



# Membrane Chemical Reactor for industrial wastewater treatment

Bruce Jefferson

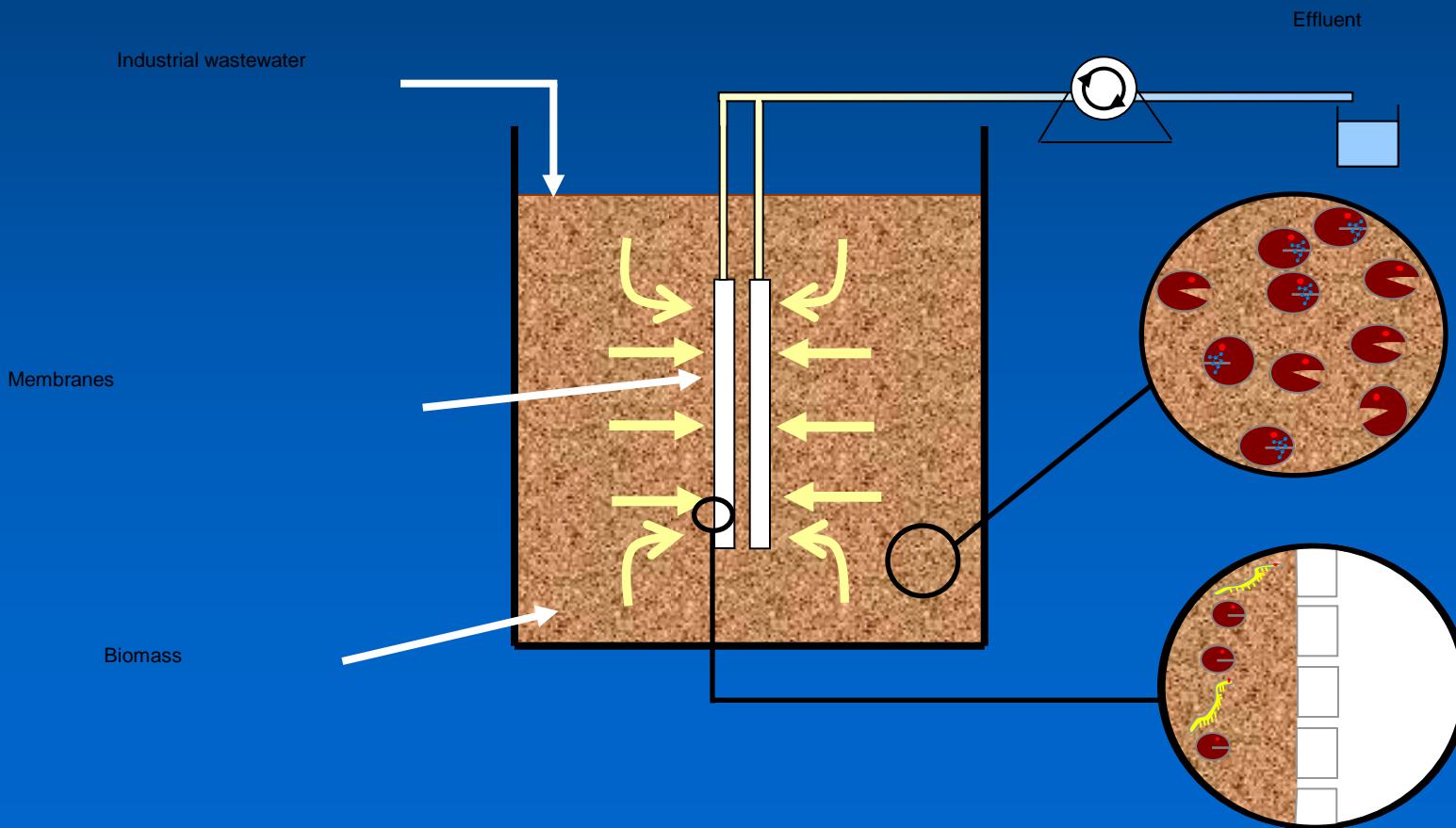


## Acknowledgment

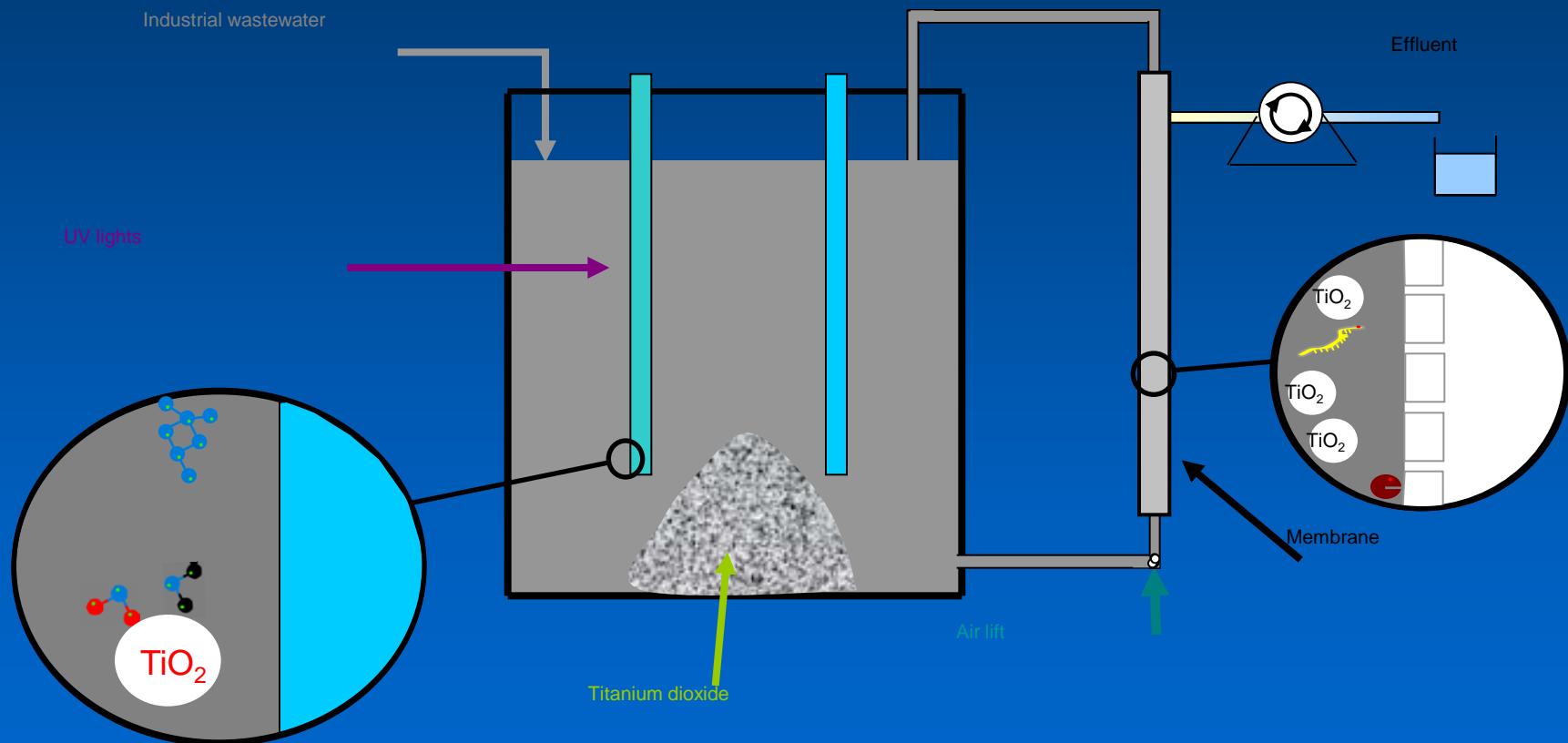
This study is part of the EU Innowatech project (Contract No. 036882), which has been financially supported by the EU