Effective Drilling Fluid & Slurry Management Options

Adam Bates
Vermeer Corporation

Overview

- Water used for drilling fluids and hydro-excavation is key for effective utility installation, but proper disposal can add significant operational costs and logistical challenges for contractors. The right equipment and a good plan are key. This presentation will discuss what to consider when planning the next job's disposal. It will highlight different industry solutions that are available to help contractors understand the cost, time and complexity of drilling fluid and hydro-excavation waste management.

Agenda

- So what's the problem with fluids management?
- How are contractors dealing with it today?
- How does solidification compare to separation?
- How does solidification work?
- Where is this solution needed?
- Close

Industry problem

- Increase in hydro excavation with more utilities underground
- Less readily available disposal sites can mean excess time on the road traveling to specialized dump sites
- Maintaining road legal weight limit on large truck vacuum excavators can be challenging

Industry problem

- "Pump and dump" has been the go-to strategy for fluid management in the utility installation market for years
  - Factors that can impact margins
    - Drills waiting on vacuum excavators
    - Disposal costs
    - Transport costs
  - Drilling fluid practices
    - Operators use less bentonite and water volume than recommended

Many options to consider

- How to dispose or manage drilling fluid or hydro vac material
- Where to dispose of materials
  -Take into consideration the distance and time
- Do you have enough equipment for the project to stay productive?

Fluid management

- Vacuum excavation
- Reclaiming
- Solidification
- Separation
- Localized Separation

Vacuum excavation

- \+ Most commonly used application
  - -Efficient and effective
- − Increase in disposal cost of wet materials
- − Decrease in disposal facilities that accept liquid waste
- \+ Potholing and servicing horizontal directional drill fluids

Reclaimer/Recycler

- \+ More commonly used in pipeline applications
  - -Gaining popularity in small HDD application
- \+ Decreased fluid disposal
- \+ Help increase jobsite productivity
- – More application training required
- – Jobsite space requirement and set up time

Solidification

- ✚ Used in pipeline industry for several years
- ✚ Mobile/Modular setup in centralized location
  - -Help decrease time spent on road traveling to specialized dump sites
- ✚ Use of Super Absorbent Polymer (SAP) to solidify material
- ✚ Material can pass paint filter test – passable as a stackable material
- ➖ Cannot reuse material after processing

Solidification vs. separation

Solidification

- To make solid; change from a liquid or gaseous to a solid form

Separation

- An act or instance of separating; something that separates or divides

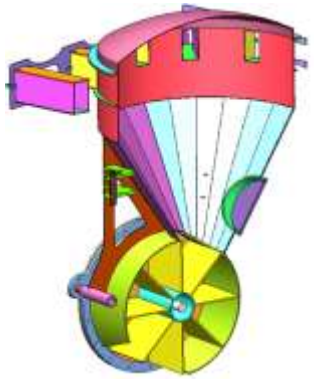
Criteria for technology selection

- Particle size range: <1 micron to 4” (10.2 cm)
- Solids content range: 0% to 100%
- Solids pass paint filter test

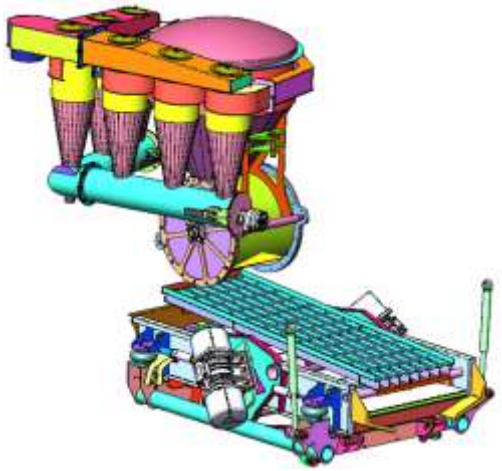
Localized Separation

- Vacuum Excavation
- Separation on site
- Stackable material
- Higher water capacity

