



# Volute Dewatering Press for Septage and Grease Trap Sludge

Kyle Kinard – PWTech



NAWT Symposium – August 2017

# Mechanical Sludge Dewatering

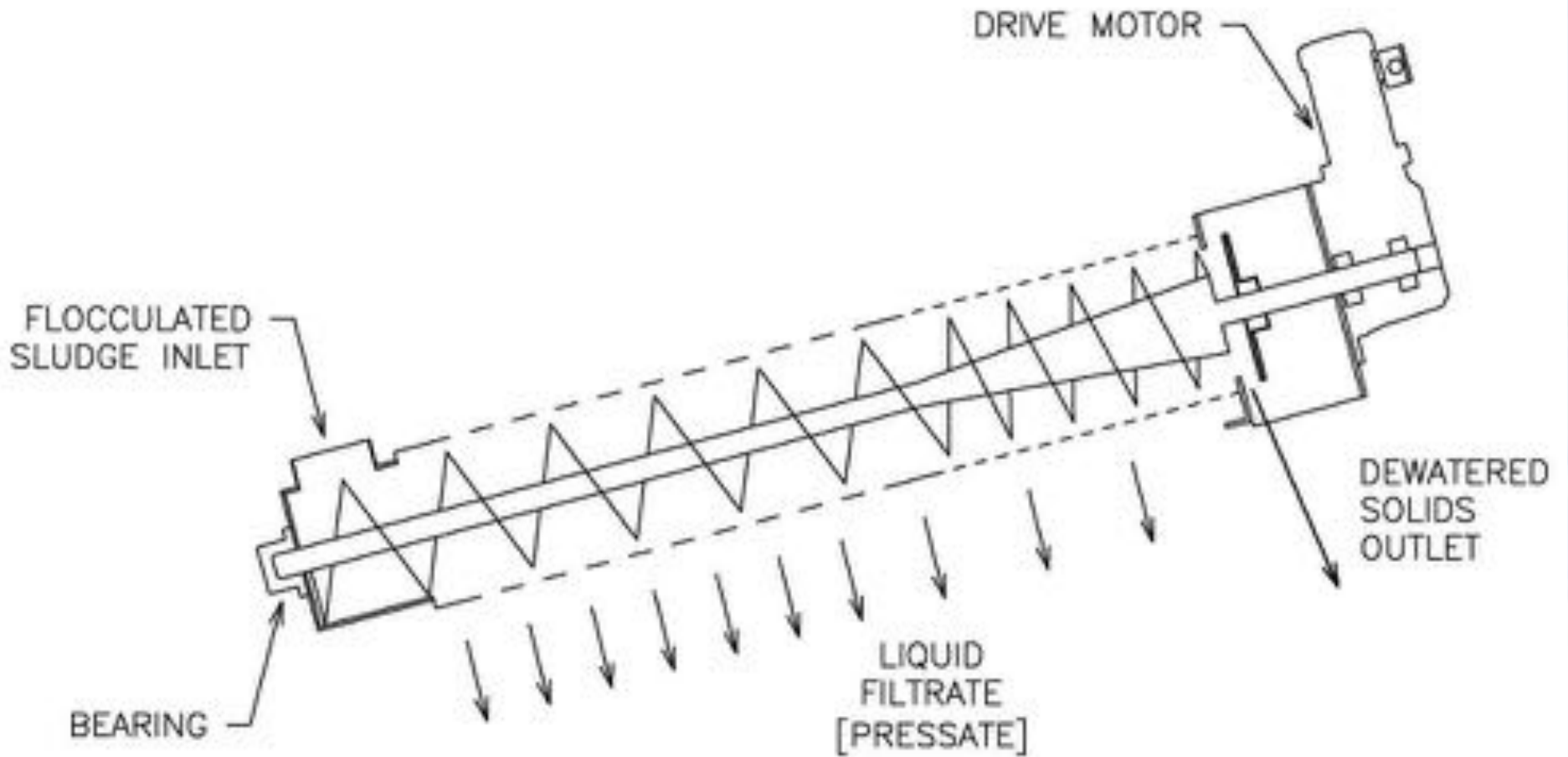
---

- **Dewatering** – Pressing, and removal of all free water and most of the interstitial and intercellular water in a flocculated sludge. (Limited if any removal of intracellular water)
  - Cake solids will be largely a function of the amount of water in the cells. Properly dewatered cake could be 13-35% or more.
  - Volume Reduction – cheaper transport, landfill disposal, composting or drying.
- **Volume Reduction** – Dewatering a 1% sludge into a 20% cake solid generates a 95% reduction in volume

