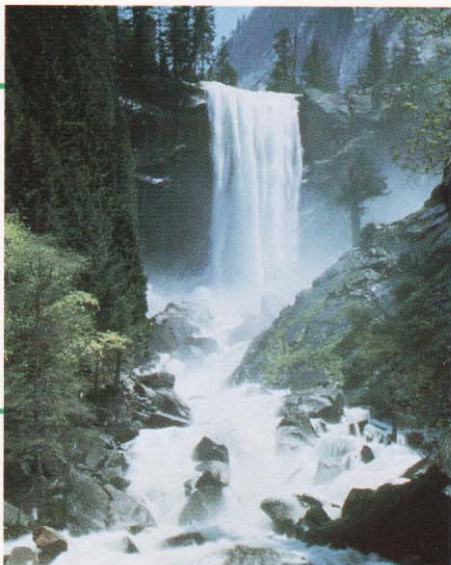


KOLENE[®] SMS[™]

SLUDGE MANAGEMENT SYSTEM



- **Treats both rinse waters and sludge.**
- **Provides heavy metals treatment and removal where needed.**
- **May reduce sludge volume requiring disposal.**
- **May produce a non-hazardous filter cake.**

MANAGE SPENT SALT EASILY AND ECONOMICALLY

Kolene Corporation, North America's leader in the development and application of molten salt cleaning systems, offers a comprehensive system for managing reaction by-products.

Kolene's SMS is a chemical treatment system that quickly and reliably adjusts pH, reduces sludge volume, and isolates heavy metals and renders them non-leachable.

Easily interfaced with any Kolene molten salt system, Kolene SMS is a workable, cost-effective answer to long-term waste management.

KOLENE: EQUIPMENT, CHEMISTRY AND SERVICE IN A SINGLE PACKAGE

More than any company in the world, Kolene understands the special requirements of salt bath processes. We welcome the

opportunity to demonstrate how our Sludge Management System can lower your operational costs and optimize overall process efficiency.

As with all Kolene Systems, SMS equipment and chemistry is custom-engineered to your specific application. Systems are designed to minimize space requirements; equipment can be configured for manual, semi-automatic or programmable operation.



Kolene's SMS has been engineered for safe, convenient sludge handling.

SLUDGE RECEIVER

Molten sludge is discharged into a specially engineered, tapered sludge hopper which is fitted with a lifting sprue. After the sludge has cooled and solidified, it contracts slightly from the sides of the mold. The cold, solid cake of sludge may then be easily and safely removed from the mold by engaging the lifting sprue with an overhead hoist.

DISSOLVING

The solidified sludge cake is transferred to a dissolving/treatment tank. The tank is equipped with an agitator, pH probe/controller, oxidation/reduction potential (ORP) probe/controller, level sensors, and other support components.

Once the sludge cake is in place, the tank is filled with water, and agitation started. Dissolving time varies, but is generally complete in four to eight hours. After the sludge is in solution, chemical treatment begins. Process quench water may be used for all or part of the sludge dissolving water.

CHEMICAL TREATMENT

Chemical treatment usually involves the chemical reduction of metallic species to render them water-insoluble; pH adjustment is usually also required. Treatment sequence is determined by laboratory bench tests on samples of the sludge to be treated. Once the optimum treatment sequence has been determined, the process control system is wired or programmed to duplicate the treatment in the field installation.

Commonly used chemicals in the sludge treatment systems include mineral acids for pH adjustment and Kolene 6-2-3 Reducing Agent[™] for metals reduction. Special

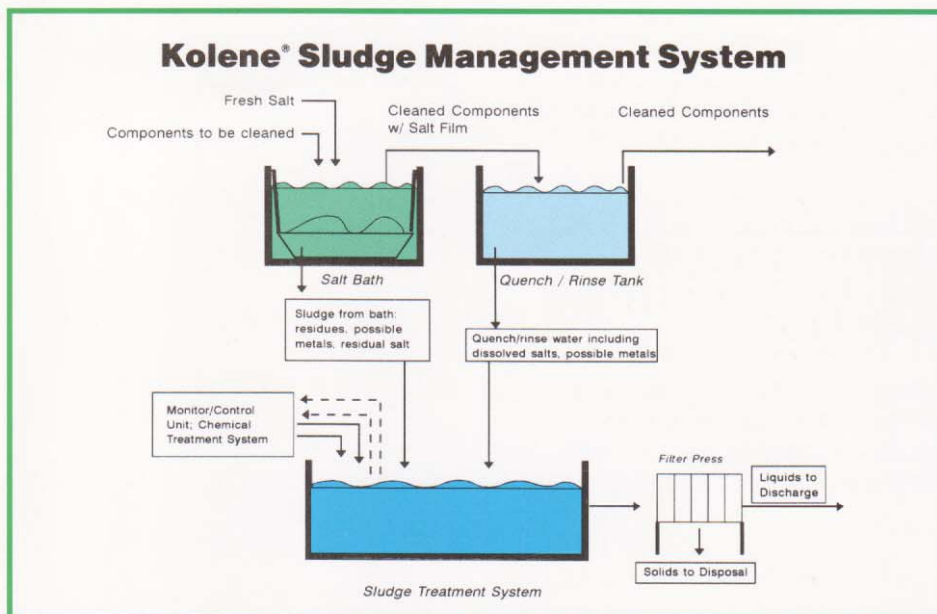
applications may include additional reactants to achieve enhanced metals precipitation, or to produce an end product of value.

FILTRATION

Following chemical treatment, solids are filtered from the system. Pumping the agitated, treated solution through a filter press is usually sufficient to remove unwanted insolubles and to produce a clarified liquid suitable for discharge. The composition of the clarified solution will depend on the molten salt process from which it was generated, and the specific treatment involved.

Residual solids collected by the filter press will not be corrosive or oxidizing in nature. The solids should, however, be subjected to TCLP (Toxic Characteristic Leaching Procedure) testing to determine whether leachable metals are present.

Kolene provides installation and start-up assistance, and will train your workers in the operation of your system.



12890 Westwood Ave.
 Detroit, MI 48223
 313-273-9220
 (Outside MI) 800-521-4182
 (FAX) 313-273-5207