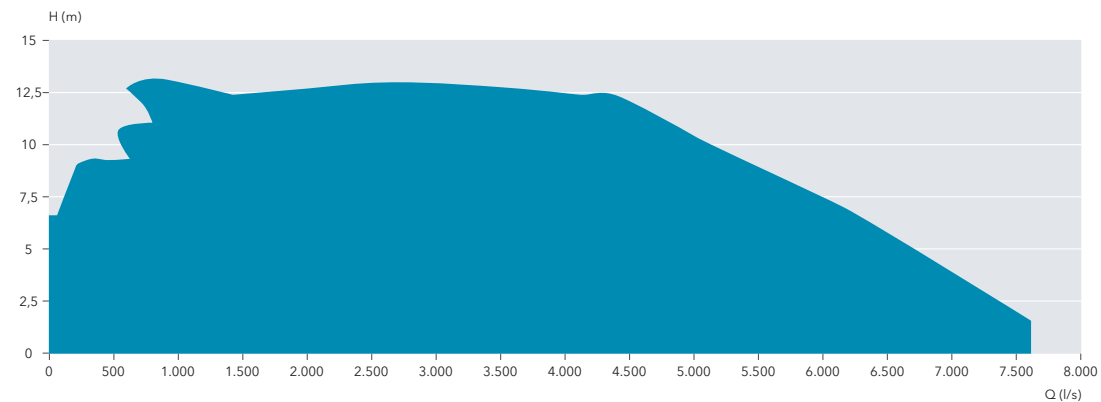


Flygt
PL 7000 Series

Installation Examples



PL 7000 Series Performance Fields



- 1 In concrete structures: For pumping to channel. No check valve is required.
- 2 In manufactured column: For pumping channel to channel. No check valve is required.
- 3 With a discharge pipe and free outlet.
- 4 With submerged outlet and flap valve.
- 5 With a siphon.



Lowara
FH Series

The FH Series consists of highly effective, compact, single-stage centrifugal pumps in compliance with EN 733 - DIN 24255. Ideal for dry-installed end-suction pumps.

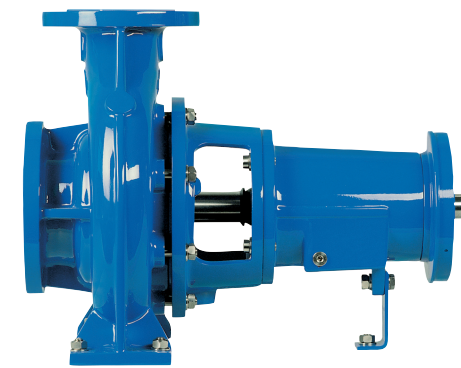
- Delivery: up to 900 m³/h
- Head: up to 100 m
- Power supply: both single and three-phase 50 and 60 Hz
- Power: from 0.25 kW up to 132 kW
- Maximum operating pressure: 16 bar
- Temperature of pumped liquid: from -30°C to 120°C
- 2, 4, 6, or 8 pole motors available

Construction Characteristics

- Cast iron centrifugal pump with end suction and radial discharge ports
- Hydraulic sizes and nominal diameter (DN) of suction and discharge ports according to EN 733 (ex DIN 24255)
- Flanges according to EN 1092-2 (ex UNI 2236 and DIN 2532)
- Back pull-out design (impeller, adaptor and motor can be extracted without disconnecting the pump body from the pipes)

FHF Series Frame Mounted Cast Iron Pumps

| | 50Hz | 60 Hz |
|----------------|-----------------------|-----------------------|
| Capacity up to | 900 m ³ /h | 950 m ³ /h |
| Head up to | 100 m | 100 m |
| Power up to | 132 kW | 90 kW |



