

***What can be done at factory level with regard to  
contaminated wastewater management?***

SASDT Symposium

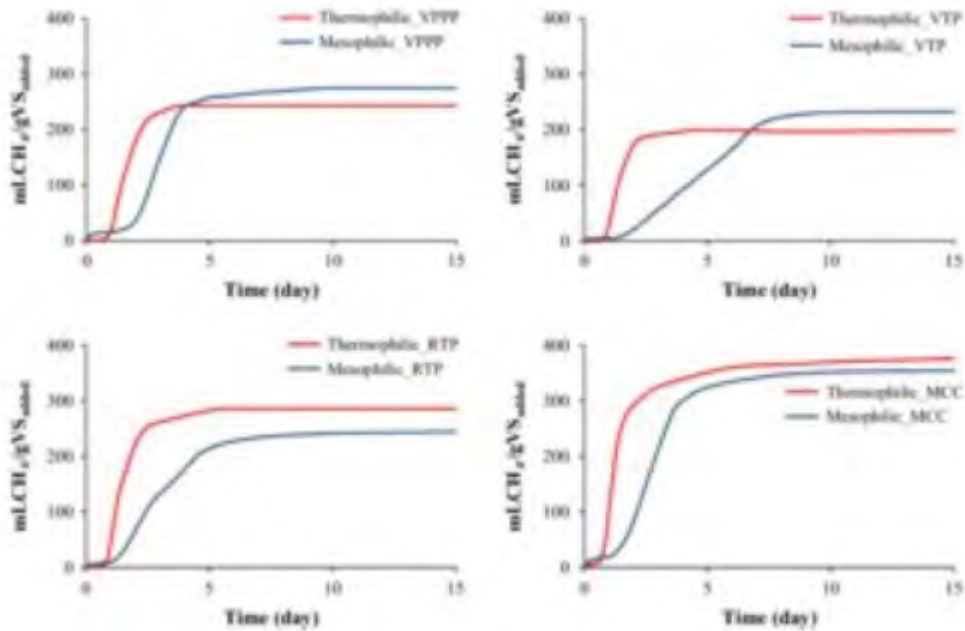
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# TALBOT *The Art of Water*



- Test to determine available energy
- 1kg of sample
- MSDS
- 3 – 30 days



*R19 500 per sample*

## BIOMETHANE POTENTIAL (BMP) TRIALS

CHARACTERISE AND QUANTIFY ENERGY POTENTIAL FROM 'WASTE'

With 30 years' of engineering and operational expertise, Talbot is well positioned to provide a value-added service for BMP trials on various process streams. Our unique service provides client-specific advice, complete assessment and reporting.

We assess the BMP of the following process streams:

- Semi-solid Waste
- Organic Solid Waste
- Sludges
- Effluent Streams
- Un-characterised Organic Rich Streams

FOR MORE INFORMATION CONTACT

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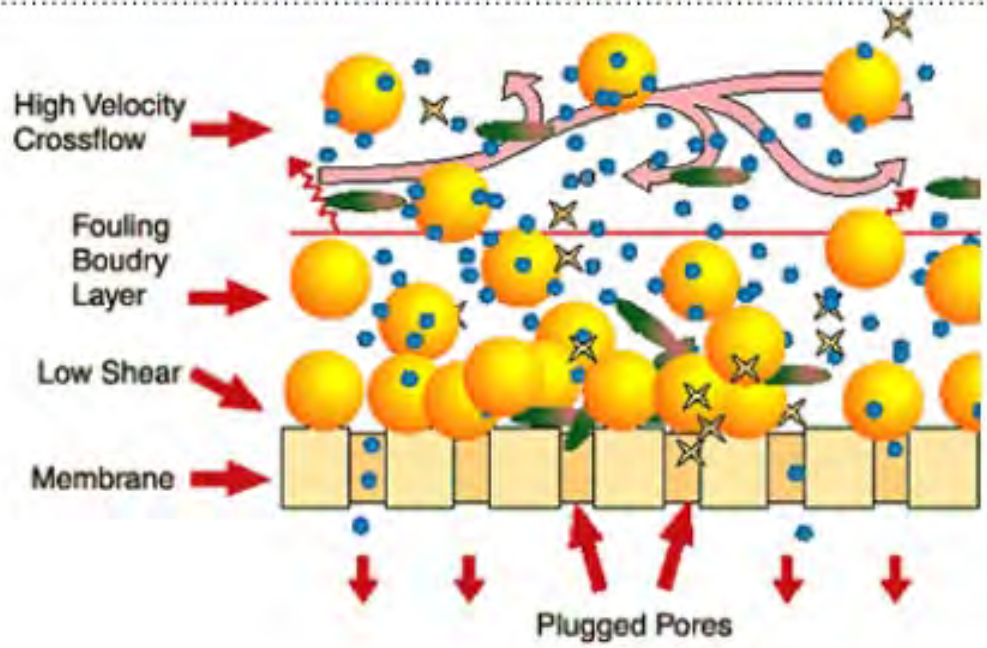




