UNE PRÉSENCE MONDIALE
A GLOBAL PRESENCE

Dewatering Anaerobically Co-digested Biosolids;

Learning from Experience in Scandinavian Countries

www.fournierindustries.com

Questions:

What did Fournier learn from dewatering digestate in North America & Scandanavia?

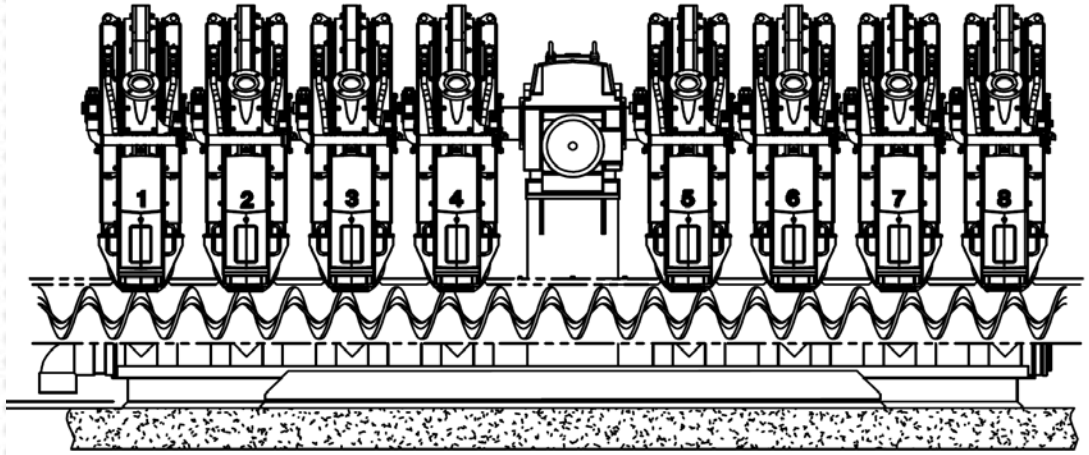
Can this be useful in the transformation from Wastewater treatment to Resource recovery?...

Fournier Industries

- Fabrication of heavy-duty equipment since 1960
- Sectors
  - Biosolids Dewatering
  - Biomass Furnaces
  - Mining Equipement
  - Aluminum Smelters + Large Hydro

Rotary Press

- 1985 Concept
- 1992 1st WWTP installation
- 2002 1st installation USA
- 2022 + 500 installations, 20 countries, 5 continents (2021)
  - Water + Wastewater Sludges
  - Paper Mills + Industrial
  - Ethanol Production (ICM)
  - Digestate from NRG Plants



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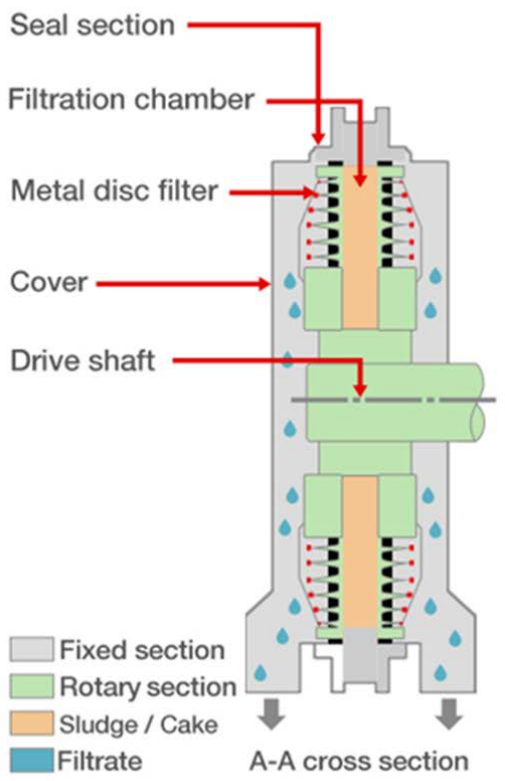
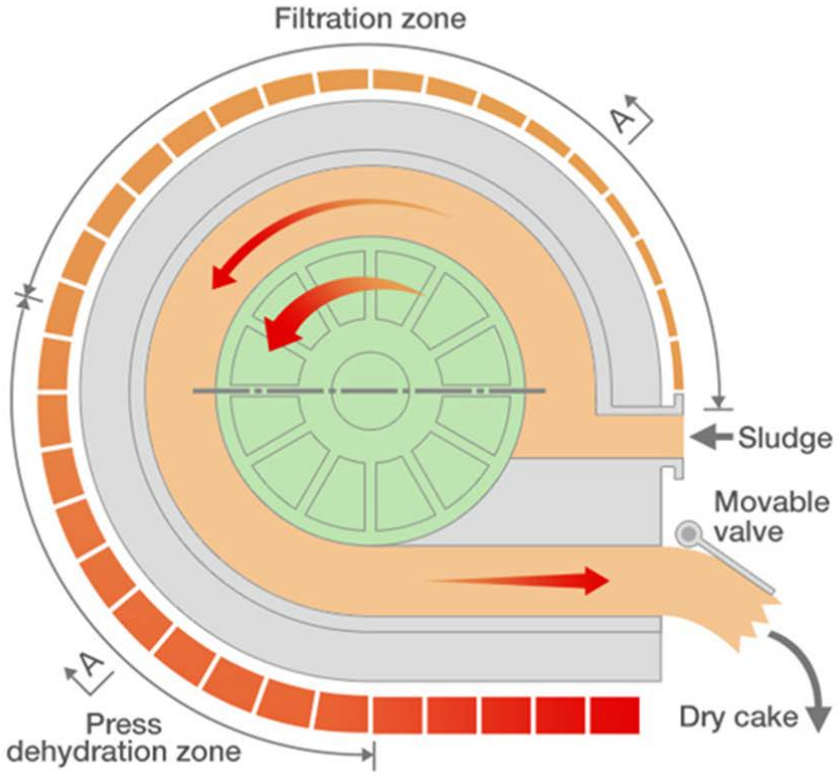
Principle of Operation:

