Dry Polymer System Installation - What you need to know!

Dry Polymer System - Safety First!

- Provide certified, robust lifting and support structures. (CWB)
- Mark, label and indicate all hazardous areas for mechanical and electrical devices and system operations.
- Leakproof, welded SS piping, flanged or Tri-Clamp fittings or PVC socket fittings, minimize threaded connections. (TSSA Standard, Certification available).
- Equip systems with knife gate or suitable isolation between the hopper and volumetric feeder.
- Install protective screen between hopper and volumetric feeder.
- Minimize Dust in the area (dust collector optional, recommended).
- Provide an adequate and pressurized supply of water (80 PSI).
- Vacuum conveying and wetting devices provide excellent dust particle containment and offer exceptional polymer hydration.
- Concentration range .25 – .75 for conventional system Min. 120 + minutes of ageing water temperature-dependent.
- Low-temperature water may impede hydration for as long as 6-7 hours.
- CSA Certified components and devices and system wiring.

Mix Tanks

- Adequately size for bulk delivery, determine load quantity, delivery time to site, (days) ensure enough onsite operational capacity before the next scheduled delivery.
- We suggest oversizing mixers 30-50% from suppliers' theoretical calculations to ensure proper mixer sizing.
- Dual Hydrofoil propellers, typical diameter ratio 1/3 of tank diameter, use four (4) bladed designs.
- Bottom prop, .5 - 1.5 from the tank bottom, upper propeller mounted between 1.5 – 2 prop diameters above.
- Provide structurally certified mixer bridge.
- Use FRP where economically feasible, provides excellent corrosion resistance.
- Cylindrical baffled tanks are best; rectangular designs create dead spaces, baffles, typically $1/12^{th}$ to $1/18^{th}$ tank diameter, do not flush mount baffles to the side of the tank wall if possible.
- Provide Seismic calculations for all tank designs.
- Provide adequately sized, fill, drain, outlet and overflow nozzles, discharge, overflow piping to an oil-filled container to prevent air ingress in the tank.
- Provide adequately sized vent (critical).
- Install level indication and overflow prevention instrumentation, with a secondary backup, i.e., float ball or capacitance type devices.
- To ensure adequate freeboard, we typically suggest 1 meter (20%) above the tank's working volume.
- OHSA standard ladders, cages, handrails and non-slip tank covers.

Transfer Pumps

- Most widely used – Progressive Cavity, our standard is WANGEN.
- Hose or Lobe pump alternatives increase costs and have limitations in polymer applications.
- Dry Polymer Material - Pumps Cast Iron/Buna (consult supplier for details) - shaft speeds 450 rpm max., flooded suction.
- Double Pin Cardan joint shaft connections provide extended maintenance benefits.
- Weld piping systems to TSSA Standards.
- Provide adequate and properly sized piping and component supports.
- Post dilution systems require an adequately sized static mixer, check, back and pressure relief valves and backflow preventers.

Application Tanks

- Ensure adequately sized, determine large volume downtime capacity typical - 24 hours.
- Use FRP where economically feasible in many applications, painted steel is acceptable, SS is an expensive long-term alternative.
- Provide Seismic calculations for all tank designs.
- Provide overflow protection.
- Provide adequately sized overflow pipe/outlet, side-mounted.
- Install inlet and outlet connections 180 ^{o} apart.
- Install a tangentially directed inlet or an inverted cone in the tank to reduce the polymer solution's short-circuiting.

Process Feed Pumps w/ Post Dilution

- Most widely used – Progressive Cavity, our standard is WANGEN.
- Secondary pump recommendations, Hose, Lobe. Diaphragm Metering.
- Dry Polymer Material - Pumps Cast Iron/Buna - shaft speeds 450 rpm max. & flooded suction. (consult supplier for details)
- Double Pin Cardan joint shaft connections provide extended maintenance benefits.
- Cartridge-type mechanical seals.
- All welded TSSA piping (recommended) and or socked weld PVC.
- Provide adequate and properly sized piping component supports.
- Post dilution systems require an adequately sized static mixer, check, back and pressure relief valves and backflow preventers.

Tanks with Agitators

- Providing a 1:1 tank height-to-diameter (working volume) ratio offers optimum geometry.
- If the above ratio is not an option, taller and smaller diameter tanks provide suitable mixing.
- Install 3 to 4 tank baffles when center-mount mixer designs.

For Information, call - KGO Group Ltd. 905.847.1544.