Workshop Abstracts - 2026
Life Support

10 Hour OSHA General Industry Course – Stiles Inc. (Dry)
Designed by OSHA to provide 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. People completing both days of training will be mailed an OSHA 10 General Industry Card distributed by the Department of Labor.

Acrylic Scratch Removal – American Sealants (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.

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 sections will include basic controller setup and programming required to operate and maintain drum filters to their design specifications.

Ambient Ozone Safety Workshop – Ozone Water Systems (Dry)
We will discuss ozone gas basics. Codes and threshold values. Procedures to safely find the source of a leak.
Review Ozone Water Systems Safety Standards for ambient ozone monitors setpoints, Signage, and maintenance. Specifically Risk Level 1, Risk Level 2, and Risk Level 3 exposure areas.
Then we have a hands on troubleshooting and “bumping” of an ATI and OWS ozone safety monitors. We will show how they operate when ozone is detected, what the different features are, and how they interact with controls, ozone generators, estops and alarm horns and strobes.
We will discuss your own sites procedures to respond to ozone leaks and help develop procedures. Assisting will be Ozone Water Systems Level 3 Regional Service Techs so you can share your sites ozone safety program or how to set one up.

ASME B31.3 Solvent Cementing Training for PVC & CPVC – IPS Workshop (Dry)
This workshop will cover the basics of solvent welding PVC pipe, causes of failed joints and cement & primer selection. There are two parts to this class. There will be a PowerPoint Presentation in a classroom and a hands-on class where each student will make a sample under our supervision. The sample will then be tested at our facility. If the sample passes the hydrostatic testing, the student will be issued an ASME B31.3 Bonder qualification card stating that they have successfully completed the training.

Assessing Ultraviolet Light Sources for Exhibit Use – Reef Brite (Wet)
A hands-on workshop that focuses on Ultraviolet light sources, their differences, and their safe use around animals and humans. Participants will be instructed on how to measure the presence of both UVA and UVB. They will learn how to determine safe ranges of exposure for both animals and handlers. Participants will also participate in underwater measurements for the presence of UV to demonstrate its effectiveness in penetrating water.

Automated Control Systems Workshop – RCK Controls (Wet)
This workshop will run throughout the day as an informal discussion/observation and will not be a slot in which an attendee can register for. This is an opportunity for attendees to interact with the Variable Frequency Drives (VFDs) and the control system at the end of the BAWL as you finish a workshop or are between activities. The automation supports many of the other workshops so there is usually something going on. Folks from RCK will be on hand to provide an overview of how VFDs and Automated Controls Systems (ACS) can help save time, energy consumption, reduce mechanical stress and provide alarm notifications when the LSS is not functioning within parameters. The B.A.W.L will be automated by a control system, and attendees can witness live feedback from various points throughout the system including flow, pressure and level.
This workshop may also cover VFD basics including how to program VFDs to perform simple process tasks with direct feedback from sensor(s). Basic VFD integration stumbling blocks and nuisance faults/trips will be discussed. Methods for detecting, diagnosing problems and troubleshooting resolutions will be offered.
Please Note: This is an Informal Workshop and is not specifically scheduled, but is open and always available to visit at the B.A.W.L. control booth

BAWL Commissioning & Startup – AALSO (Wet)
This unique workshop is designed for newcomers to the LSS industry. The attendees will get 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. During the BAWL build-out this workshop will cover a variety of topics including:
·· Flange Assembly ·· Cement Welding ·· Fusion Welding ·· Commissioning ·· System Start-up ··
·· Pump and Motor Rebuild ··Water Quality ·· System Controls ·· Automation··

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 receive basic instruction on the theory of operation, key parts identification, backwash sequence and proper start-up of a drum filter. Practical sections 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.