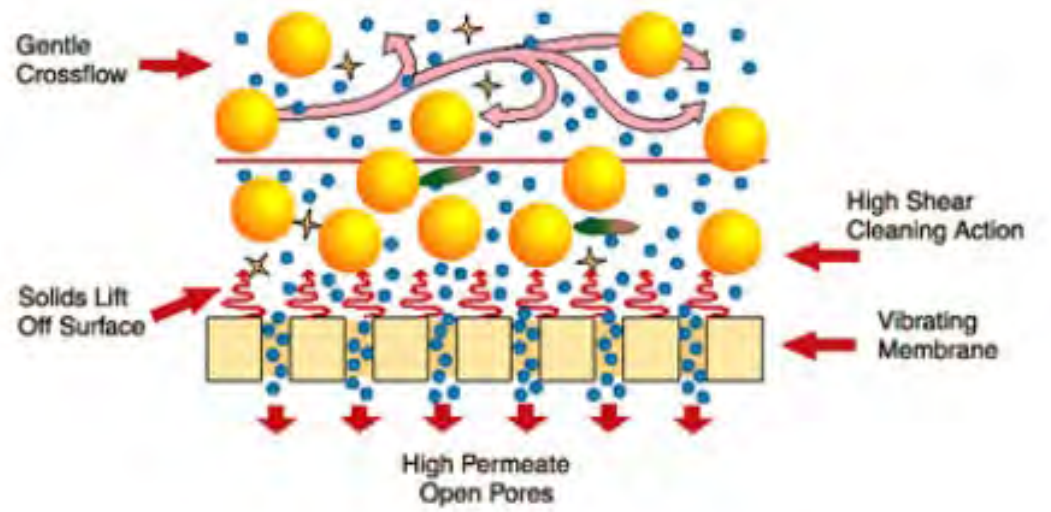
- Specialist RO system which will treat **HIGHLY** contaminated wastewaters with virtually no pre-treatment.
- Includes UF, NF and RO options.
- Vibrating sheer continually scrubs membrane surface, prevents scale formation.

Contaminant	Spiral Wound RO	VSEP RO
COD (mg/l)	20	>200,000
TSS (mg/l)	<5	>20,000
TDS (mg/l)	10,000 (BW), 20,000 (SW)	80,000
FOGs (mg/l)	<1	No specified limit
Silica (mg/l)	20	No specified limit
Iron (mg/l)	<5	No specified limit

### Crossflow



### VSEP





- 440 horizontal discs, hand pressed
- Alternating brine ports
- Central permeate port
- Oscillating platform
- Tested and shipped complete
- Minimum maintenance



**Milk Factory, Hamilton, New Zealand.**

**Background:**

Client wanted to investigate concentration of evaporated milk (50% solids) and dilute milk (10%) to 55% solids.

**Project Aim:**

Total solids to 55%

**VSEP Design Basis:**

Onsite pilot testing

Process temperature of 45°C

3 membrane types used to finalise design

Final design used NF membranes





**Results Summary**

Final concentrate achieved >62% solids.

System recovery 91.6% at 14 bar

Standard membrane cleans of acid and alkali solutions >98% flux recovery

Sample	pH	Conductivity	%Solids	Viscosity	Sample Weight
Feed	6.81	5,480 $\mu$ S	9.18%	-	129.8 lbs.
Composite Permeate	6.43	5,250 $\mu$ S	4.28%	5 mPa·S @ 8.9°C	111.8 lbs.
Final Concentrate	7.02	NA*	62.83%	61,600 mPa·S @ 23.3°C	5.6 lbs.

\*Sample was too thick to obtain accurate reading

## Greek Yoghurt Factory, Utah, USA

### **Background:**

Waste skimmed milk whey stream, offsite disposal costs due to strict onsite BOD limit of 250ppm.