# Cake Solids



# Screw Press Concept



# Screw Presses for Dewatering



# Screw Presses - Advantages

---

- Mechanically very simple
  - Minimal maintenance (if designed right)
  - Easy operation
  - Minimal alignment and wear issues
- Low power consumption (<20% of a Centrifuge)
- Easy automation
- Other benefits
  - Low noise
  - Minimal exposed moving parts,
  - Low odor – may be contained (along with harmful vapours)
- Easy to install

# Comparing Screw Presses to Other Technologies

## → Cake Solids performance

- Screw > BFP (3-6%)
- ~ Centrifuge (May be 1 or 2 % lower)

## → Polymer Use

- BFP < Screw < Centrifuge (Different polymers are used)

## → Solids Capture

- BFP > Screw > Centrifuge (Volute > BFP)

# Comparing Screw Presses to other technologies

## → Power Use

→ Screw Press << BFP << Centrifuge

## → Wash water use

→ Centrifuge < Screw Press < BFP

## → Operator and O&M Requirements

→ Screw Press < Centrifuge < Belt Filter Press



# Screw Press Problems

---

- Screw Presses typically are a lot **larger and more expensive** than other dewatering options
  - Screw presses are large and expensive because most of the fine openings are continuously clogged with the solids being dewatered so a lot more openings are required to compensate for the plugged openings.
- Screw presses can have capture issues, especially for secondary sludges