Hydro excavation

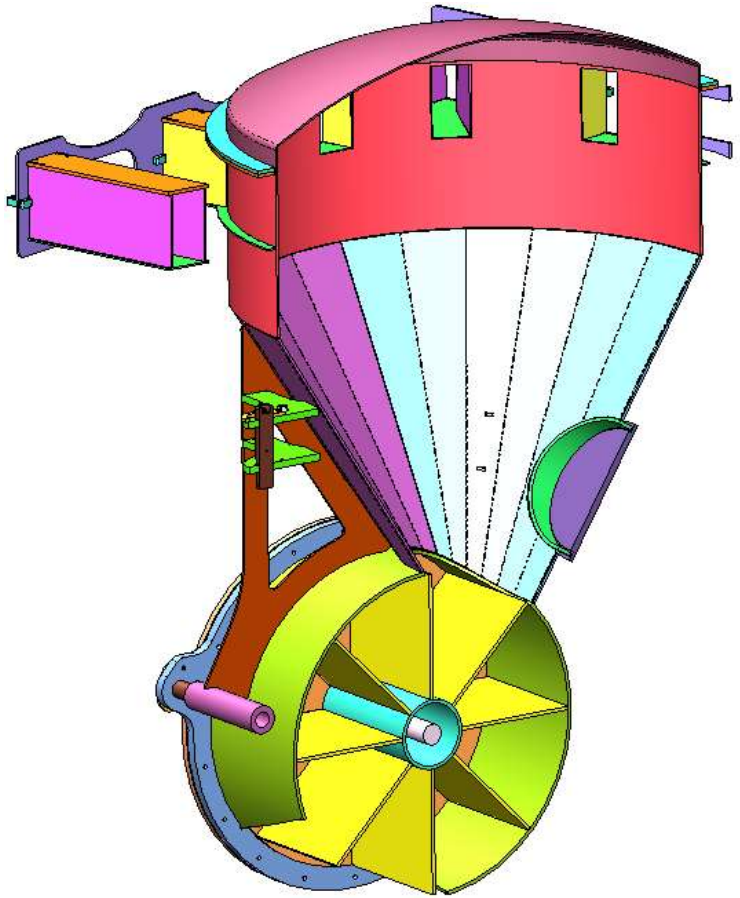


AirLock design



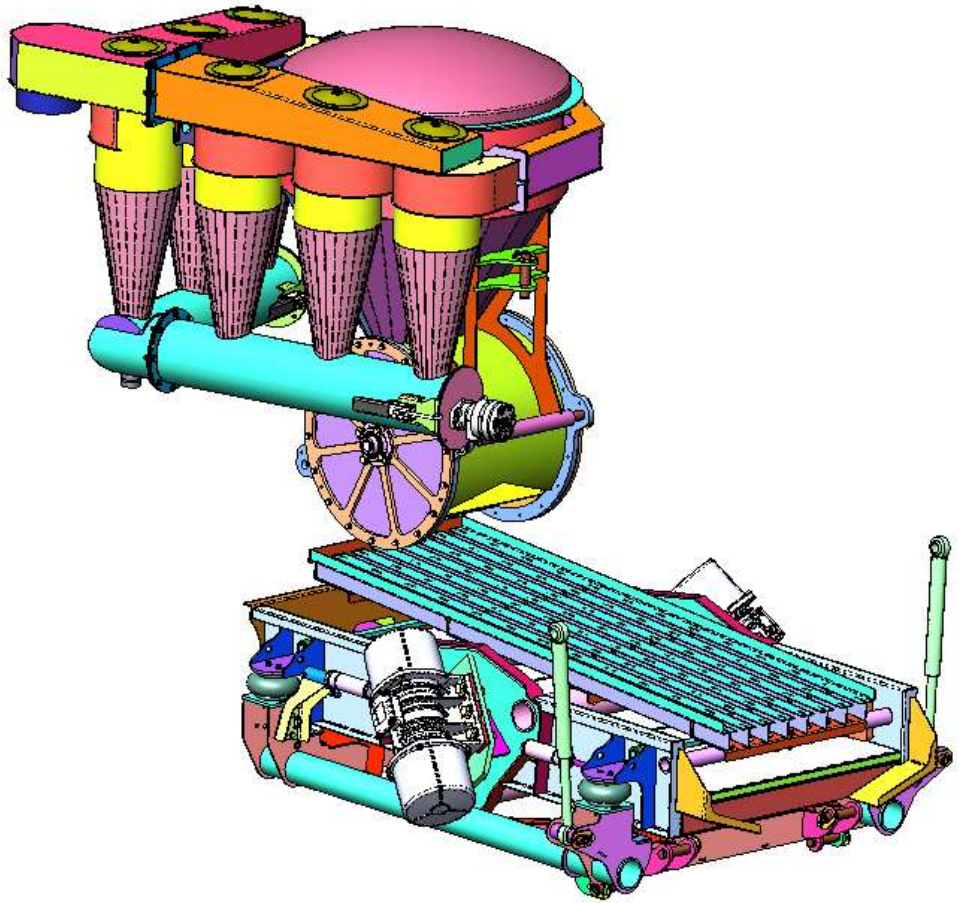
Shaker screen integration

AirLock



- Material enters deceleration tank from boom and drops into airlock
- Deceleration tank allows air speed to reduce and solids and liquids to fall out of the airstream and into the airlock
- The airlock rotates continuously discharging solids and liquids while maintaining vacuum pressure

Shaker Screen



- Shaker deck separates liquid and solids that exit the air lock
- Material exits the airlock onto the grizzly shaker which removes large debris preventing damage to the shaker deck below
- Remaining fine particles and liquids fall through the shaker screen and are pumped back to the tank

Water Capacity

- 1500 gal (5678.1 L) capacity in four tanks
- Water returns to tanks and solids discharge from the shaker via conveyor belt
- Material can be pumped from one tank to another to balance the load on the truck or discharged for disposal

Summary

- Consider all the options, but make an educated decision based off of scope of work and logistics
- Think long term when making that decision
- Understand that most options for fluid management are focused on long-term results rather than short-term successes

Contact

- Adam Bates– Product Manager, Vermeer Corporation
  abates@vermeer.com
  641-629-1178

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