

Workshop Abstracts - 2019

10 Hour OSHA General Industry Course - Stiles Inc.

Designed by OSHA to provide an awareness training on topics such as: Introduction to OSHA, Walking and Working Surfaces, Electrical, Hazard Communication, Personal Protective Equipment. Exit Routes, Emergency Action Plans, Fire Prevention, Material Handling, Hazardous Material (Flammables and Combustibles), and Permit Required Confined Space Entry. Persons completing both days of training will be mailed an OSHA 10 General Industry Card distributed by the Department of Labor.

CPO Certification Blended Training* – Joel Yankie, Columbus Zoo & Aquarium and Zoombezi Bay Waterpark

The CPO® certification program includes pool and spa chemistry, testing, treatment, filtration, maintenance, automatic feeding equipment, and government requirements. Participants will achieve a better understanding of the operator's role in pool care, management, and risk reduction. Many state and local health departments accept the CPO® certification program. This two part course begins with prior completion (before the AALSO Symposium) of an online curriculum that follows the 18 chapters in the NSPF® Pool & Spa Operator™ Handbook, which is also provided. Students must bring a Pool Operator Primer™ Record of Completion to the classroom on Thursday and successfully complete the Pool Operator Fusion™ class to obtain a CPO® Certification. The CPO® certification program requires an in class open book written examination. Upon successful completion of this course and exam, participants will receive CPO® certification from NSPF in the mail and is valid for five years.

ASME B31.3 Solvent Cementing Training for PVC & CPVC – IPS Workshop Supplies provided by LASCO Fittings, Inc.

This training will be done in a **two part series**:

1. Will be the classroom theory, where the attendees will be presented the ASTM D 2855 step by step procedure for solvent cementing a PVC or CPVC joint. This includes how to choose the proper tools to use as well as the proper grade and type of cement and primer based on the diameter and type of pipe being bonded.
2. Will be hands on, where each of the attendees will build their own component assembly that will be shipped to a lab to be tested to the ASME B 31.3 required parameters. If the assembly passes the test a training certification card will be issued in that individuals name and will be sent to them. If the assembly fails the test, than that individual will be notified that they did not pass the testing and will need to go through the training again.

Please Note: This is a 2 part workshop and these workshops occur consecutively.

BAWL Startup & Commissioning (Wet)

This is a unique workshop in which the attendees will get a hands-on experience with all the exciting facets of the initial setup, startup, and commissioning of the Big Automated Water Loop. This workshop will provide a comprehensive system startup experience including, but not limited to: Flange assembly, solvent cement welding techniques, pipe fusion practices, protein skimmer assembly and tuning, introduction to automation, problem solving and troubleshooting.

Butterfly, Ball and Check Valve Workshop – Asahi America (Dry)

Hands on disassembly and troubleshooting of butterfly valves, ball valves and check valves (ball and swing/flapper). Parts identification, standard features, recommended spare parts, installation and setting of Gear-Operators, and complete tear down and rebuilding valves. How to properly diagnose failure conditions, symptoms of failures. Review of flow direction requirements where applicable along with

Workshop Abstracts - 2019

some light actuation issues and troubleshooting. Workshop attendees will have the opportunity to cycle through each of the manufactures above and work on a series of valves.

Understanding the Benefits of VFDs – ABB Inc. (Dry)

You've probably heard that variable frequency drives (VFDs) can help with energy savings, but exactly what does that mean? This session will teach you how and why VFDs can help save energy, reduce wear and tear on your equipment, and provide other benefits, and how you can leverage that knowledge to substantiate savings.

Laser Alignment of Pump and Motor Coupling – CECO Environmental – Fybroc Brand (Wet)

This presentation and alignment simulation will provide a brief tutorial of shaft alignment identifying the various types of misalignment, differences between shaft and coupling alignment and descriptions of the various methods of alignment including straight edge, dial indicator and laser. Utilizing a pump/motor coupling simulator the various methods of shaft alignment will be demonstrated highlighting the issues not identified by straight edge and/or dial indicator measurements. Finally, the laser alignment tool will be used to illustrate the condition of a motor "soft foot."

Maintaining Larger Pumps – CECO Environmental – Fybroc Brand (Wet)

This workshop will train and provide the attendees with the opportunity to perform the typical maintenance/repairs required on large non-metallic pumps. Subjects covered will include the various types of pump lubrication, changing pump oil (how much and how often), setting and/or replacing mechanical seals, axial adjustment of impellers, methods for removing threaded impellers, removal and/or replacement of INPRO shaft seals and finally a brief discussion and presentation of centrifugal pump cavitation.

