

Development of membrane technologies for production of concentrated fertilizers and clean water

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Introduction

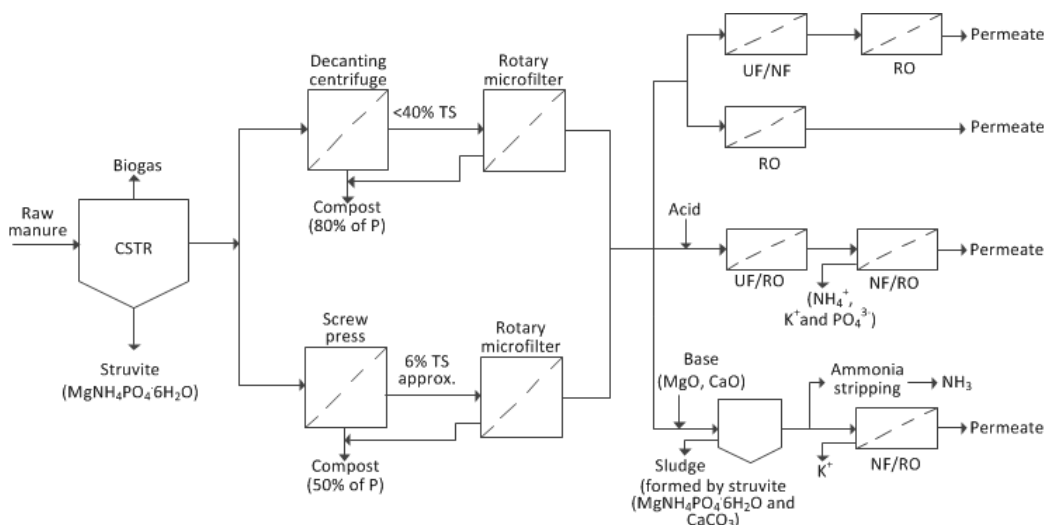
Membrane technologies are currently a wide spreading technology. Currently, membrane technologies are being studied for separating the manure liquid fraction into a concentrated mineral fertilizers and water. The success of this process will depend greatly on the type of slurry to be treated and the applied pretreatment. Studies in minimizing fouling on membranes and how pretreatment affects the final performance of membranes and composition of the fertilizers is of great interest.

Aims

- Membrane processing to produce clean water and mineral concentrated fertilizers from manure containing ammonia, potassium
- Anti-fouling strategies will be developed by cleaning optimization and spectroscopic techniques evaluation

Experiments

- Combination of microfiltration, ultrafiltration/nanofiltration and reverse osmosis
- Influence of different mechanical pretreatment techniques on reverse osmosis performance and concentrated fertilizer composition
- Flocculant effect on microfiltration/RO performance
- Acidification/basification effect on RO performance
- Phosphorus precipitation by formation of struvite followed by centrifugation and reverse osmosis for the concentration of ammonia and potassium
- Heavy metals removal by MEUF technique
- Substitution of NF or RO with membrane distillation



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