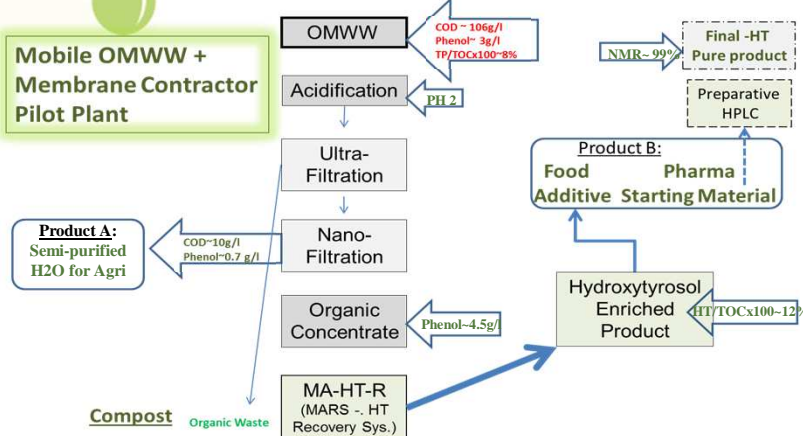
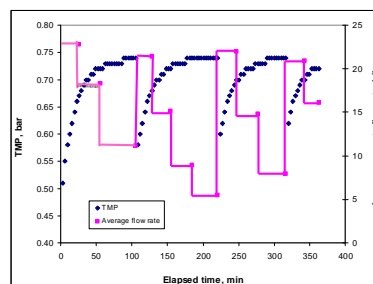


NF Membrane application for polyphenols recovery in OMWW

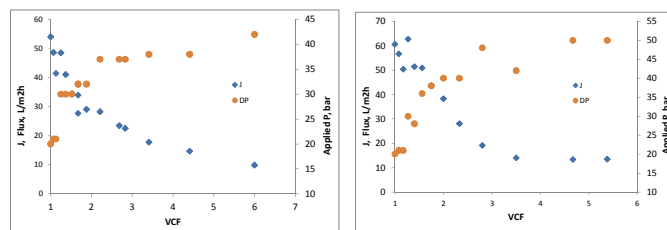
Main technical features



UF treatment

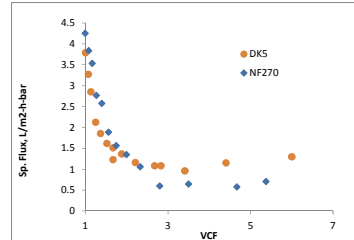


NF – concentration of OMWW (steritech)



DK5 – 7.1 L/m²-h-bar

NF270 – 12.2 L/m²-h-bar



Main outputs / Conclusions

Capital costs

Capital Equipment	Euro
UF	50000
NF	92000
MARS	50000
Contingency (5%)	9600
Total	201600

Operating cost

Operating Costs (Euro/year)	
Electricity (NF + UF)	1550.987
Chemicals (acid, base, cleaning)	12000
Membrane replacement	2000
Maintenance	2000
Labor	25000
Vehicle rental (2 months)	4000
Facility rental	15000
Insurance	800
Total	62350.99

Balance sheet

Value of recovered polyphenols that compensates costs – 150 €/kg
Case 1: 70% Recovery from NF permeate
Case 2: 50% Recovery from NF Permeate



	70% REC	50% REC
Operating costs	62350.99	62350.99 €
Phenol value	144522	103230 €
Net Operating Income	82171.01	40879.01 €
Annual Return on Investment	41%	20%
Operating costs	62350.99	62350.99 €
Capital costs (Charged at 10%/year)	20160	20160
Phenol value	144522	103230 €
Net Income	62011.01	20719.01 €