Plate Heat Exchanger Preventative Maintenance – Delta Hydronics and Aqua Logic (Wet)

Hands-on discussion of plate heat exchanger components, basic design and general maintenance practices. Workshop will cover the principals of equipment sizing and aquatic application considerations. Workshop attendees will break down a small plate and frame heat exchanger, remove the plates, change the gaskets and reassemble the heat exchanger.

UV Sterilizer Maintenance – RK2 (Wet)

Hands-on workshop where participants will remove, clean and replace quartz sleeves. Participants will learn and physically replace O-ring seals, contacts and bulbs on a UV sterilizer and will learn about life expectancy of various bulbs along with recommended frequency of maintenance.

Ozone System Design and Integration – Satchell and Associates, Ozone Water Systems (Dry)>(Wet)

1. Participants in this class will be given a presentation on the key components that make up an ozone system, engineering factors that are considered when selecting various components, different ways of contacting ozone with water and various air prep systems. At the conclusion of the presentation, the group will head to the workshop BAWL.
2. There we will cover ozone generation with a demonstration of all of the integrated safeties. This includes ambient ozone monitors, ozone destruct, backflow prevention, e-stop, pump control, ORP, dew point and more.

Please Note: This is a 2 part workshop and these workshops occur consecutively.

Workshop Abstracts - 2019

Ozone Exposed & Plasma Block Ozone Generator Maintenance- International Ozone (Dry)

Will take you through the often mysterious world of ozone production systems from the beginning to end. Attendees will be provided you with simplified formulas to easily calculate: Applied ozone dosage, ozone dosage required for specific applications, existing ozone system production and how to validate ozone system output. Also covered our "Ozone System Laws" which outline the minimum required, non-negotiable features an ozone system must have in order to function reliably. We will also cover important questions you should ask your ozone system supplier. Discussion on upgrading older ozone systems to newer types of ozone technology and existing infrastructure concerns. This will be a revealing eye opener for most people and will hopefully reduce some of the anxiety that comes with such a complex system. The second part of this workshop will cover disassembly and cleaning of plasma block cell, troubleshooting of plasma block, routine service of self contained oxygen concentrators, troubleshooting of self contained oxygen concentrators.

Proper Calibration & Maintenance of DO, pH & Conductivity Sensors - YSI (Dry)

This workshop will go over the proper way to calibrate the parameter DO, pH, ORP and Conductivity. It will include hands on calibration with the proper worksheet and information needed for calibration records. This will also go over when it is recommended to calibrate and what standards to use for your application.

Thermoplastic Materials for Compressed Air Applications - IPEX (Dry)

This workshop will discuss various thermoplastic materials that are suitable and safe for use in compressed air applications. Attendees will learn what makes a suitable material and why traditional materials are unsuitable. Different methods of joining will be discussed as well as system repair and start-up options. Each attendee will also have the chance to assemble a unique compressed air system joint without the use of any cements, primers or heat fusion machines.

Converting Manual Valves to Automated Valves in Service - IPEX (Wet)

This hands on workshop will discuss and showcase the benefits of installing actuator ready valves. Beginning with manual valves, attendees will walk through the necessary steps to automate valves while they are in service. The necessary components for conversion will be discussed as well features to look for when choosing valves that could be automated in the future.

Actuator Adjustments – Bray (Wet)

Workshop attendees will have the ability to witness actuators that are out of adjustment and subsequently make the necessary adjustments to the actuator to bring it back to within normal operating parameters. Attendees will also cover valve diagnostics information available through the SMART positioner for proactive maintenance.

Acrylic Scratch Removal – American Sealants, Inc. ASI (Dry)

Workshop attendees will be instructed on proper techniques for performing preventative maintenance tasks on acrylic surfaces, assessing and properly identifying damage to acrylic surfaces such as crazing, minor scratch identification and major scratch identification. Workshop attendees will be taught the techniques of minor scratch removal and have the opportunity to remove minor scratches from an acrylic tank.