# The Volute Technology

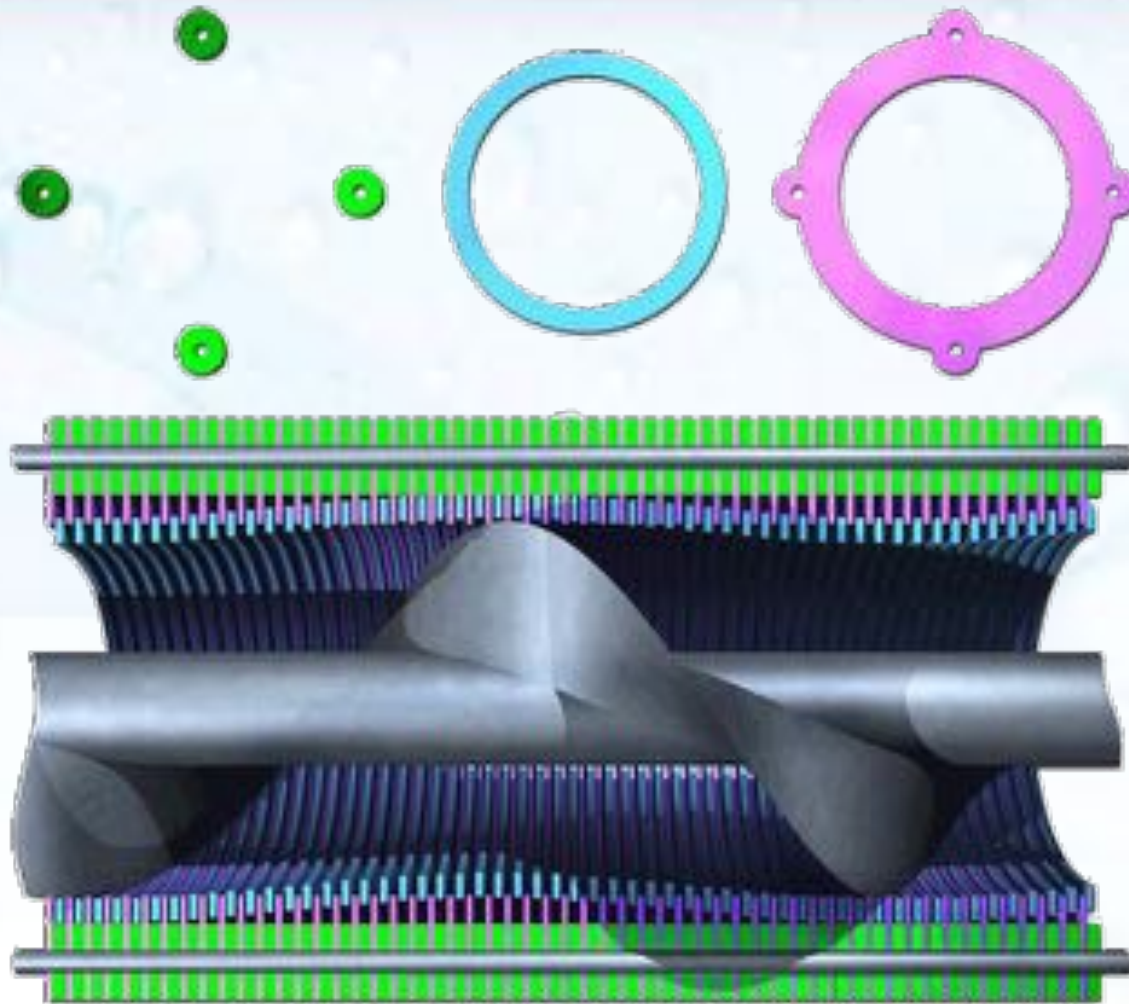
# Dewatering Drum Design

---

- The Dewatering Drum design is the critical difference between the Volute and other screw presses
- Dewatering Drum is made of a combination of fixed and moving rings around a screw auger.
- Dewatering Drum can achieve both thickening and dewatering/pressing of the feed sludge.

# Dewatering Drum Components

---





# Dewatering Drum



# Dewatering Drum - Endplate







# Volute for Grease and Septage

---

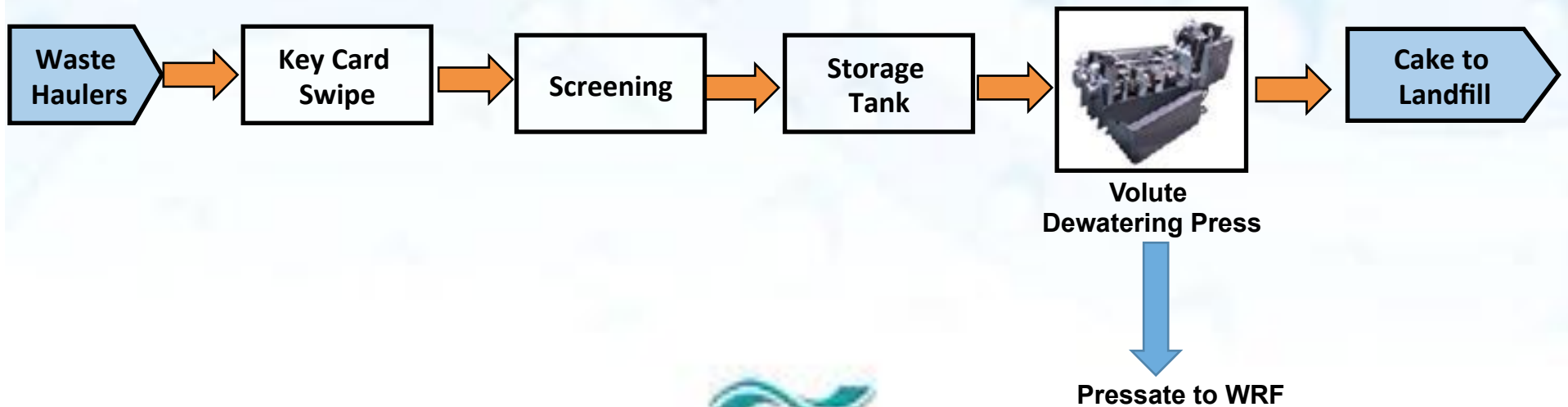
- **Compact footprint** - Easily retrofitted into existing spaces, able to be trailer mounted
- **No clogging** – Self cleaning screen eliminates problems with greasy sludges.
- **Automated** - Can operate unattended and be integrated directly into rest of treatment process

# Case Study: Manatee County

→ Grease and Septage Receiving – Manatee County  
Southeast WRF, Bradenton FL



# Case Study: Manatee County



# Case Study: Manatee County

→ **Full Circle Project**– Bench test to full scale



→ **Results:** 10-20lbs/ton Poly, > 40% cake, > 95% capture

**Questions?**