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New Logic's 2019 Rep Seminar

After a few years with no Rep Seminar event, New Logic recently hosted another get together event for its regional Representatives and Distributors. Previous seminars were held in 2011 and 2013. With several changes at New Logic and with many new projects and applications, it was past time to update New Logic's global partners. New Logic invited about 100 companies who have been recently active or previously active in promoting the VSEP technology. This event was held March 20th through the 23rd at New Logic's relatively new facility in Minden Nevada near Reno.

One of the main topics discussed was New Logic's move of its operations from the San Francisco Bay Area to the new facility in Nevada. After more than 30 years manufacturing VSEP near San Francisco, it was decided that this location is not desirable for the long term and so the transition to another more manufacturing friendly place was needed. New Logic has moved all of its manufacturing activities to the temporary facility in Minden that was started 6 years ago in anticipation of this move. New Logic has kept an administrative office in the Bay Area where sales and engineering activities take place. A move of a large operation like this is not easy and so the Seminar was a good opportunity to explain the process and reasons to our distributor network.

Attending were 17 company representatives from Russia, Jordan, China, South Africa, Ireland, England, Pakistan, and Thailand. The companies represented included Ion Exchange Technologies, AWJ Water, Clinty Chemicals, Talbot and Talbot, Good Earth/Delta Pyramax, Encotec, Aquatech, and Esmil Process.

On the second day of the event, several of New Logic's engineers gave presentations on some of the recent VSEP success stories. We wanted to share with our distributors the best opportunities for the VSEP technology so they could take that back to their country and find these kind of projects.

Attendees of the 2019 VSEP Rep Seminar

The first of these presentations, led by Matt O'Brien, gave examples of how membranes and especially VSEP membranes are used for a process known as diafiltration where soluble contaminants can be washed from a chemical product such as latex. New Logic has installed several of these type of projects in the past.

Chris Moore summarized all of the successful VSEP installations for treatment of raw manure of digestate after anaerobic digestion to make biogas. Chris has commissioned two full-scale projects for this application and has conducted several pilot tests for the same. He shared his first-hand experience in working on these projects.

New Logic engineer, Jiruth, covered probably the best VSEP application, which is treating the reject from a spiral RO system. Jiruth recently returned from expanding a VSEP system at a bottling plant in Thailand which serves this purpose. Jiruth shared his experience on this project and talked about other VSEP projects installed for RO reject.

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Nick Auger conducted a presentation showing many of New Logic's landfill leachate installations. VSEP has

been installed for leachate treatment around the world in New Zealand, Ireland, South Africa, Korea, and many in Latin America. With the assistance of New Logic's representative in China, New Logic has also recently received and order for a leachate system in Singapore.

Tom Henry explained how VSEP can be used to treat Whey wastewater to turn it from a liability into a value added product that can be sold. Toms' presentation covered a recent pilot test he conducted in Mexico for this purpose.

Senior Engineer, Roger Torres, gave an update on installed projects that were new at the time of the previous seminar in 2013 to explain how the projects are running now.

During the next day, there were several hands-on workshops given to update our Reps in things like Marketing, Maintenance, and Bench Tests. Two of the international distributors, AWJ Water and Esmil Process have represented New Logic for more than 10 years. Some of the other companies such as Encotec, Talbot & Talbot, and Clinty Chemicals are new. These workshops were a benefit for all agents, old and new.

New Logic would like to thank all of the people who attended this event. We will have another Rep Seminar in two years. Copies of the presentations and pictures from the event are available upon request.