Basic LSS-Skid Style – Hayward (Wet)
Demonstration and discussion with a life support skid to illustrate the variety of life support system components, as well as automating systems, basket strainers, bag filters, pumps and more. The skid-based system will contain a variety of products including valves, filtration, strainers, actuation, and control products for an operational education experience

Basic Monitoring Systems & Troubleshooting – RCK Controls Inc. (Dry)
This workshop will cover basic monitoring and automation systems concepts and components to prepare facilities to adhere to requirements set by the Association of Zoos & Aquariums (AZA). Participants will gain insights into both the technical and practical aspects of deploying and operating these systems. Come learn how to add a simple monitoring and control system to ensure optimal animal welfare.

Blueprint Reading – Satchell Engineering & Associates (Dry)
Understanding blueprint reading is a fundamental skill for designers, contractors, engineers, operators, and building owners. In this interactive lecture and hands-on class, you'll gain a solid understanding of blueprint terminology and conventions. Key topics include drawing scales, P&IDs, plan, elevation, and section views, as well as architectural symbols and legends. This course is designed to help you understand how blueprint sets are organized and to confidently interpret their details.

Butterfly Valve Repair/Disassembly/Reassembly – Hayward (Dry)
The workshops will focus on basic butterfly valve installation and will include hands-on training to remove and/or replace the valve liner, shaft seals, shaft and disc, and the re-assembly of the same. The program will also discuss different valve/liner materials and when (or not) to use them.

CPO Certification Blended Training – Joel Yankie
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.

Designing for Animal Perception: Lighting & Sensory Worlds in Modern Exhibits – Provolitan (Wet)
Perception is the primary interface through which animals interact with their environment, yet it is often interpreted through a human sensory framework. This workshop explores how different animal species perceive their surroundings in fundamentally different ways, with a particular focus on the connection between visual perception and lighting. Across taxa, variations in spectral sensitivity, light intensity tolerance, flicker perception, and circadian rhythms shape how animals experience their habitats. What appears natural or aesthetically pleasing to human visitors may be stressful, disorienting, or biologically inappropriate for the animals themselves.

Dry Actuation Workshop, Basics 101 – Hayward (Dry)
A short overview about electric actuators and their applications followed by the breakdown/opening of the actuators, identification of the critical parts and features, cam adjustments, and the powering up of the actuators and their basic operation.

Exhibit Lighting Design + DMX Lighting Programming Workshop – Kessil (Dry)
This workshop will focus on two main topics, exhibit lighting design and a hands-on review of DMX Programming. Designing lighting for an exhibit must meet many different standards and signoffs from various groups. This workshop will dive into considerations from all aspects and how to ensure animal health is maintained while interfacing with other trades and departments. One major challenge is interfacing with controls systems, and we will review DMX Programming, the way exhibit lighting can tie in with building lighting, and how to create common exhibit effects such as sunrise to sunset, lunar cycles for coral spawning, and varied looks for "extended hours" exhibits.

From Startup to Calibration: Building Confidence in Actuated Valve Operations – Asahi (Wet)
Good for all levels! This hands-on course is ideal for individuals looking to expand their knowledge of actuation operations and troubleshooting. Participants will gain practical experience selecting and installing electric actuators including both on/off and modulating types onto valves within an operational piping system. During the course, participants will remove manual operators, mount actuators and bracketry onto valves, and connect control wiring to both the actuator and a local Human Machine Interface (HMI) panel. Instruction also includes how to read and interpret wiring diagrams. By the end of the workshop, participants will verify actuator operation to confirm proper installation. Upon successful completion, participants will receive a Certificate of Completion recognizing their achievement.

Heat Management Through Application of Refrigeration Equipment – Aqua Logic, Inc. (Dry)
Effective heat management is critical in aquatic life support systems and other controlled environments. This workshop will explore practical strategies for moving heat, addressing both the addition and removal of thermal energy to maintain optimal conditions. Participants will learn how to evaluate applications through fact collection and investigation, considering variables such as water type (fresh, salt, glycol mixtures), organic load, and flow characteristics. At the end of this workshop, participants will have a clear understanding of heat management principles, equipment selection, and energy-efficient solutions for aquatic systems and beyond.

