Craft Brewers Conference 2021 Seminar – Question & Answer

Soft Hoses vs. Hard Pipes: Process Applications, Safe and Sanitary Design, and Limitations of Both

QUESTION	ANSWER
What did you switch to when you stopped using chlorinated caustic?	Sodium Hydroxide Caustic mix, recommended from Chemical supplier for our application of cleaning brewing, cellar, and packaging equipment.
Do you allow filler metal to be used in the welding of sanitary piping?	Proper back purging is critical for producing a sanitary weld, whether filler rod is added or not. Rod must be used when there are gaps between materials to be welded. The preferred welding method for sanitary butt joints is autogenous (no filler rod) orbital gas tungsten arc welding (GTAW or TIG). Autogenous TIG welding can be hand done by a skilled welder. Autogenous welding is not recommended for pipe size greater than 6" or for tube wall thickness greater than 1/8". A tube squaring machine must be used on butt joints to ensure that they are perfectly squared and mated prior to welding. There are a variety of fit-up clamps available to assist with hand autogenous welding.
Random sanitary welds you said use camera. Is x-ray necessary or is a visual inspection enough?	Visual should be plenty fine, X-ray is next level but not typical in this application.
For hard piping overhead to a packaging line with carbonated product, what's the best way to design a system to chase out small air bubbles from the high-spot?	Gas shouldn't come out of solution if tubing overhead to filler is under pressure. Pushing with water, then CO2, then product under pressure at filler will help this situation.
How often are you scoping your hoses?	At Blackstone, we just scoped our hoses for the first time in preparation for this presentation. We examined hoses that are 1, 7, 10 and 25 years old. The only issue found was one hose that was documented in the presentation. All of our hoses are high quality, properly reinforced with chlorobutyl tubes. Based on this experience, I would recommend inspection of new hoses after one year. If no issues are found, I'd inspect again at 5 and 10 years assuming nothing shows at the 5 year inspection. After 10 years, annual or biannual inspections are probably a good idea. If you identify a potential issue, record the distance from the end and re-inspect that spot after 6 months. If that spot has not deteriorated you can probably inspect once a year but I would inspect that entire hose at the one year points.
What about the common barbs and bands on draft lines?!	Barbs at the point of dispensing and for other non-sanitary transfers are fine. Regular cleaning of draft lines is important. Barbs and bands are an inexpensive option for non-sanitary uses in a brewer but they should not be use on one inch or greater hoses for pressure applications and never for CIP.
Is there a recommendation for inspection of hard	Use a camera/scope used for hoses works will for hard piping as well. Main thing is to look for gaps in the welds from a not fully penetrated weld and a shiny surface of the weld during the inspection. Dull or off color welds that aren't shiny are unsanitary.

piping, similar to hoses?	
If the triclamp is horizontal (parallel to ground) does direction of screw connection matter?	The positioning of the tri-clamp and/or screw connection does matter if it creates a deadleg. If you have a connection that is installed more than 1.5 pipe diameters away from the main piping run, then you'll want to pulse CIP to drain in order to clean that section of piping. Additionally, connections that are installed pointing up towards the ceiling can hold air bubbles that will negatively influence D.O. pickup and connections that are installed pointing down towards the floor can hold liquid and potentially allow for bacterial/mold growth if not cleaned properly. In general, thinking in terms of drainage and CIP will help guide you in the positioning of these fittings.
Are there upsides/downsides to din fittings compared to triclamp?	Yes, here is an incomplete list: 1 - DN fittings screw down tight, and have less risk of coming loose and spraying someone during CIP or HW sani. 2 – DN fittings and gaskets can be harder to come by. 3 – Tri-clamps connections are the same on both sides of the connection, thus requiring less welded parts to complete the connection. 4 – Tri-clamps are ubiquitous, and can be purchased through numerous suppliers. 5 – Tri-clamps present safety issues if they are not properly connected during CIP, i.e. a loose tri-clamp can come completely apart during CIP and spray hot liquid, whereas a DN fitting can simply be tightened down and usually that's enough to stop the leak.
Thoughts on sanitary conditions for braided tubing? E.g. Oetikers vs torque clamps. Types of barbs.	Braided tubing using a variety of tubing material (PVC, Silicone, PTFE & other) are manufactured to and have obtained FDA/USDA/3-A certifications. Hose barbs regardless of the style of clamp should not be used for wort, beer or any other sanitary transfers. There are sanitary fittings for braided hoses but those are used more for pharmaceutical applications than for brewing applications.
Does passivating your stainless steel pipes protect from chlorine pitting? How often should you passivate?	Chlorine pitting will happen regardless of if your stainless steel is passivated or not. The chromium oxide layer formed during passivation protects against oxidation and rusting, but not pitting. As far as passivation frequency goes, it's best practice to do so 1) before you are about to commission a new or used piece of equipment, 2) if you have performed a welding modification to an existing piece of equipment to passivate the weld or 3) if you start to pick up metallic flavors in your beer, and you have ruled out the possibility of iodophor sanitizer being left over in your system, 4) if you notice any rouging or even worse, rust during periodic visual inspections 5) and lacking those reasons, once a year
Is it a bad practice to leave valves on the ends of hoses when hanging them to dry?	My preference is to always leave hoses and/or piping systems clean, sanitized and dry, never packed with liquid. The exception being if you know you are going to fire up that system again within 24 hours. Reasoning is that if you leave a hose packed with PA, it can degrade the internal hose material, and if that hose sits packed with PA for too long, the effectiveness of the sani will be lost and you can potentially grow mold in your hose.
When heat sanitizing hoses can you do it too long and damage it?	If you stay within the temperature and pressure ratings of the hose, you will not damage the hose. However, please realize that hoses are derated with time and temperature. For instance, a brewery hose that is rated at 250 PSI that is heated at 200 Degrees for an extended amount of time will lose pressure rating down to only 105 PSI. When using hot temperatures, be careful not to accidently close a valve and blind the recirculation or you may damage the hose. You are more likely to physically damage a hose than damage it from heat. Keep them out of fork truck areas; never kink them, step on them or roll equipment over them.