Automated Control Systems Workshop – RCK Controls

This workshop will run throughout the day as in informal discussion/observation and will not be a slot in which an attendee can register for. The intention is to provide an opportunity for an attendee to interact

Workshop Abstracts - 2019

with the controls end of the BAWL as you finish a workshop or are between activities. The automation supports many of the actual workshops so there is usually something going on. Folks from RCK and ABB will be on hand to provide an overview of how an Automated Controls System (ACS) can help save time, energy consumption, reduce mechanical stress and provide different types of alarms for times when the LSS is not functioning within parameters. B.A.W.L 2017 will be run through a control system and attendees can witness live feedback from various points throughout the system including flow, pressure and level. The loop pumps will all be run off VFD and the folks from ABB will be on hand to discuss soft starting pumps, control through a VFD and maintenance items on a VFD.

Please Note: This is an Informal Workshop.

Troubleshooting LSS Control Systems – RCK Controls

Operators will connect to a simulated LSS to learn standard techniques for troubleshooting LSS problems. A variety of scenarios, starting with simple and escalating to higher difficulty, will be demonstrated. Attendees will interact with the simulation to diagnose and correct the cause of the problem. At the end of the workshop a final troubleshooting scenario will be set up, first person to solve the problem will receive extra credit!

Ozone, ORP and Probe Calibration – GF Signet (Wet)

This hands-on class will build a better understanding of the relationship between these topics. Equipment will be on hand that offers participants the opportunity to properly operate a Signet wet tap assembly and perform the procedures necessary to verify and ORP reading including cleaning, & calibration. frequency. Will also address, adapting various sensor measurements for installation in larger size lines, and proper installation of salinity sensors

Chlorine and D.O. Calibration – GF Signet (Wet)

This hands-on class will build a better understanding of the application, operation and maintenance of these instruments. Equipment will be on hand that offers participants the opportunity to get familiar with and learn how to calibrate these sensors and analyzers.

Point of Measurement, Remote Multi Parameter Monitoring & Flow Technologies Update - GF Signet (Dry)

This class will cover the options available to operators for measuring various parameters (flow, ORP, Dissolved Oxygen, Salinity, etc.). It will go over the benefits of Smart blind sensors, local readouts/controllers, and remote reporting of parameters and where they may best fit your measurement needs. The flow portion will focus on available technologies, feature sets, benefits, where to apply them, and installation precautions

Actuated Backwash Valves - Hayward Flow Controls (Wet)

This workshop will target will be selection and operation of Actuated Backwash Valves illustrating the benefits of automating systems; highlights of actuation maintenance and configuration included.

Filtration and Straining Products - Hayward Flow Controls (Dry)

The workshops will focus on general Bag Filter and Basket Strainer sizing, operation, maintenance and safety. The program will include in-depth discussions of the effects DP has on filtration and straining performance as well as operator and equipment safety. Presentations will include general overview of proper bag changing and strainer cleaning procedures. Utilization of Bag Filter and Basket Strainer will be used for hands on illustration and training.

Workshop Abstracts - 2019

Small Pump Rebuild – MDM Inc (Wet)

Many people are unaware that small pumps can be rebuilt much in the same respects as their larger “cousins”. Workshop attendees will have the opportunity to cycle through each of the above manufacturers and completely rebuild these pumps from impellers and shafts, to seals and even changing motor’s.

Pump Sizing – MDM Inc (Dry)

A focus on all moving parts from mechanical seals and impellers to motor bearings and shafts, you’ll gain the knowledge and skill set required to add value by keeping your pump systems functional while reducing downtime. Additional discussions on proper installation, VFD interface, duty point sizing, and optimal curve placement to duty-point via motor rpm control (turn-down or ramp-up) will be provided.

Alternative LSS Piping– Asahi America (Wet)

We are all familiar with PVC piping used in most of our LSS Systems. We will discuss the benefits of other materials, such as HDPE and Polypropylene and how they can benefit LSS Systems. These piping systems are installed with thermal fusion. This method of installation requires only a very short cool-down period, not the long curing process that we all have skipped to get the system up and running. Each attendee will conduct a thermal socket, side saddle or butt fusion weld.