High-Rate Sand Filter Training – AALSO (Wet)
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 about filter operation and automation, different kinds of valves and valve sequencing, how to operate a filter manually when the automated controller fails. Different types of media available, 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 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 and routine maintenance for the filter bed.

Industrial Sumps: System Operation & Maintenance – MRC America (Wet)
The purpose of this BAWL workshop series is to provide an operational industrial "iSeries" sump with accompanying peripherals alongside the BAWL loop to demonstrate the following protocols: ● How to plan for and initiate basic sump maintenance with staff. Topics include filter sock change outs and cleaning, ongoing sump care, and long-term unit upkeep ● Operation and maintenance of an Integrated UV system. Topics include lamp and sleeve changes, quartz sleeve care, proper flow/wattage selection, and ballast maintenance ● Moving and static bed bio-chamber selection, operation, and service ● Ambient monitor calibration frequency.● Automatic roller mat system operation and service ● Fractionator technology comparisons and maintenance. This will cover both Beckett style and Needle wheel injection technologies and their associated care. Additionally, workshop attendees will be provided with a service template and checklist to follow up with staff members ensuring routine maintenance is achieved and accounted for on their own systems. Topics from this workshop will coordinate alongside the MRC "dry" sump workshop as well discussing initial sump design with integration into new systems or retrofitting old ones.

Level II Actuated Butterfly and Ball Valve Workshop – Georg Fischer (Dry)
Hands on assembly, disassembly, and troubleshooting of electrically actuated butterfly valves and ball valves. Workshop will consist of parts identification, installation and setting of electric actuators, and complete disassembly and reassembly. Additionally, wiring of the actuators, diagnosing failure conditions, and overviewing actuator features will be covered.

LSS System Design Principles: "The Big Picture" – Cloward H2O (Dry)
This session will discuss items to consider for LSS system design. This includes water quality factors and the systems to control them. We will investigate determining turnover times, filtration methods and sizing, piping and distribution. Will also address common system configurations and the pros & cons of each.

Maintaining Larger Pumps – Tusk Industrial (Formerly CECO Fybroc) (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.

Mastering Valve Selection & Maintenance – Asahi (Dry Workshop)
Join us for an engaging, hands-on workshop designed to build your confidence and skills in valve selection and assembly for life support systems. This interactive session begins with a clear overview of common valve types, their practical applications, and unique benefits. Participants will observe live demonstrations on ball and butterfly valve assembly, swing check valve cleaning, and proper techniques for torquing flanges. The course will also include an overview of some often-overlooked Asahi/America components — including flow control ball valves, manual limit switches, Y-strainers, and even ECTFE piping systems for LSS applications.
Back by popular demand! To keep things fun and interactive, we will continue our friendly contest that will challenge participants to assemble and disassemble a ball valve as quickly as possible, with a leaderboard to recognize top performers. Who will be the fastest? At the end of the workshop, participants will leave with a stronger understanding of valve systems and will take home a ball valve. Hands-on practice ensures you gain practical experience in a supportive environment. This workshop is ideal for anyone looking to expand their technical skills while enjoying a collaborative, engaging learning experience!

Measuring & Assessing Lighting for Exhibits & Coral Restoration – Reef Brite (Dry)
A hands-on workshop that instructs participants in the assessment of light sources for aquatic animals. There's a section that addresses working with corals and preparing them to be returned to the wild. Participants will receive detailed instruction on measuring and evaluating ppfd (PAR), PUR, DLI, Kelvin, Lumen, Lux, CRI and more. The workshop will offer participants the opportunity to use a Spectrometer, Quantum Flux Meter, and other light measurement equipment, used to test and evaluate light sources for exhibit and facility use.

ORP Maintenance & Calibration, & Available Flow Measurement Technologies as Well as Proper In-Line Installation of Salinity, Temp, & Dissolved Oxygen – GF Signet (Wet)
For ORP - Course will be focused on proper removal from live line, cleaning, conditioning, recommended frequency & calibration of ORP systems. For Flow- Will discuss available flow technologies Paddlewheel (mechanical), Magnetic (no moving parts), and ultrasonic (non-intrusive). Going over features advantages and benefits of each. For the balance we will cover proper installation of salinity (avoiding dead spaces and bubbles), Temp sensors in larger lines and options for mounting Dissolved Oxygen sensors.

