



Phone 727/573-0785 - 5100 Ulmerton Rd. Unit #7 Clearwater, Fl. 33760

Dustin Colina, President

PRESENTATION: 15 YEARS OF ZERO ACID DISPOSAL USING *PRO-pHx*

Speaker: Dustin Colina President & Owner Phone: 727-573-0785
Allbright Electropolishing, Inc. Clearwater, Florida

My name is Dustin Colina. I have been the owner and operator of Allbright Electropolishing for the last 13 years. Thank you for coming by today and I hope the presentation will be very helpful for you. Below are some of the important facts that I would like you to share with you.

In 2002, before we began using *PRO-pHx*, we were a **Large Quantity Generator** that spent over \$23,000 per year on virgin acid. We decanted over 25% of our bath every 2 months, which produced over 33,000 lbs (36-42 drums) of hazardous-waste per year. Using *PRO-pHx*, we became and are a **Small Quantity Generator** that spends just over \$3,000 per year on virgin acid. We no longer decant our baths which saves time, money, and materials. We now produce just over 11,000 lbs. (15 drums) of various hazardous waste each year.

Using *PRO-pHx* and Simple Filtration Allbright:

- Went from Large Quantity Generator to Small Quantity Generator Status
- Eliminated the Decanting Process Entirely
- Eliminated Waste Storage and Changed it to Product
- Eliminated Down Time
- Reduced Energy Consumption in These Heated Acids
- Consistent Production Quality due to Consistent Acids
- A Safety Benefit Due to Less Acid Handling
- Purchased 87% less Virgin Acid Annually
- Reduced Hazardous Waste Generated Overall by 64%
- Reduced Shipping and Manifesting of Waste

www.PRO-pHx.com

NASF White Paper

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15 YEARS OF ZERO ACID DISPOSAL USING *PRO-pHx*

Intro: “Good Morning”. My name is Dustin Colina and today I will be sharing a story of how my company has reduced our waste generation by over 90% and has maintained that for over 13 years.

(Before we get right into it, I do have a Verbal disclaimer: I am good at speaking with people, I’m not so good at droning on for over 30 minutes straight, so I will be encouraging questions as we go along. I do promise that this presentation and any answers I provide will both contain 2 things; Honesty, and answers to the best of my ability. I am not a chemist. I’ve never been to college. I did take over the family business young and have been the owner and operator of Allbright Stainless Steel Electropolishing Inc. for the last 13 years.)

Electropolishing of Stainless Steel. The explanation of Electropolishing basics is now presented. How it works (somewhat like reverse plating). We make the customer parts the anode (+) and we have stainless steel and/or copper Cathodes in the tank(s). What chemistry is used (sulfuric and phosphoric mixtures) in heated tanks. What it does (removes the outer skin of the material along with imbedded contaminants) This makes for a better corrosion resistance and a better surface finish.

What industries we serve: (Medical, Pharmaceutical, Food and Water Processing, Aerospace, Military, US government, Etc. or essentially any industry that requires Stainless Steel).

About the Company: AEI was founded in 1997 by Patrick Bogart, who, is my uncle. A year later he partnered with my father Arnie Colina whose degree in Electrical Engineering helped him pick up the process quickly and helped the company to progress. I worked for my father on and off for years as I finished school. And after I graduated, I became a full-time employee. I learned the production line and quickly rose to the position of shop foreman. In 2005 I became the company president. I had a great support staff with both my father and uncle, David French, and many others contributing. We were able to turn the company around from being inefficient, to literally making money on our waste acids.

Timeline: I’m going to present this story as it came to me in a timeline format. We will start in the year **2002** to look at how the shop operated before we began using *PRO-pHx*, and simple filtering. The company had been operational for 5 years now, and it had developed a consistent routine for its waste. Allbright was a Large Quantity Generator, creating more than 2,200 lbs. per month of Haz-Waste. We had 2 EP tanks for our process. One was an 800-gallon tank that we used for military parts that had high tolerances, and the other a 900-gallon tank for all other parts.

We had a decanting schedule that consisted of us replacing 4 - 55gallon drums of acid in our tanks with virgin acid solution, every 2 months. Every 60 days, we spend 8 hours pumping out hot used acid, that was full of metals & organics, pumping in the new virgin, and then waiting until the next day before the

tank would be at operating temp. Then we stored the hazardous waste and manifested it offsite, on a highly regulated basis.