Protein Fractionation – The Keys to Successful Equipment Selection and Long Term Operation - RK2 Systems, Inc.(Dry)

The process of protein fractionation has been in use within the zoo/aquarium industry for nearly forty years. While there have been many improvements to enhance the process, there has been even more debate over what can be done to maximize the efficiency of this process. The primary objective of this workshop is to explain how protein fractionators operate and why it is a valuable life support system, (LSS), component. Further, we will discuss the various types of protein fractionators currently available within the market, explaining each technology’s associated benefits and limitations. With this understanding in mind, we will expand our discussion towards equipment selection criteria with topics ranging from bubble sizes and air to water ratios to the importance of flow designs, bombardment ratios, and contact time inside your protein fractionator. With a firm understanding of how to size our equipment, our conversation will shift towards understanding the cost of ownership and equipment efficiencies. Understanding that the manufacturing processes and materials vary will help us tackle what is needed, versus what “bells and whistles” may look good but offer no improvement. Lastly, we will dispel the most common misconception associated with protein fractionation, “A protein fractionator should produce waste continuously or it is not working properly”, by presenting scientific facts rather than myths put forward by manufacturers trying to provide undersized equipment to the industry.

Protein Fractionator Technologies, Installation, Maintenance – RK2 Systems, Inc.(Wet)

Workshop designed to provide overview of protein fractionator technologies, highlighting the various benefits and limitations associated with each process. In addition to having participants learn assembly and cleaning protocols, we will cover how ozone works in conjunction with protein fractionation and close out the session with the group working through various troubleshooting scenarios in real time.

Basic Drum Filter Maintenance - Integrated Aqua Systems, Inc.(Wet)

Integrated Aqua Systems, Inc. is offering a hands-on workshop on the operation and maintenance of gear wheel driven drum filters using a HEX drum filter installed and operational on the BAWL. Attendees will

Workshop Abstracts - 2019

receive basic instruction on the theory of operation, key parts identification, backwash sequence and proper start-up of a drum filter. Practical section will include basic maintenance tasks required to operate and maintain drum filters to their design specifications including panel maintenance, lubrication, basic controls set up, troubleshooting.

Advanced Drum Filter Design Considerations & Maintenance - Integrated Aqua Systems, Inc.(Wet)

Integrated Aqua Systems, Inc. is offering a class with instruction on design considerations, proper selection, application and maintenance of gear wheel driven drum filters using a HEX filter installed and operational on the BAWL as a working example. In addition to a brief overview of basic drum filter operation and maintenance, attendees will receive an overview of different drum filter types, control systems, options and design applications. Practical section will include basic controller setup and programming required to operate and maintain drum filters to their design specifications.

High Rate Sand Filter Training - Neptune-Benson, Dryden Aqua (Wet)

The Hardware: The Filter

A general introduction of the High Rate Sand Filter; how it works, and a brief explanation of the parts of the filter. A discussion and demonstration of filter inspection; draining, removing the manway, inspecting media and laterals, how to lance the media, how often should lancing be done, replacement of manway and leak testing before putting filter back in to service. Discussion and demonstration about filter operation and automation, different kinds of valves and valve sequencing, how to operate a filter manually when the automated controller fails.

The Software: The Media

Different types of media available. Different media for different purposes. Mixed media, media grading and quantities. The importance of filter design to media performance. The advantages of deep bed filtration and the influence of filtration rate on performance of different media. A simple demonstration of the differences between 2 media. A discussion and demonstration about filter backwashing; why we do it, when to do it, and how often. The importance of backwash velocity and bed expansion in backwash.

Regenerative Media Filter Training - Neptune-Benson (Wet)

A general introduction to the Regenerative Media Filter; how it works, and a brief explanation of the parts of the filter. A discussion on filter rate and precoat rates, what a "bump" cycle is and why it's done, what to look for in a good coating versus a bad coating of media on filter elements, differences between Perlite and Diatomaceous Earth media. A discussion and demonstration on a drain and rinse procedure, loading new media, performing a "bump", performing a precoat cycle, and observing system valve cycling and adjustment to the program, air sparging, RMF controller programming for "bump" schedule, "bump" block, fireman connections, Variable Frequency Drive connections, and UV lock outs. Discussion on performing periodic maintenance; valve adjustment, bump assembly maintenance, tube wash and chemical cleaning, and controller software upgrades.

Plast-O-Matic (Wet)

Our focus on the design of the flow loop for AALSO was to create a dynamic, interactive loop that educates the attendees about how these types of products safely control process flow conditions.

Attendees will receive hands on experience in the following areas:

- Actuate 2" lug style butterfly valve for loop pressurization
- 4-20 mA control of a characterized ball valve for chemical dosing or flow control.
- Control downstream pressure with adjustable Pressure Regulator.
- Control solenoid activity and GPM through Flow Control units.