Oxygen Concentrator Service & Basic Troubleshooting – International Ozone Services (Dry)
Valve rebuilding, compressor and mount replacement, solenoid troubleshooting, discussion of proper operation of oxygen concentrators, causes of low oxygen purity.

Ozone Safety – AALSO (Dry)
This classroom style workshop will cover basic ozone safety topics such as:
● What Codes Govern Ozone. ● What ambient air thresholds are allowable by code. ● What PPE should be used when entering an ozone-laden space. ● Ambient monitor calibration frequency.
We will discuss recommendations for ozone generator rooms, emergency stops, transmitter locations and ambient alarm set points. Participants will be encouraged to share experiences and interact with the intent of gaining a better understanding of ideal ozone installations.

Ozone System Design & Integration – Satchell Engineering & Ozone Water Systems (Dry)
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.
This is a unique opportunity to get perspectives from the design side and the equipment provider side. Come with questions!

Ozone System Training & Maintenance – Ozone Water Systems (Wet)
On the BAWL we have a complete skid mounted ozone system. We will discuss design and review all of the components of an ozone system and the integrated safeties. This includes air prep, ozone generator, back flow prevention, injector, pump, contact tank, and ORP and ambient ozone monitors and review PM requirements for all of the components.
We will discuss and demonstrate the Ozone Water Systems Industry Safety Standards.
Safety for the Equipment (dew point, back flow prevent)
Safety for the Animal/ Fish (high ORP, signage, bubbles in water)
Safety for us People (bump test, signage, strobe, SOP)
We will demonstrate critical tests to ensure the safeties actual work. We hope you will bring this back to your facility and test your safety interlocks!

Plasma Block Ozone Generator Maintenance Troubleshooting & Repair – International Ozone (Dry)
Conduct hands-on training on the following:
● Troubleshooting ozone generators with plasma block. ● Disassembly and cleaning of plasma blocks, YES you can do this yourself. ● Discussion on upgrading older ozone systems to newer types of ozone technology and existing infrastructure concerns. ● Discussion of attendee system challenges. ● Q&A with workshop presenter

Plate Heat Exchanger Preventative Maintenance – Delta Hydronics (Wet)
Hands-on discussion of plate heat exchanger components, basic design and general maintenance practices. Workshop will cover the principles 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.

Principles of Management – AALSO
Discussion surrounding principles of management, Dennis Ethier has over 25 years' experience in various management roles in Zoos and Aquariums and will be sharing experiences that have worked well along with things that have not worked so well. The session will cover time management techniques, Computerized Maintenance Management Software (CMMS), budgeting and inventory. This class will be beneficial for anyone thinking about advancing into a management role in their career and even for some existing managers who may be able to offer different perspectives or take away some new ideas. The discussion will be open, none of the information is designed to be "You must do it this way", it is more sharing what has worked well and what hasn't.

Protein Fractionation – The Keys to Successful Equipment Selection & Long-Term Operation - RK2 Systems, Inc. (Dry)
Protein fractionation has been a staple of zoo and aquarium life support systems (LSS) for nearly forty years. Despite its longevity, debates persist regarding how to maximize efficiency. This advanced workshop explores the science behind foam fractionation, detailing why it is a critical LSS component. We will shift from theoretical understanding to practical application, covering equipment selection criteria—including bubble size, air-to-water ratios, flow design, bombardment ratios, and contact time. The discussion will also address the total cost of ownership and equipment efficiencies, helping participants distinguish essential engineering from superficial "bells and whistles." Finally, we will debunk common misconceptions to separate proven science from industry gimmicks.

Protein Fractionator Technologies, Installation, Maintenance – RK2 Systems, Inc. (Wet)
Workshop designed to provide an 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.