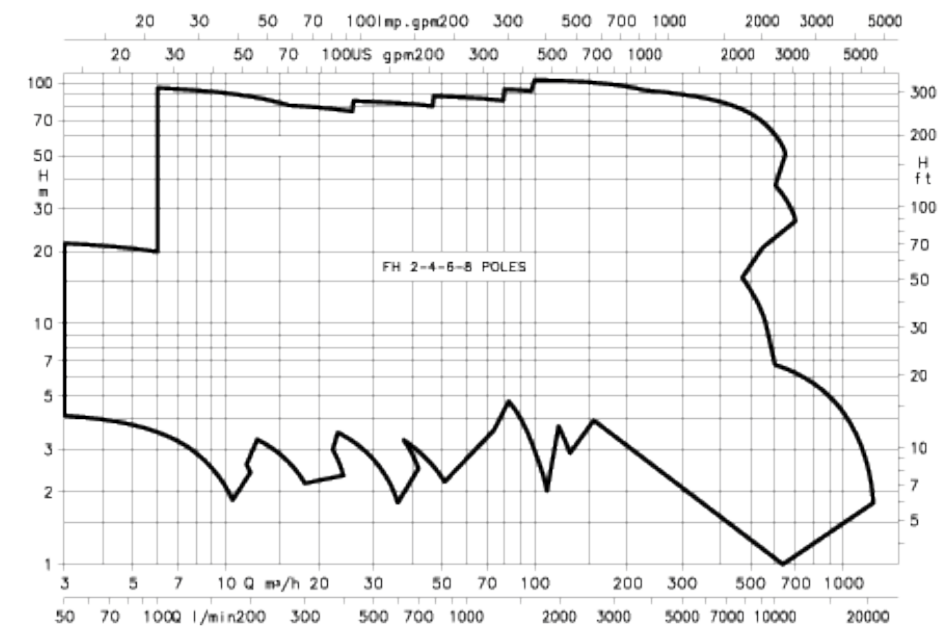
Cast iron pump body and AISI 316L stainless steel, laser-technology welded impeller. Suitable for pumping hot and cold, moderately aggressive liquids. Larger pumps utilize durable cast iron impellers.

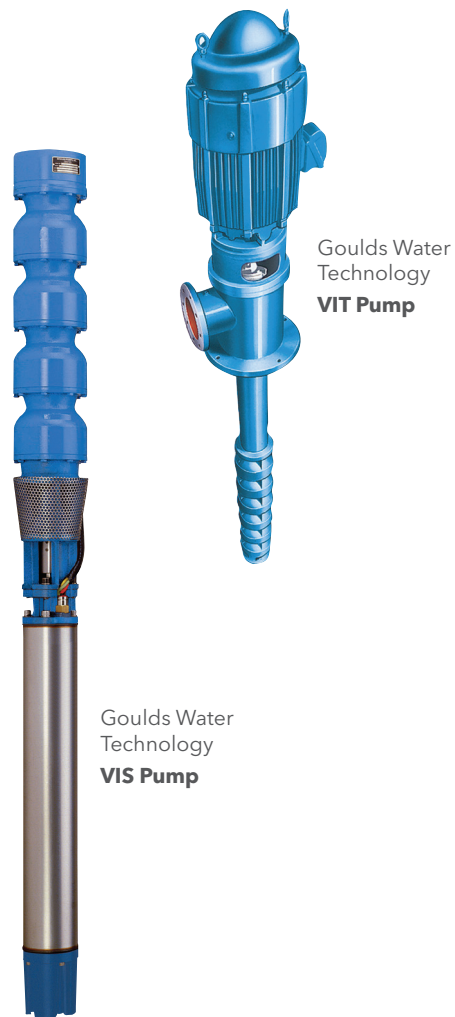
Available models:

- FHE close-coupled with special motor shaft extension.
- FHS with stub shaft and standard motor for quick, easy replacement if needed.
- FHF with flexible coupling, adapter, base and standard motor in compliance with EN 733 - DIN 24255.

- Various voltages and frequencies available
- Special materials for mechanical seals and gaskets
- Version with Hydrovar control system (VFD mounted on top of motor)
- Bronze impeller available

FHF Series Hydraulic Performance Range at 60 Hz





Goulds Water Technology
VIT Pump

Goulds Water Technology
VIS Pump

Using state-of-the-art techniques in turbine pump design, Goulds Water Technology vertical turbine line covers a wide range of hydraulic conditions to meet virtually every pumping service in the industry with optimum efficiency.

Goulds Water Technology VIT Vertical Industrial Turbine Pump

- Fabricated discharge head and flanged column
- Flanged bowl construction
- 416 SS shafting
- Alloy construction with external flush of critical wear areas available for corrosive/abrasive services
- Built-in alignment and simple piping for less costly installation and ease of maintenance/reduced downtime

Goulds Water Technology VIS Vertical Industrial Submersible Pump

- Ideal for deep-set applications where use of lineshaft pumps is impractical
- Complete unit is installed underground resulting in space-saving, quiet operation

MJK pump controllers provide pump alternation over times, counting starts and running hours, calculation of pump flow and integrated communication capability to SCADA systems.

