Net Zero Workshop

EKS-WWT Process - Technology Overview

Background

EKS is a technology development company that has developed a dewatering technology designed to consolidate oil sands tailings. The **EKS**-**D**ewatering **T**echnology (EKS-DT) uses electrokinetics to induce electrophoresis (i.e. the movement of suspended particles towards the anodes) and electro-osmosis (i.e. the movement of water towards the cathodes); the result being consolidated solids suitable for reclamation and released water suitable reuse in the bitumen extraction process.

Wastewater Applications

The basic physics driving the EKS-DT process apply to many colloidal slurries and sludges including municipal and many industrial wastewaters. EKS has adapted the innovations developed for dewatering oil sands tailings and produced a new technology for the rapid clarification, treatment and dewatering of wastewater.

This new technology (i.e. the **EKS**-**W**aste**W**ater **T**echnology - EKS-WWT) differs in several ways from the EKS-DT process.

- EKS-DT is a batch process; EKS-WWT operates continuously.
- EKS-DT largely dewaters; EKS-WWT clarifies, treats and dewaters wastewater.
- EKS-DT is effectively a static single unit process; EKS-WWT involves moving parts and treatment stages.

The two technologies share many common features. Both processes are:

- Regulated by the applied power to the electrodes,
- Controlled by an automatic control system that adjusts on a continuous basis the applied power (in the case of the EKS-WWT process, the rate of some moving parts is also controlled),
- Able to produce high-density dewatered sludge according to operator specifications, and
- Able to rapidly release water suitable for reuse or discharge to the environment.

Benefits

The benefits of the EKS-WWT process include:

- A greatly reduced land footprint for wastewater treatment facilities,
- Reduced capital costs due to smaller sized treatment components,
- Reduced operating costs for aeration,
- Production of "designer" sludge with much lower water content,
- Significant reduction of odour, and
- Ability to adjust immediately to large variations in inflow rates and maintain high quality treatment.

Value Proposition

EKS is in the process of securing the necessary patents for its technology. Extensive lab-scale testing has been conducted. Some further lab-scale testing is planned. A pilot at a municipal wastewater treatment facility is being researched. EKS is seeking municipal and private sector partners to collaborate in the pilot scale testing of the technology.