- Low Feed Pressure
- Slow Rotation
- 1st Zone: Thickening
- 2nd Zone: Dewatering
- Self-Cleaning Screens (Limited Washwater)
- Controlled Outlet Pressure

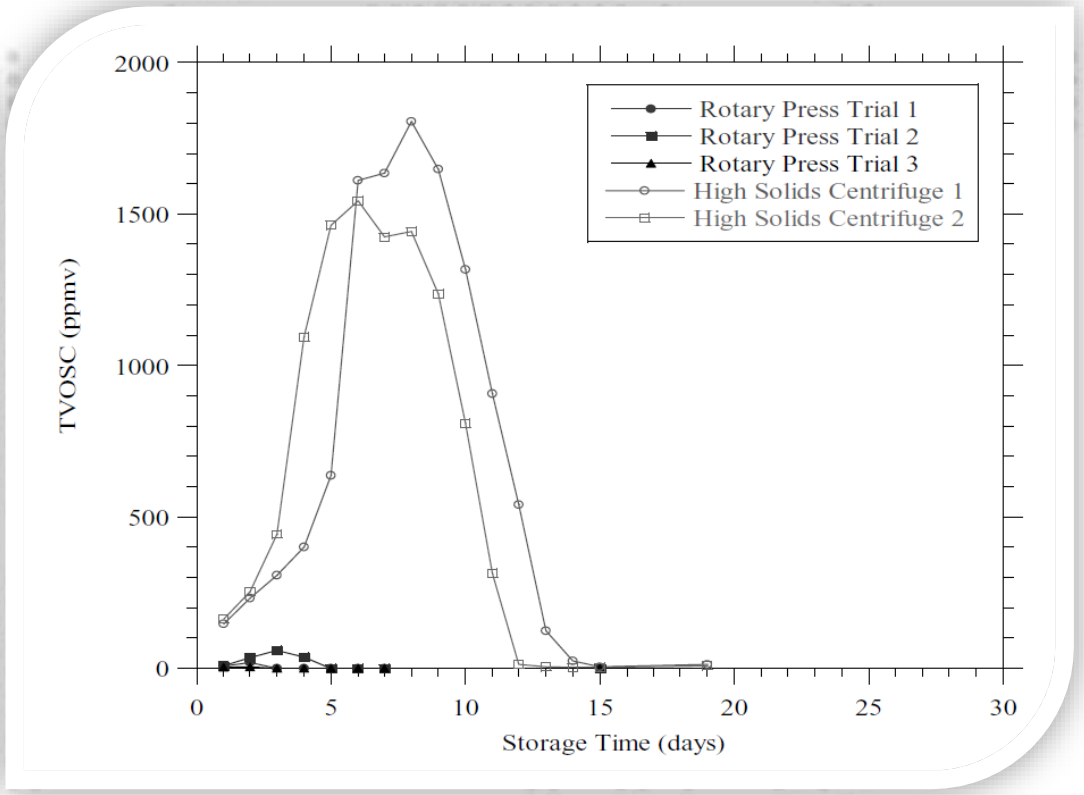




AD Dewatering Challenges

Odors

- High solids centrifuges shear anaerobically digested biosolids. (Murthy et al. 2006)
  - Increased labile proteins, an odor precursor.
  - Inhibition of methanogens that allow degradation of organosulfur compounds
- Comparative trial, rotary press-centrifuge ~2200 rpm conducted for WERF study.
  - Lower VOSC emissions from rotary press than from centrifuge (WERF 2008; Erdal et al. 2008)



Sudden Growth & Regrowth

- Following centrifugal dewatering, indicators rise above the Class A concentrations (Higgins et Murthy, 2015, Chap. 5).

Filtrate Quality

- Critical for « Fertigation »

Struvite

- Complications linked to nutrient-rich feedstock: clogging
- Precipitate Struvite BEFORE Dewatering: Added-Value Product (Ex.: EkoBalans)

Cake Dryness

- Variable Dryness fonction of:
  - Feedstock (ex.: FOG vs Municipal SSO)
  - Mode de valorisation (ex.: Land Application vs Drying)

EkoBalans refines recovered struvite into fertilizers for local use.

