Vacuum Lines: Scale Remediation & Prevention

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VACUUM TOILETS – A PROBLEM SOLVED, A PROBLEM CREATED?

While vacuum toilets have solved many of the odor problems associated with recirculating toilets, these high vacuum systems cause phase separation of the solids and liquids in waste and ultimately result in buildup of hard salt and mineral scale in the vacuum lines. Over time, this scale can quickly build up to 6mm or more in thickness, not only resulting in blockages, but also in the continuous carrying of excess weight.

Commercially available products utilizing either ***sulfamic*** or ***phosphoric*** are corrosive and can cause damage, leakage and failure. Routine use of ***vinegar (acetic acid) and crushed ice*** serves to combine mechanical abrasion from the ice chunks with very mild acid cleaning from the acetic acid. This method, however, can create surface pitting from the high velocity ice chunks that will ultimately increase the rate of scale formation. In addition, vinegar is ineffective as a urine scale removal material. As a final approach, ***routine physical removal and cleaning or replacement*** of vacuum toilet components can be effective; albeit expensive.

Celeste's approach is one of scale prevention using a safe, non-corrosive product that can become part of a simple, daily maintenance routine.

SCALE PREVENTION WITH GLY-VAK

Gly-Vak is a "state of the art" maintenance chemical used routinely to minimize or ideally, eliminate the formation of urine scale in vacuum toilet waste lines and tanks. By utilizing Gly-Vak as a daily cleaning task, airline operators can avoid the labor costs and downtime of strong acid flushes or power water washes. Ultimately, a rigorous Gly-Vak program will avoid the extremely high costs that result from line clogs and aircraft diversions.

Gly-Vak is a safe, non-corrosive and highly effective cleaner and line protector. By utilizing foaming technology, Gly-Vak is able to completely coat waste tube walls without the use of costly – and damaging – ice cubes. The product's strong clinging action creates long residence times for the chemical to soften the scale and ready it for removal.

The maintenance process for Gly-Vak is simple, and the key to a successful preventive maintenance program. *Small amounts, frequent dosing.* For optimum performance, just pour 8 oz (240 ml) in each toilet every 1-3 days, preferably during an overnight cleaning stop. As the aircraft sits overnight and through the first flushes the following day, Gly-Vak's penetrating action softens any existing scale and coats the tube walls to impede additional scale deposition. As a maximum, 1 qt (1 liter) can be used every 7 days. If the operator confirms existing scale build up before starting the Gly-Vak program, a weekly flush with Sani-Tank N will help emulsify and remove softened scale.

SMALL AMOUNTS, FREQUENT DOSING. Dosing every 14 days with 1 or even 2 quarts (liters) is not an adequate dosing method. In this case, dosing with a larger amount less frequently does NOT yield better results.

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Gly-Vak is best used in aircraft with less than 6mm of scale buildup, so ***it is important to know the condition of your vacuum lines before you implement a Gly-Vak program.*** This can easily be done by visual inspection, or optimally, using a borescope.

For severe cases of build-up (greater than 6mm / ¼ inch), you will need to implement a scale remediation program to bring the lines back to "like new" before implementing a preventive maintenance program. In these cases, an on-wing circulation cleaning using Celeste's Sani-Vak G is recommended ***(for more details on this procedure speak with your Account Manager or Sales Coordinator).***

ON A FINAL NOTE: *Carrying extra weight increases fuel consumption. Whether speaking of aircraft or automobiles, additional weight leads to additional fuel consumption. In fact, an extra 1,000 lbs (454 kgs) in landing weight can increase fuel consumption by 0.2% to 0.9% depending on the aircraft. How much can scale in vacuum lines weigh? In one remediation program performed by Celeste, a total of 286 lbs (130 kgs) of salt weight was removed from the vacuum pipes of a single aircraft.*

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