Workshop Abstracts - 2019

- Drain lateral lines and reopen line while watching the air being evacuated through our acrylic (for show demonstration) Air Release Valve.
- Adjust our Three-Way Pressure Relief valve and visually watch the flow being diverted to a bottom outlet during over pressurization.
- Drain lateral lines and reopen line while visually seeing the air being evacuated through our acrylic (for show demonstration) Combination Air Release Degassing Valve.
- Operate our newest adjustable speed compact Basiks electric actuator.
- Additional discussions about proportionally controlling the level of an aquarium tank by opening a V-Notch ball valve proportional to the amount the level is dropping. Inexpensive, reliable solution utilizing an Echopod and 4-20 mA controlled electrically actuated ball valve with V-Notch custom ball.

Acrylic Scratch Removal – EisenShine (Dry)

Learn how to remove scratches and restore clarity to acrylic enclosures. Hands-on experience removing scratches from acrylic on wet or dry surfaces by hand sanding, and polishing. Discussion of acrylic properties, the aging process, and tips for how to extend the useful life of all acrylic enclosures.

Blueprint Reading - Satchell Engineering & Associates (Dry)

Learning to read blueprints is an essential skill for designers, contractors, engineers, operators and building owners. In this lecture and hands-on class, you will learn the vocabulary and language of blueprints. Topics covered include drawing scales, P&ID's, plan, elevation and section drawings, architectural symbols and legends. This course will help you understand how a set of blueprint drawings are put together and how to read them.

Building the Foundation for an OSHA-Compliant Dive Program - Dive Operations - Paul Dimeo (Aquarium of the Pacific) (Dry)

In this Lecture we'll walk through the OSHA regulations required to build a compliant dive program from the ground up. The workshop will focus on training, documentation, equipment, and servicing requirements and how to implement them in a safe and easy way that works for your specific needs and facility.

OSHA-Compliant Facility Diving Made Easy - Dive Operations - Paul Dimeo (Aquarium of the Pacific) (Dry)

In this lecture we'll break down the barriers and misconceptions of conducting OSHA-compliant dive operations at your facility. We'll walk through the basics of the OSHA Diving Regulations and how to apply them to routine maintenance and inspection dives conducted at zoo and aquarium facilities. We'll also discuss outsourcing your dive operations and how to manage and oversee those contractors.

Basic Water Chemistry - Testing Techniques - YSI and the WQ Education Committee (Water Quality)

This workshop will provide basic information, tips, and tricks on performing the common water quality tests that are crucial to the operation of a zoo or aquarium system. This 45 minute workshop will demonstrate and provide hands on training for common testing like Nitrogen Cycle (Ammonia, Nitrite, and Nitrate), Chlorine, Bromine, Phosphate, Copper, pH, Temperature and Salinity by use of a variety of testing methods. The focus of this workshop is to compare testing method with cost and accuracy.

Workshop Abstracts - 2019

Water Quality Lab Safety - Karen Tuttle Stearns (Aquarium of the Pacific) (Water Quality)

This lecture will provide an overview of Laboratory Safety. This 45-minute lecture will cover basic laboratory best practices in safety standards like laboratory hazards, personal protective equipment, storage of chemicals, chemical spills and laboratory green practices. The focus of this lecture is laboratory best practices.

Water Quality Instrumentation/Equipment Options - Jeff Gibula (Newport Aquarium) (Water Quality)

This lecture will provide an overview of the equipment needed in a water quality laboratory that supports the operation of a zoo or aquarium system. This 45-minute lecture will cover chemicals, glassware, laboratory supplies, electronics, spectrometers, meters, and burets. The focus of this lecture is from set up to expansion, and will highlight what equipment is needed at a variety of budget levels.

Life Support Levels 1 and 2 Certification Exam Prep - LSS Certification Committee(Exam Prep)

This workshop will cover the format of the certification exams, and focus on the math and calculations in found in the AALSO Field Guide.

Life Support Level 3 Certification Exam Prep - LSS Certification Committee (Exam Prep)

This workshop will cover material for the Life Support Level 3 exam through an example problem and will allow time for discussion.

Water Quality Levels 1 and 2 Certification Exam Prep - Water Quality Certification Committee (Exam Prep)

This workshop will cover the format of the certification exams, and focus on the math and calculations in found in the AALSO Field Guide.

Water Quality Level 3 Certification Exam Prep – Water Quality Certification Committee (Exam Prep)

This workshop will cover material for the Water Quality Level 3 exam through example problems.