Protein Skimmers – Beyond the Foam MRC America (Dry)
This hands-on Workshop is designed for beginning to intermediate aquatic specialists interested in the care and service of varying styles of foam fractionation units.
We will discuss and demonstrate various brands and types available on the market, showcase their features and benefits, differences in technologies, and allow participants to engage in the deconstruction, mock cleaning, and reassembly of the various units. Units will include both external and submersible configurations. After the workshop, attendees will be better prepared when designing and working on smaller systems.

Pump Installation, Laser Alignment & System Component Impact on Pump Performance – Tusk Industrial (Formerly CECO Fybroc) (Wet)
This presentation and alignment simulation will provide a brief tutorial of proper pump installation and 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."
In addition, this workshop will train attendees on Identifying and learning about key systems components that work in conjunction with pump systems and how they can impact pump performance. (VFD's, filters, sealing systems, etc.)

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.

Regenerative Media Filtration: Operation, Controls Integration, & Maintenance – Neptune Benson (Wet)
This workshop will provide an in-depth look at the Neptune Benson Defender RMF Filter System. Participants will gain a comprehensive understanding of the sequence of operation and learn best practices for configuring and optimizing its control setup. The session will feature a fully assembled skid with all major components. The hands-on demonstrations will include maintenance procedures, maintenance of all moving parts and troubleshooting techniques. Attendees will leave with practical knowledge to ensure reliable performance, extend equipment life, and maintain water quality standards in their facilities.

Review of Biological Lighting Technology & Practices for Zoos & Aquariums – Provolitan (Dry)
This workshop will look at the requirements of biological lighting in zoos and aquariums. It will discuss color temperatures that are natural for animals within these collections and the impact of lighting on animals, practical installation processes, and lastly examine the true meaning of full spectrum lighting. The workshop will also review the requirements outlined by AZA and what these guidelines imply for facilities in their lighting installations and automation requirements. Lastly this workshop will aim to provide ideas on how to solve common lighting issues seen within facilities that have been historically problematic, but can now be solved.

Small Ozone Systems Workshop – Ozone Water Systems (Dry)
Participants in this class will be given a brief presentation on Clearwater Tech ozone generators, air prep, backflow prevention, controls, ozone safety monitors, ozone destructs. Troubleshooting, design, integration.
Then a hands troubleshooting on three systems. Clearwater CD-2000P, CD/10 and CD/12. Pressurized and vacuum air prep systems, ozone destruct and simple control options. And an opportunity to rebuild the CD-2000P cells and CD/10-12 cells.
We will discuss PM frequency and at the end you will have the opportunity to discuss your specific issues at your facility with one of our OWS level 3 techs. So, bring photos of your systems and questions!

Sand Filter lateral Design – Dryden Aqua (Wet)
What to take into account when looking at ordering a media filter for replacement or a new system.
-Filter hydraulic design – does your choice suit your application
-Flow rate vs filtration velocities calculations
-Surface area usage
-Manufactures filter flow claims vs realistic performance expectation in different requirements
-Effective backwashing
-Demonstration of the performance between 2 filter designs.

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 be provided with the materials and tools to rebuild pumps including case disassembly/assembly, O-ring maintenance, as well as impeller, shaft seal, and motor replacement. Participants will also have the opportunity to remove and replace motor shaft bearings on sample motors using a hydraulic press.

The Intersection of LSS & Construction – Longhorn Organics (Dry)
To provide deeper understanding of the construction process and how it intersects with LSS. Discussions of construction documentation, LSS & Construction means and methods, Handover procedures and post project continuity.
Attendee Take Away:
• How to read and interpret LSS specific construction documents.
• Communication documents (RFI, Change Order, Submittal)
• Drawings, P&ID, Layout, models
• Specifications
• Commissioning and Post Handover (O&M, Testing Docs, etc..)
• How to correlate LSS needs and the BIM modeling world.
• Deeper understanding of how decisions are made in the pre-construction and active construction process.
• What tools are available to LSS Operators after construction to better onboard a new exhibit system.
• Q&A with workshop presenters.