Top Ten Lists for VSEP

Last 10 Bench Test Applications
Lactose Concentration
Hemp Oil Clarification
Landfill Leachate
Cow Manure
Digested Vinasse
Olive Mill Wastewater
Rubber Production Effluent
Electrochemical Machining WW
Fermented Mash Concentration
Poultry Wastewater

Last 10 Field Pilot Applications:
Corn Wastewater
Flue Gas Scrubber Water
Pig Manure
Metal Plating Wastewater
Whey Wastewater
Printing Ink Wastewater
Phosphate Pond Water
Copper Refining Effluent
Micro Cellulose Separation
Landfill Leachate

Last 10 Inquiry Applications:
Cellulose Press Water
Lignin Recovery
Pig Manure
Yeast Broth Dewatering
Wheat Straw Black Liquor
Salmon Manure
PVC Latex
Colloidal Gold Recovery
Cow Manure
Desalter Effluent

Recent Top 10 Country visits to Website:
76-United States
55-Canada
15-Russia
11-China
9-India
9-Mexico

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8-Germany
7-Spain
7-South Korea
6-Thailand

New Distributor Spotlight: Talbot & Talbot

New Logic is glad to announce its partnership with Talbot & Talbot. With almost 30 years of experience, they have installed 300 projects in 20 countries on the continent of Africa. The company employs a large number of engineers, scientists, and skilled technicians providing sustainable water treatment solutions to its customers.

The company CEO, Carl Haycock concluded partnership discussions with New Logic CEO, Greg Johnson where Talbot & Talbot will offer the VSEP technology as one of its treatment options to its customers. After completion of this, Senior Engineer, Claire Lipsett traveled to visit New Logic for in depth workshops on the VSEP technology. During her visit, the possible use of VSEP at several South African projects was discussed.

Claire Lipsett attending a VSEP Workshop

Talbot and Talbot provides consulting services to its customers who are facing water or discharge issues to help them overcome plant problems and to help them choose the best treatment options available. In addition, the company provides operation and maintenance services so that their client can focus on the task of making their product.

New Logic will benefit from the market access and the expertise supplied by Talbot & Talbot. They in turn, will benefit from being able to offer the VSEP technology to its customers for high strength effluent that is difficult to treat using conventional methods.

Word of the day: Zeta Potential

Zeta potential is the electrical charge measured in Millivolts that develops at the interface between a solid surface and its liquid medium. Membranes tend to have hydroxyl (OH-) groups extended out from the surface. This contributes to the hydrophilic nature of the membrane and also provides a negative electrical charge near the surface. The net charge at the surface affects the ion distribution in the nearby region of the liquid, increasing the concentration of cations close to the surface. Thus, an electrical double layer is formed in the region of the particle-liquid interface

University Report: Rowan University

Rowan University, located in Glassboro New Jersey, has had a VSEP LP pilot machines for many years and has conducted many studies for local industries looking for treatment solutions. Dr. Stewart Slater, the head of the Chemical Engineering Department, has directed these studies using student talent at the University. Previous work looked at the use of vibrational microfiltration of algae to dewater prior to extraction of oils found in the algae to make biodiesel.

More recently, Rowan conducted a study using VSEP to treat the effluent generated during the processing of soluble coffee to make a dried or concentrate coffee product. This effluent can be problematic and will have a dark color, low pH and high organic content containing oils. The complex nature of this

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wastewater also containing tannins, polyphenols, and Lignin can make treatment difficult using conventional biological methods.

Dr. Slater's group found that VSEP was a very effective method for treating this effluent and that the recovered water could be used for cooling tower make-up water or other types of process water. The VSEP when using RO was able to remove 97% of the turbidity and COD and reduced the conductivity by 99%

Rowan University, Glassboro New Jersey

The study found that the complex nature of the effluent would quickly form a gel layer when fed to a conventional spiral crossflow membrane element, but that the shear employed by the VSEP RO membrane gave favorable results and good flux rates.

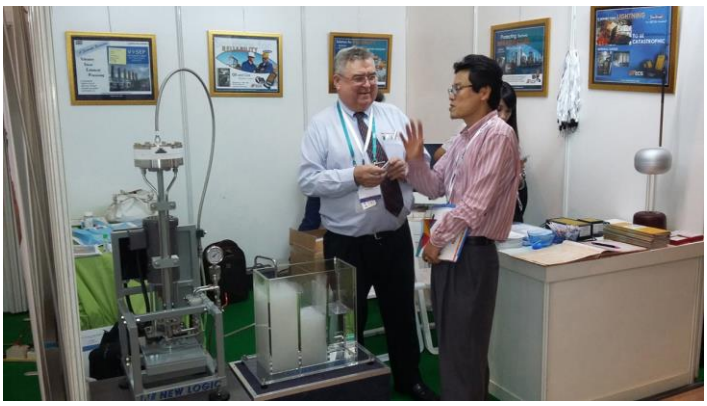
The study was done using effluent provided by Nestlé USA and was funded through the Pollution Prevention Grant Program of the U.S. Environmental Protection Agency.

