

Removing waste and dissolved solids from liquids

CrystalX Recovery, the United States, has developed multi-patented processing systems that can remove waste and other dissolved solids from various liquid solutions. Although designed as a versatile technology solution, CrystalX has focused on developing and marketing products/ services that regenerate as well as recycle waste sulphuric acid, used worldwide in manufacturing and oil refining. The heart of the CrystalX recovery system is a crystallizer, inside which sulphuric acid crystals are formed to produce a slurry. The crystals are removed and cleaned using a centrifuge. A brief description of the various process stages is given below:

- Spent sulphuric acid solution enters the CrystalX recovery system through a feed tank and then flows into the crystallizers;
- The acid solution continuously flows through specially designed acid-resistant tubes and as the cooled acid solution flows through the tubes, sulphuric acid crystals form at the tube surface;
- The crystals are constantly removed from the surface of the tubes and flow with the un-frozen solution containing the contaminants into the crystal holding tank;
- The crystal slurry is fed into a high G-force centrifuge, where crystals are isolated from the liquid phase. The liquid phase is returned to the recycle tank for further processing; and
- The sulphuric acid crystals are automatically discharged from the centrifuge into a melting tank where the melted crystals produce high concentration sulphuric acid, with 99 per cent of organic contaminants removed.

In addition to waste chemical regeneration, CrystalX recovery system has other potential applications including:

- Fruit juice and beverage concentration;
- Calcium chloride reconstitution;
- Black liquor and dyes waste treatment;
- Pharmaceutical and biotech processing systems;
- Wastewater concentration;
- Food processing; and
- Oil-well brine wastewater recovery.