In **2002** we spent a total of \$23,105.00 on new virgin acid. Our annual waste disposal was between 36-42 drums. (over 33,000lbs a year)

Two years later in **2004** Allbright found itself in a pickle. Both of our EP baths were in bad shape. Our main 900-gallon tank was completely unusable for Electropolishing and our “tight-tolerance” 800-gallon tank was on its last leg. Too many organics and metals from processing had accumulated in the baths and our decanting wasn’t enough. The costs incurred became too much to sustain and we were looking for solutions. That is when Arnie found an article in Products Finishing Magazine entitled “Long Live Acid Baths” which presented a process using a simple chemical catalyst addition and standard filtrations to remove metals and organics. It examined a catalyst called **PRO-pHx**. When added to the acid baths the catalyst would cause the organics and metals, that were dispersed in the liquid, to go from a dissolved state, to an undissolved state. This reaction would allow the standard filters to collect these contaminants for removal. After some discussion between Arnie and David French we tried it. We added 1% of **PRO-pHx** to our tanks or 9 gallons of **PRO-pHx**, for the 900-gallon tank and 8 gallons for the 800-gallon tank.

Within a few hours a thick jelly like substance had formed on the surface of the saturated acid. It was the organic and metals impurities changing to a non-dissolved state. We kept the filter running but we were able to scoop off a large portion of the jelly manually. Within 48 hours and with many filter cleanings or changes, both tanks were running within all normal operating parameters. The floating metals and organics had disappeared and the number of filter changes were significantly reduced.

In March of **2005** I stepped up as the new President of Allbright Inc. and let’s just say that times were tough. I had a lot of issues to take on. With functioning baths and some work available I had hope. In my 1st few months I learned a lot, but I also had about a dozen barrels of hazardous waste being stored that were quickly coming up to their maximum allowed storage date. Those barrels contained used acid that were saturated with metals and organics.

So we **PRO-pHx**’ed it all. We used an 800-gallon holding tank. We emptied the drums into the holding tank that had a Hazardous Waste identifying label on it. We then dropped in 2 Flo-King filters with 20 Micron poly-spun cartridges, and then added 1% of the total tank volume in **PRO-pHx**.

FLO-KING FILTRATION

Initially we had so many impurities in our tanks that we actually had a hard time filtering out the baths. To compensate we had to upgrade our filters from BX2500 to BX 5000s, which circulated/filtered the tanks at a rate of 5000 gallons per hour. We also went from single cartridges to quad-cartridges. It is interesting to note is that we were pulling out cartridges that had almost a full inch of sludge thickness on them. Then, with gloves on of course, we would scrape off the thick sludge into our solid haz-waste container. We would then simply RE-USE the same filter cartridges, only to pull out more sludge. We were able to consistently re-use the polyspun (meltblown) cartridges 2-3 times each, before there were stored for disposal.

Within a couple days, after checking the specific gravity and pH the acid was absolutely usable. We removed the Hazardous waste label from the tank and replaced it with a "Product Label". That immediately solved the storage of waste problem. Now I have almost 700 gallons of usable Acid stored. How do we effectively use this, and most importantly keep the quality of our baths consistent?

Removing the need to Decant....ever. This was, clearly a GAME HANGER!!

With close continuous talks between myself and David French he proposed the idea of using 50% of the used acid, with 50% virgin acid for tank additions when required. 1% of *PRO-pHx* was added with the required new acid addition based on volume. We had eliminated the need for decanting large amount of material every couple of months. Depending on the work load we found that on average we would lose 10-20 gallons a week thru drag out and evaporation. Why not just keep the tank topped off, while constantly adding fresh virgin material and simultaneously use up product that was once labeled "waste" a few days prior. Then we added the *PRO-pHx* at 1%.

On Friday every week, we cleaned off or replaced the filters in our tanks. We would determine how many gallons the tank was low from processing all week. Again, its usually around 10 gallons. We added 5 gallons of our saturated used solution, 5 gallons of virgin acid and 0.1 gallons of *PRO-pHx*. We often use the weekends to allow the tank to properly agitate, mix, and filter. Now again, in the beginning, there were a lot of metals and organics to remove, so for a short time we would clean or change the filters on Monday and then again on Friday. For the last few years we've only changed the filters out every Friday. We saved money on not having to Store, Ship, and dispose of Hazardous Acid Waste. We also eliminated the down time involved. Now we were actually making money on what was formerly an expensive waste.

In 2006 we submitted a Pollution Prevention Plan (P2 Plan) to the Florida Department of Environmental Protection. I also sent in a request to be listed as a Small Quantity Generator. **2007** Was a Big Year for us at Allbright Inc. Working with myself and David French, the folks at Products Finishing Magazine published a 3-page article about our methods of waste reduction and Acid Re-use. The article was titled "Clean, Economical, Electropolishing." In addition, the Florida Department of Environmental Protection not only approved our P2Plan but also our new Small Quantity Generator Status.

A production Company in L.A. California happened to see the PF magazine article. Modern Marvels on the History channel, was researching for an upcoming episode on "Acids". They reached out to me and asked me to be on the show. A film crew flew out and filmed my facility and crew for over 9.5 hours. It equated to literally 4 minutes and 58 seconds of air time, but I guess that's show business.