VSEP's First Expedition to Indonesia

New Logic Research has worked for several years with its local representative company, Oilindo Dinamika International, to develop projects in Indonesia. Indonesia is a unique place and has more than seventeen thousand Islands. Having a population of more than 261 million, it is the 4th largest country in the world in terms of population.

Industrialization and urbanization began in the 1960's and the country has progressed from an agricultural-based economy to manufacturing. Indonesia has the largest economy in Southeast Asia. With the advance of industrialization, there are needs for modern technology when it comes to water and wastewater treatment. The markets open for new technology such as VSEP include Coal, Oil and Gas, Palm Oil, Rubber, Mining, and Textiles.

In 2013, the owner of Oilindo Dinamika International, Mr. Tommy Short saw an ad for VSEP in the Chemical Engineering magazine and contacted New Logic and expressed a desire to market the VSEP product as part of his product line. Work together began after that and Tommy helped to develop many projects in Indonesia. A few years later, Tommy and some of his staff visited New Logic in California. Sadly, Tommy passed away recently. Adding to our sorrow, his wife Maya, passed soon after that. Tommy will be missed, but his work continues and his staff including Mr. Albertus Sondak have continued to pursue water treatment projects.



Mr. Tommy Short Demonstrating the Series B VSEP Unit

One project that Tommy started was a treatment option for a company that prints currency for the government in Indonesia. This project has developed

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and New Logic recently sent pilot equipment to perform demonstration testing at this facility. New Logic's engineer, Chris Moore, traveled there to perform the pilot testing.

The wastewater resulting from the printing operation contains high levels of dissolved solids, chemical oxygen demand (COD), and has high pH. The client currently runs the effluent through a filter press before hauling it at great cost. The client wanted to be able to reduce the volume of wastewater for hauling and produce a clean permeate stream for discharge or reuse at no cost. In order for the treated water to be discharged or reused, large reductions in Biological Oxygen Demand (BOD), COD, and the metal Nickel would be needed.

This kind of effluent is a good one for VSEP because it is high in organics, metals, and other contaminants. The client had tried flocculation, chemical treatment, and other technologies. Because of the complexity of the effluent, an expensive multistep treatment process would be needed using many dissimilar technologies. However, VSEP is able to treat this effluent with only one type of process equipment.

New Logic's engineer, Chris Moore, was able to demonstrate the VSEP capabilities to the client and while operating the pilot unit at 60 Bar pressure was

able to recover about 70% of the volume as RO permeate. The VSEP pilot unit was fitted with an ESPA RO membrane. The VSEP permeate removed had a conductivity of only 645 µS from the feed effluent that had conductivity of 26,000 µS.

Even though the VSEP membrane was able to reduce the conductivity by about 97%, additional polishing was needed to reduce the BOD and COD to below the limits required by the client. For this purpose, a spiral pilot unit was used to filter the VSEP permeate making a 2nd pass with RO. After two passes, the conductivity of the final treated water was only 30 µS.

New Logic is very grateful for the effort of Tommy Short and for the fact that his staff has continued to promote projects in Indonesia in spite of the loss of Mr. Short and his wife. New Logic is also very happy to finally be working on the ground in Indonesia and is looking forward to installed projects there.

Application Spotlight: Palm Oil Mill Effluent

Palm oil is one of the most widely used ingredients in food that most people don't know about. It is used as an additive in Mayonnaise and in candy bars such as Butterfinger and Twix. It is also labeled as Vegetable Oil used for cooking. Palm oil production happens mainly in the tropical belt near the equator where year round production can occur.

