WHY STAINLESS STEEL?

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PER Corporation (Filtrex's predecessor) and Filtrex, Inc. manufactured carbon steel tanks up to 1976 (Filtrex's last carbon steel tank). It was certainly an attractive option as it lowered material costs by 40-60% depending on filter model. The main problem with carbon steel tanks was field longevity. Our goal as a manufacturer is to offer products that will give an effective service life equal to that of the facility itself. This in our opinion could not be achieved with carbon steel construction regardless of surface treatments, coatings, linings and processes.

In general, unprotected carbon steel fared poorly in swimming pool filter and recirculation systems. It suffered from both oxidative and chloride mediated corrosion processes. Coating and surface treatments may be a partial answer in sand filters and balancing tanks. However, factors involved in a modern regenerative filter render these solutions temporary at best. Two main factors, which tend to thwart the use of surface treatments and coatings, are flow velocity and precoat recycle surface ablation. Flow velocities, especially in the lower portion of a regenerative filter (below the inlet distributor) are quite high (8-10 times higher than found in a typical sand filter), moreover flows are highly turbulent with some locally concentrated vectors producing flow "hot spots". In addition, during precoat recycle the liquid in the closed loop may contain up to 10,000 PPM silica (D.E. or Perlite) particles. This in effect, "sand blasts" areas in filter leading to ablation and eventually coating failure. Although this effect is transitory in nature, it tends to roughen coating surface leading to further erosion.

We have, over the years tried vulcanized rubbers, vinyl, urethanes, and a variety of epoxies (filled and non-filled) in our testing lab. Our testing protocols simulate 1 year of operation (8750 hrs) under normal conditions. Coatings are evaluated with a thickness tester and optically examined with a stereo microscope. We have observed ablation rates in materials mentioned above, between 8-36 MPY (mils per year). Poorest being urethanes and best being with filled epoxies.

These above cited problems combined with normal application problems; surface bonding, pinholes, voids, cracks (cracking being particular to epoxy treatments) and uniform coating of complex geometrics of inlet distributors, in our opinion do not lead to adequate protection against erosion. In fact, they can, under some circumstances exacerbate corrosion problems.

By contrast premium grades of stainless steel used in conjunction with proper welding alloy/practices, shielding gas, and post fabrication passivation will produce filter tanks with a life span, which can and will (if maintained properly) outlast the facility.

While our competitors may make many claims for their coated carbon steel products versus stainless steel (we have seen their arguments with respect to corrosive effects on 300 series stainless steel and find them rather misleading and exaggerated as they do not pertain to water chemistries typical of recreational water venues). Based on our experience (35 "leak free" years), they will not pass the test of time.