Controller 701

- Level control of 1 pump and 1 alarm or 2 pumps in alternating service

Controller 704

- Up to 4 pumps or valves between adjustable levels
- Selectable functions for control, alarm, indication and flow calculation



mjk
704 Pump Controller

MJK M μ Connect is an integrated control and monitoring instrument with features for power optimization of pumps with the control of frequency and has functions for calculation, data logging and communication with SCADA systems.

M μ Connect has WIFI built-in and is operated with a PC program, Instrument Link, and can be monitored and updated with a smart phone with graphic and flexible access to data and controls.



mjk
M μ Connect controller and Instrument Link PC program

Heating/Cooling Exchanger



Plateflow

Plateflow gasketed plate and frame heat exchangers provide more heat transfer in less space.

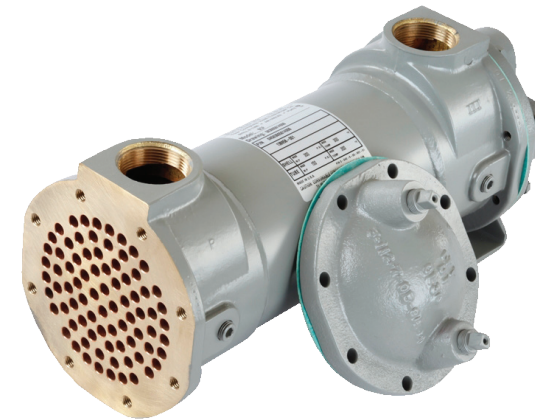
- Plateflow's unique plate designs offer superior heat transfer coefficients compared to shell and tube heat exchangers
- Plateflow models have higher surface area to volume ratios than shell and tube heat exchangers
- Plateflow's perform with 1/3 to 1/5 the surface area required in a shell and tube heat exchangers
- Available in connection sizes 1" - 24" with stainless steel or titanium plates as well as single and double-wall plate designs



Brazepak

Brazepak brazed plate heat exchangers provide the same type performance characteristics of gasketed plate heat exchangers but with the use of brazing technology to eliminate gaskets.

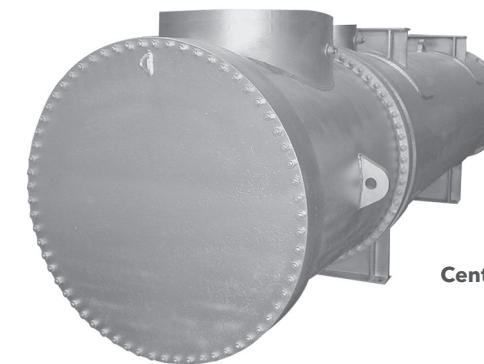
- Brazepak's are available with connection sizes 3/4" - 4" and with both single wall and double wall constructions
- Plateflow models have higher surface area to volume ratios than shell and tube heat exchangers



Pre-Engineered Series

The **Century Series** engineered shell and tube and **Pre-Engineered Series** shell and tube exchangers offer complete customization for your unique heating and cooling applications as well as the ultimate in product reliability.

- Pre-Engineered Series shell and tube exchangers configured and constructed using pre-designed components yet allowing for the flexibility of choosing unique features and options
- Pre-Engineered Series shell and tube heat exchangers are available in shell diameters of 2" - 8" in copper alloys, stainless steel and carbon steel materials. Century series engineered shell and tube heat exchangers are completely custom designed for your specific applications. Carbon steel, stainless steel alloys, and titanium are available in 5" - 60" shell diameters



Century Series

The continuous flow of design innovations and refinements, the availability of a variety of new construction materials, and an expanding array of "non-traditional" applications have made the task of heat exchanger selection more complex than ever before. Engineers are increasingly finding answers to these challenges in the Century Series heat exchangers. This line of products offers a vast range of combinations in design, performance, materials and options for virtually any heat transfer problem.

Whatever the application requires, chances are there's a Century Series heat exchanger that's right for the job.