Approx 1300kl/day

### **Project aim:**

Reduce waste stream by >50% volume

Produce concentrated product stream >18% solids

Permeate suitable for onsite discharge

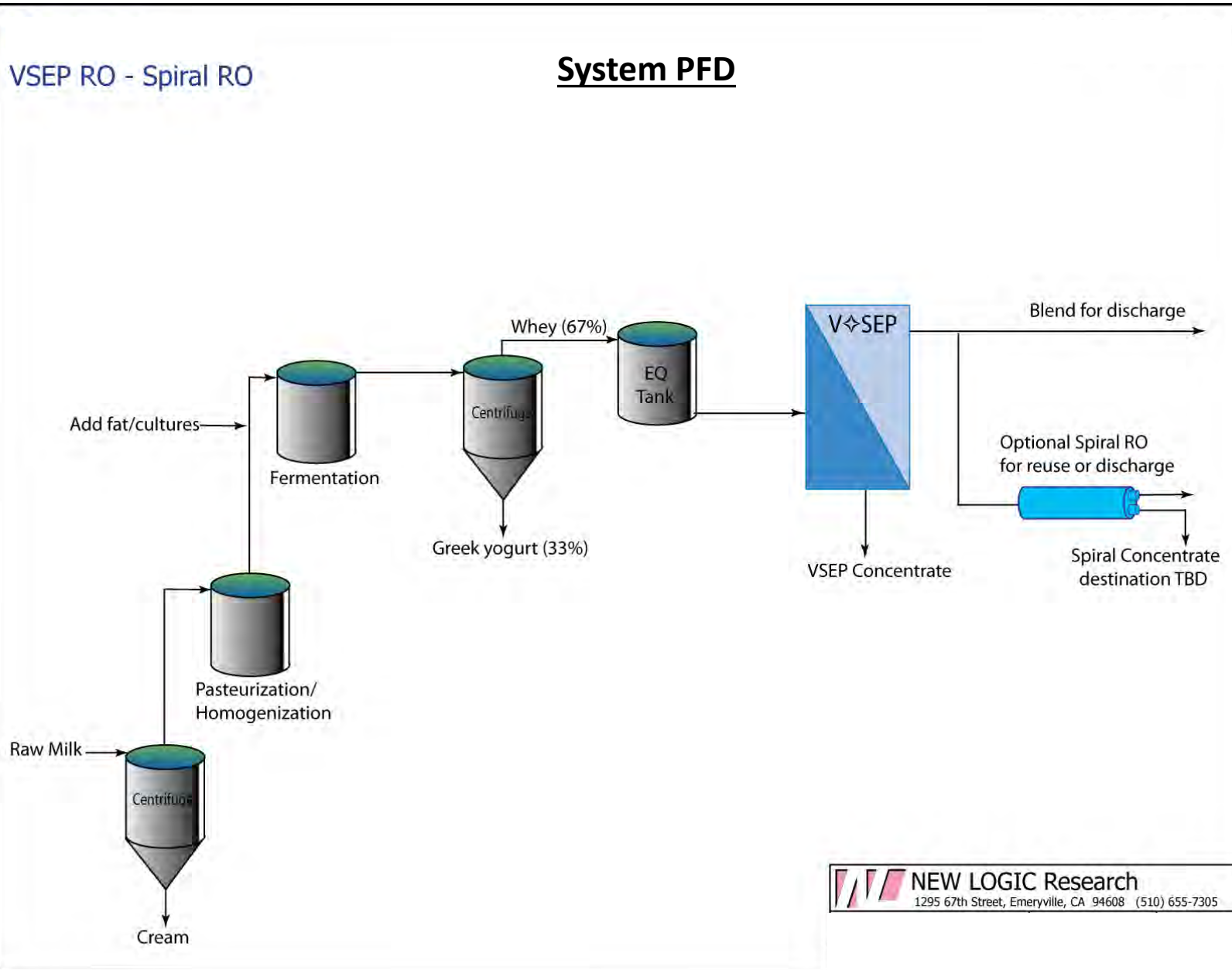
### **VSEP System Basis:**

Onsite Pilot Testing

ESPA RO membrane

Spiral RO on permeate for extra polishing







**Results Summary**

Waste stream achieved an average 64% recovery rate at 240gpm and 500psi (34 bar)

Permeate required spiral polish to achieve <250ppm BOD discharge standard

Concentrate achieved >18% solids, suitable for reuse.

Project was a success but never implemented.

<b>Batch</b>	<b>Total Solids Feed</b>	<b>Total Solids Concentrate</b>	<b>Permeate</b>	<b>Composite Permeate COD</b>	<b>Spiral Permeate COD</b>	<b>Composite Permeate BOD</b>	<b>Spiral Permeate BOD</b>
<b>#1</b>	6.67%	16.4%	0%	N/A	N/A	353 mg/L	N/A
<b>#2</b>	6.24%	17.89%	0%	541 mg/L	132 mg/L	351 mg/L	51 mg/L
<b>#3</b>	5.97%	17.82%	0%	N/A	134 mg/L	N/A	N/A
<b>#4</b>	6.11%	18.88%	0.03%	493 mg/L	130 mg/L	N/A	N/A
<b>#5</b>	6.91%	19.05%	0%	434 mg/L	180 mg/L	N/A	N/A
<b>#6</b>	6.81%	18.65%	0%	N/A	N/A	N/A	N/A

*Single Pass Mode Summary*



## Cheese Factory, France

### **Background:**

Feta brine stream, non compliance effluent

### **Project aim:**

Reduce stream 80% for evaporation

Enable overall site ETP compliance

### **VSEP System Basis:**

25°C stream temperature

ESPA RO membrane

### **Results**

90% reduction in effluent salts

70% reduction in evaporation model









*Thank you!*