Wastewater is generated during the crushing and processing of the palm oil fruit. Steam is used to extract the oil from the fleshy pulp. For every ton of oil that is produced another ton of effluent is generated. This wastewater can contain about 1-3% of the oil that may be emulsified and is not able to be extracted. The effluent is very high in BOD and COD, with COD ranges

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up to 70,000 mg/L. It can also contain tannins and other plant self-defense polyphenols that protect the plant from infection and fungus. Land application of the effluent can be problematic as these polyphenols will kill the beneficial bacteria in the soil that helps the plant grow.

Discharge of the effluent has been a problem for decades and while hundreds of studies have been done, a good simple solution has not been widely found. Discharge of the untreated effluent was done for a long time. But, because of the high Biological Oxygen Demand (BOD), when the effluent is discharge to surface waters, it consumes all of the Oxygen in the water and this is lethal to aquatic animals and plant materials.

The typical method of treatment for BOD and COD is anaerobic and aerobic digesters. These have been used with some success for palm oil effluent treatment. However, the high strength of this effluent and the presence of oil, tannins, and polyphenols make the digester process difficult to operate and maintain. In addition, the retention time for treatment can be 30 days or more meaning that very large ponds or tanks must be used.

VSEP can provide a very simple, small, and effective solution. New Logic has installed two full-scale projects for Palm Oil effluent treatment in Central America. The raw effluent is first screened and then filtered by the VSEP RO membrane to reduce the BOD/COD by 95%. Then, a second stage polishing step is accomplished by a conventional Spiral RO system yielding another 95% reduction. The overall reduction of BOD/COD is 99.8%

This is all accomplished with a filtration system that has a very small footprint compared to digesters. The final treated water can be blended with well water to provide feed to the boiler that makes steam. So there is no liquid discharge. Each VSEP module can process about 50-100 m3/day.

There is a small volume of concentrate left from the VSEP system. The spent fruit bunches are shredded. Some of the fibrous material is burned as fuel to generate heat to make steam. But much of the leftover plant material can be composted and used when planting new fruit trees. The concentrate from the VSEP is added to the compost to infuse nutrients and improve the quality of the compost.

Samples of 1st and 2nd Pass Treated Water

This whole process is small and elegant and most importantly provides a Zero-Liquid discharge situation. So rather than treating the water in large ponds and tanks using biological digesters and then discharging the effluent to surface waters, VSEP can allow for a

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completely closed loop with no discharge at all. Many palm oil mills are now required by their client buyers to adhere to sustainable solutions and with the addition of VSEP's closed loop process and recycled water, these companies can better market and sell their products.

New Team Member: Oleg Tcabilev

New Logic is glad to announce that Oleg Tcabilev will be joining our engineering team. Oleg has a very strong background in water treatment, membranes, and scientific research.

Oleg was born and raised in the small rural town of Buguruslan (population 49,000) in Southern Russia north of Kazakhstan. While growing up in a small town, Oleg was fond of photography, aircraft modeling, and sports. After graduating High School there, Oleg moved to Samara on the Volga River where he attended university majoring in Water Treatment Technologies and graduating in 2000.

Following this, Oleg continued his studies and received his Ph.D. focusing on the use of membranes to improve water treatment for power plants.

After graduation, Oleg went to work for a local engineering company named SWT Engineering. It was there he learned his craft and worked on many regional water treatment projects. After 17 years working for this company, he was promoted to senior engineer. After his work there, Oleg moved to Moscow and worked for Ion Exchange Technologies, a large multinational engineering firm.

Following his life-long dream to move to America, he has received approval and has moved here and has now joined New Logic Research. We are very happy to have Oleg working for us now and are happy to assist him in his vision for his own destiny. Oleg will be able to make great contributions to New Logic and its engineering team.

Contact New Logic

New Logic has recently moved out if its Emeryville facility and now has an administrative office in Concord California and a manufacturing facility min Minden Nevada. New Logic is expanding will be soon be relocating to a larger manufacturing facility in Nevada.

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