As a point of interest, just 5 years prior in 2002, we would have spent about \$23,500.00 on virgin acid, but in 2007, we only spent \$1,500.00. This was done while our business volume continued to grow and we saved even more than this by reducing our hazardous waste.

LQG-SQG Status and what it meant for us!

The transition from Large Quantity Generator to Small Quantity Generator was a HUGE leg-up for us. It reduced and even removed many of the requirements of our facility, our testing and our inspections. I'm sure most of you are familiar with either LQG or SQG statuses, but I don't know how many of you

have had the opportunity to be there before and after the transition, so I will elaborate a little.

As a LQG we had to conform to constant water tests from our local municipality as we have our final wash sink that does go to the city. We had to hire someone to test our rinse station every month to maintain our compliance with our water permit at about \$500 per test.

Our water permits also had to be renewed, reviewed, and our facility audited every year just to maintain it. The city would also like to drop in at random 3-6 times a year for random inspections.

We were required to have a Contingency Plan for every possible event, from fires and spills to acts of God. Facility Maps, locations of exits, safety equipment, and step by step instructions for every single possible problem, and their respected solutions were required. The Plans had to be sent to all local hospitals, first responders, fire departments, and local police. The plans had to be continuously updated and maintained with all parties, every year or we could be fined or even lose our permits.

We were required to install an audible alarm system in our facility in case of emergencies, which cost us a pretty penny.

Once we were approved for SQG status, we no longer were required to maintain and update a Contingency Plan or to have and maintain copies with the local authorities. We were instead required to have all emergency contact info from the President to the Local 1st Responders listed by all phones in the shop. That was easy. Once we were SQG status our Water Permit also changed so that we were required to now test our rinse water once every Quarter, instead of every 30 days. (again at \$500 a pop) Our water permit now must be renewed, reviewed, and our facility audited once every 4 years. In addition, our random inspections from the city now average 1-2 times per year.

In 2009 - Right as the economy went into the toilet, we were expanding our tanks from 900 gallons to 1,050 gallons. Our new tanks were capable of accommodating parts that were 36" wide. The new tank dimensions were 4' deep by 10' long by 40" wide. Of course, we have cathode bars to make room for so with 40" we could now process vessels and components that were up to 3' in width/diameter. We also upgraded our hoist system and all of our walkways at that time.

2011 We expanded our facility by 1,500 sq. ft. which we use to store all our finished parts.

2013 We bought a new forklift.

THE NUMBERS

In 2002 we were sending out about 30,000 lbs. of waste for disposal per year. At that rate, if we never found this **PRO-pHx** process, we would have produced 480,000 lbs. of waste. Or 240 tons. In the last 16 years....

However, since we began using **PRO-pHx**, our waste streams have gotten lower and lower. *From 42 drums a year.... To 15 drums*, a year, sent out for disposal, for the last three years in a row. In 2016, 2017 and 2018, we had a total of 15 drums of hazardous-waste. **Note that** these numbers include ALL hazardous waste generated at our facility. This includes satellites, universal wastes, rags, spent gloves, sludge from the filters, the filters themselves and any small discharges. This means we sent out only 11,250 lbs of waste a year, for the last 3 years running. Although we are very proud of these numbers, we are going to continue to work with **PRO-pHx** to bring these numbers down even further.

I encourage you to consider using *PRO-pHx* in your acid baths, even if you just do a little research. Get even just a 5-gallon container (it will clean 500 gallons of acid) and see for yourself. Reduce your waste, and maybe even re-used material that you currently consider as “waste”.

For the last 13 years or so I have spoken to a lot of different acid shop owners throughout the country asking about this process. This occurred either from seeing the article in PF magazine or the Modern Marvels episode that re-runs every few months or so. Even from *PRO-pHx*! I’ve had numerous people contact me by way of David French. They’ll call and say I got your number from David and I own an EP shop in N.C. or something and they want to know my experiences with *PRO-pHx* at my shop. I speak with every one of them and sometimes for a couple hours. I share what I know, what I’ve learned and what they can expect.

And at the end of the conversation most people really take the time to show appreciation for my time and my involvement. Because most of the people I speak with regarding this process are direct competitors to my business. **I tell them, what I’m about to tell you. It’s the reason I agreed to do this presentation to begin with:**

At the end of it all, the profits, the margins, the costs, the regulations, the requirements, permits... etc. Those are all far away from my thoughts. I calculate the sheer volumes of Hazardous Waste that I have prevented from entering landfills. Call me a hippy. My parents were raised in the 60’s-70’s... My mother STILL calls herself a flowerchild, and I have long hair. Regardless of your job, your industry, and your profit goals, this is something that can and will benefit you thru reduced acid use and less waste disposal.

For additional information contact:

Dustin Colina, President & Owner
Allbright Electropolishing, Inc.
Clearwater, Florida
Phone: 727-573-0785

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