EKOBALANS

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Resource Recovery and the Rotary Press

Installation	Feedstock	Digestion Process	End-use	Feed Solids (% TS)	Capacity Dry Lbs/hr	Cake Solids (% TS)	Capture Rate
Canada							
City of Repentigny WWTP	Enhanced Primary Sludge	Mesophilic Digestion	Land Application	2.5-3.0%	1550	35%	96%
RAEVR, Vallée du Richelieu	Enhanced Primary Sludge	Mesophilic Digestion	Land Application (dryed product)	3.5%	617	24%	97%
SEMER, Rivière-du-Loup	Municipal SSO	Mesophilic Digestion	Land Application	5,0%	2000	38%	97%
SEMECS, Varennes-phases 1 & 2	Municipal SSO	Mesophilic Digestion	Land Application	3,6%	5430	26%	98%
Scandinavia							
Mjøssanllet Biogass, Lillehammer (Norway)	Municipal SSO + WWTP Scum	CAMBI THP + Mesophilic Digestion	Land Application + Fertigation	4,0%	1320	30-45%	97%
Lindum Biogass, Drammen (Norway)	WWTP Sludge, SSO, Food Scraps, FOG, and Food Processing Residuals	CAMBI THP+ Mesophilic Digestion	Land Application + Fertigation	4-6%	1770	32%	96%
Eko Balans, Lund (Sweden)	Mixed Digestate from Municipal	Unknown	Dryed Pellets + Fertigation	3,5%	270	19-24%	N/A
Greve Biogass, Tonsburg (Norway)	Manure + SSO	THP+ Mesophilic Digestion	Land Application	4,5%	770	25%	N/A

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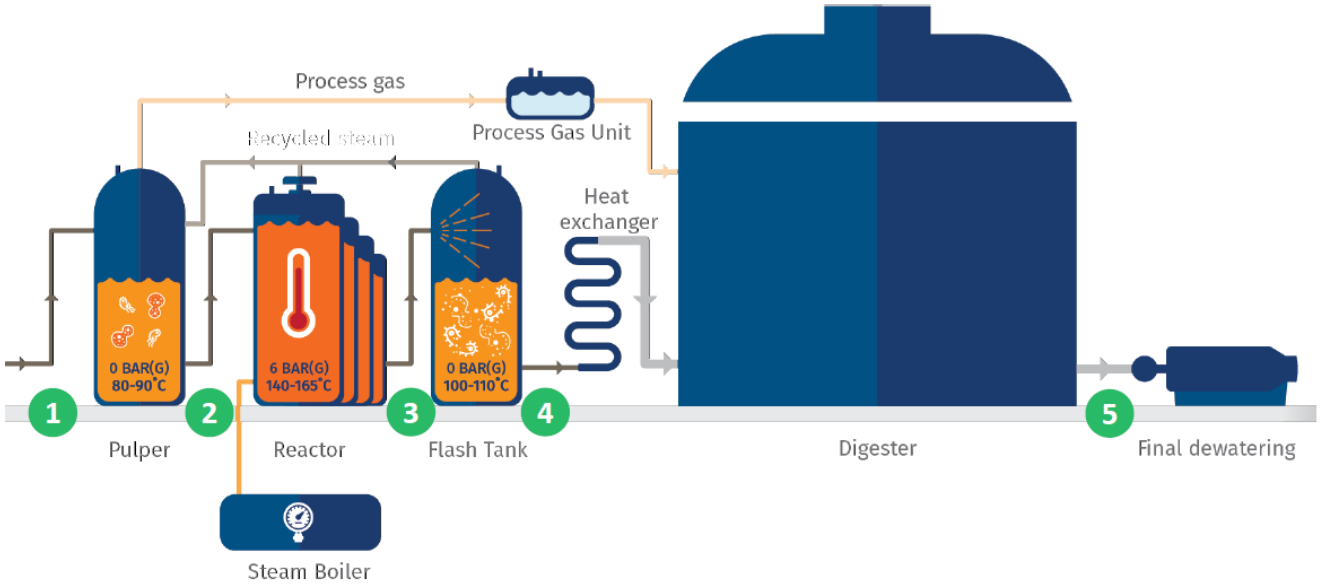
Observations / Lessons Learned

Thermal Hydrolysis Commonly Used (ex.: Cambi SA)



Feedstocks? Everything that generates Biogas!...

Digestate Transformed to Creative/Innovative Added-Value Products (ex.: Bio-Tak Grass Roofs). Organized R&D Efforts

3 observations

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Conclusions

Digestate dewatering is critical to the technical/financial success of transformation from Waste to Resource.

The operating characteristics of the Rotary Press have met the challenges:

- Odor prevention and bacterial regrowth
- Dryness and Filtrate Quality
- Operation and Maintenance costs

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The Rotary Press technology developed by Fournier Industries contributes to meet several challenges experienced in Waster Resource Recovery Facilities. By sharing our expertise acquired in North America and Scandinavia, we wish to contribute to the success of this transformation, for a more circular and low carbon economy.

Thank you for your time

Questions?