Ultraviolet Technology: From Lab Science to Field Application – Xylem (Dry)
Explore the transformative role that ultraviolet (UV) technology can play in Life Support Systems (LSS) for aquatics facilities, zoos, and aquariums. This 1.5-hour session covers the science, design, and application of UV disinfection systems. Following the class, participants will be equipped with the knowledge to select and implement UV solutions for their facilities. Topics include an overview of UV system types, ultraviolet transmittance (UVT) considerations, construction and operation principles, validation testing, and a comparison of UV and ozone treatments. Whether you're designing a new facility or optimizing an existing one, this course will provide actionable insights to help enhance water quality and protect aquatic life.
Ideal for LSS professionals, facility operators, and engineers, this session combines technical knowledge with practical applications to address real-world challenges in LSS environments.

UV Sterilizer Maintenance – RK2 Systems Inc. (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.

VFD EMI Noise & Motor Bearing Failure Mitigation – MH&W International Corp. (Dry)
This hands-on Workshop is designed for any aquatic specialist interested in learning the basics of how VFD's create EMI high frequency noise and the effect this noise has on electronics and motor bearings in the aquatic life support system.
We will discuss several EMI noise detection methods and present the use of a Rogowski coil and oscilloscope to detect and measure high-frequency common mode currents created by VFD's. Participants will learn about various industry standard mitigation techniques available on the market, showcase their features and benefits, differences in technologies, and allow participants to share their experiences.
Participants will have the opportunity to perform hands-on real-life testing with a Rogowski coil and oscilloscope with one of the mitigation techniques verifying its effectiveness through post-installation testing.

Water Quality Dry workshops

Basic Water Chemistry - Testing Techniques - AALSO (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 an opportunity to work with a variety of laboratory equipment used for common testing like Nitrogen Cycle (Ammonia, Nitrite, and Nitrate), Chlorine, Bromine, Phosphate, Copper, pH, Temperature and Salinity. The focus of this workshop is to compare testing methods with cost and accuracy.

Water Quality Lab Safety - AALSO (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 safety best practices.

Water Quality Equipment Options - AALSO (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.

Water Quality Lab QAQC - AALSO (Water Quality)
This lecture will provide a deeper dive into advanced Laboratory QAQC and best practices to ensure high quality data from your water quality testing. This 45-minute lecture will cover best practices for quality assurance, detailed explanations of the types of QC employed by laboratories, calculations for QC, theory behind uncertainty and detection limits, and method development (including method/calibration curve setup and validation). The focus of this lecture is laboratory quality control and quality assurance best practices.

Water Quality Ask Me Anything - AALSO (Water Quality)
This workshop will be a roundtable of water quality experts who will be available to participants to ask questions, get advice, or just discuss the latest and greatest in water quality. This 45-minute round table will provide an open forum to chat about any and all things water quality with some of the most experienced professionals at AALSO.

Exam Prep

Life Support Levels 1 and 2 Certification Exam Prep - LSS Certification Committee
This workshop will cover the format of the certification exams and focus on the math and calculations found in the AALSO Field Guide.

Life Support Level 3 Certification Exam Prep - LSS Certification Committee
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
This workshop will cover the format of the certification exams and focus on the math and calculations found in the AALSO Field Guide.

Water Quality Level 3 Certification Exam Prep – Water Quality Certification Committee This workshop will cover material for the Water Quality Level 3 exam through example problems.

Certification Exams

Life Support Level 1 Exam: 60 minutes for level 1
The life support operator certification acknowledges general operator proficiency with tasks ranging from basic routine operations to advanced applications and theory, covering topics such as: sand filtration, biological filtration, chemical filtration, cathodic protection, turbidity, safety, pump curves, troubleshooting, pool volume calculations, filter surface area calculations, and pool turnover rate calculations.

Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, students from aquarium-based programs, or working in a related field and looking to transition into a life support or water quality role. It is possible to take both the level 1 LSS and level 1 WQ exam during the same symposium.
25 Multiple Choice Questions
- 15 Operational Questions
- 5 Safety and Regulatory Questions
- 5 Mathematical Calculations

Life Support Level 2 Exam: 60 minutes for level 2
The life support operator certification acknowledges general operator proficiency with tasks ranging from basic routine operations to advanced applications and theory, covering topics such as: sand filtration, biological filtration, chemical filtration, cathodic protection, turbidity, safety, pump curves, troubleshooting, pool volume calculations, filter surface area calculations, and pool turnover rate calculations.

Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, and students from aquarium-based programs.

In order to sit for the level 2 exam, you must have passed the level 1 exam with a score of 70% or higher. Please note, you are unable to sit for a level 1 and then proceed to a level 2 exam during the same symposium.
25 Multiple Choice Questions
- 14 Operational Questions
- 4 Safety and Regulatory Questions
- 7 Mathematical Calculations

Life Support Level 3 Exam: 90 minutes for level 3
The life support operator certification acknowledges general operator proficiency with tasks ranging from basic routine operations to advanced applications and theory, covering topics such as: sand filtration, biological filtration, chemical filtration, cathodic protection, turbidity, safety, pump curves, troubleshooting, pool volume calculations, filter surface area calculations, and pool turnover rate calculations.

Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry or provides goods and services to the animal care industry.

In order to sit for the level 3 exam, you must have passed both the level 1 exam and the level 2 exam with a score of 70% or higher. Please note, you are unable to sit for a level 2 and then proceed to a level 3 exam during the same symposium. If you are sitting for a level 3 exam, you are not eligible to sit for an additional exam during the same symposium.

Water Quality Level 1 Exam: 60 minutes for level 1
The water quality technician certification acknowledges general operator proficiency with tasks ranging from basic laboratory techniques to advanced applications and theory, covering topics such as: laboratory safety, laboratory equipment and measurements, quality assurance and assessment, nitrification, denitrification, basic microbiology monitoring, understanding stoichiometry and chemical reactions and dilutions.

Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, students from aquarium-based programs, or working in a related field and looking to transition into a life support or water quality role. It is possible to take both the level 1 LSS and level 1 WQ exam during the same symposium.
25 Multiple Choice Questions
- 10 Water Quality Testing Theory Questions
- 5 Safety and Regulatory Questions
- 4 Analytical Equipment Questions
- 5 Quality Control/Quality Assurance Questions
- 1 Mathematical Calculation

Water Quality Level 2 Exam: 60 minutes for level 2
The water quality technician certification acknowledges general operator proficiency with tasks ranging from basic laboratory techniques to advanced applications and theory, covering topics such as: laboratory safety, laboratory equipment and measurements, quality assurance and assessment, nitrification, denitrification, basic microbiology monitoring, understanding stoichiometry and chemical reactions and dilutions.

Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry, and students from aquarium-based programs.

In order to sit for the level 2 exam, you must have passed the level 1 exam with a score of 70% or higher. Please note, you are unable to sit for a level 1 and then proceed to a level 2 exam during the same symposium.
25 Multiple Choice Questions
- 8 Water Quality Testing Questions
- 6 Chemistry Questions
- 4 Safety and Regulatory Questions
- 9 Mathematical Calculations

Water Quality Level 3 Exam: 90 minutes for level 3
The water quality technician certification acknowledges general operator proficiency with tasks ranging from basic laboratory techniques to advanced applications and theory, covering topics such as: laboratory safety, laboratory equipment and measurements, quality assurance and assessment, nitrification, denitrification, basic microbiology monitoring, understanding stoichiometry and chemical reactions and dilutions.

Eligibility: Current AALSO members who are any one of the following: actively employed in the animal care industry, provides goods and services to the animal care industry.

In order to sit for the level 3 exam, you must have passed both the level 1 exam and the level 2 exam with a score of 70% or higher. Please note, you are unable to sit for a level 2 and then proceed to a level 3 exam during the same symposium. If you are sitting for a level 3 exam, you are not eligible to sit for an additional exam during the same symposium.