Commission within the thematic priority Global Change and Ecosystems of the Sixth Framework Program (FP6-2005-Global 4 - SUSTDEV-2005-3.II.3.2)



# Membrane Bio Reactor

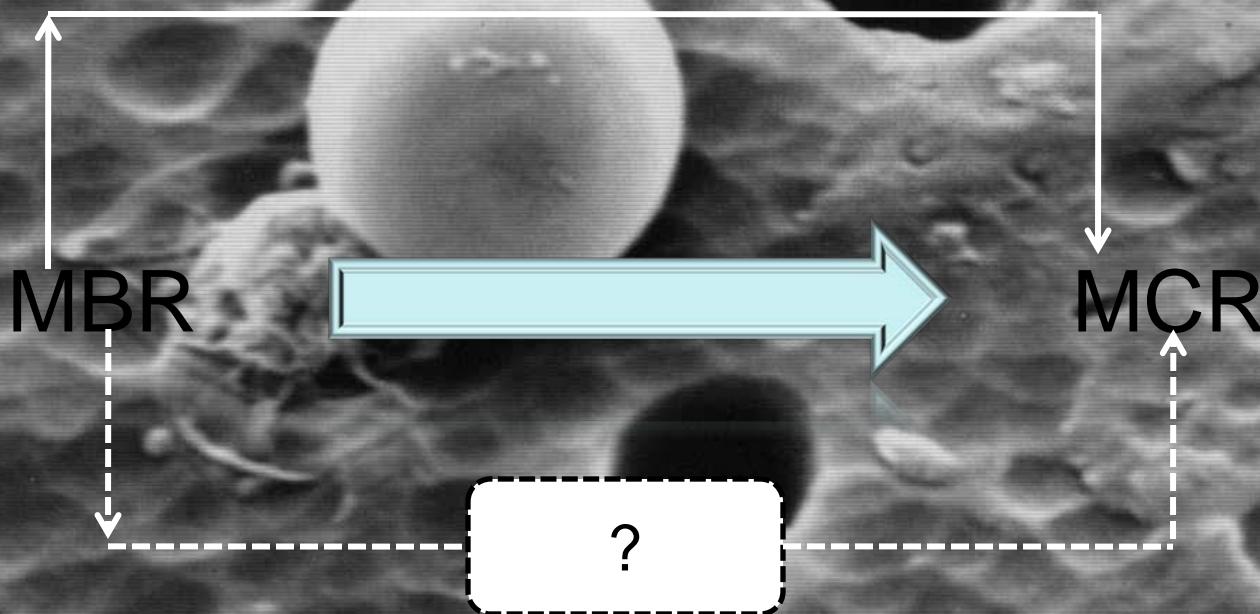


# Membrane Chemical Reactor



Retain the  $\text{TiO}_2$  with a barrier

Direct transfer ?



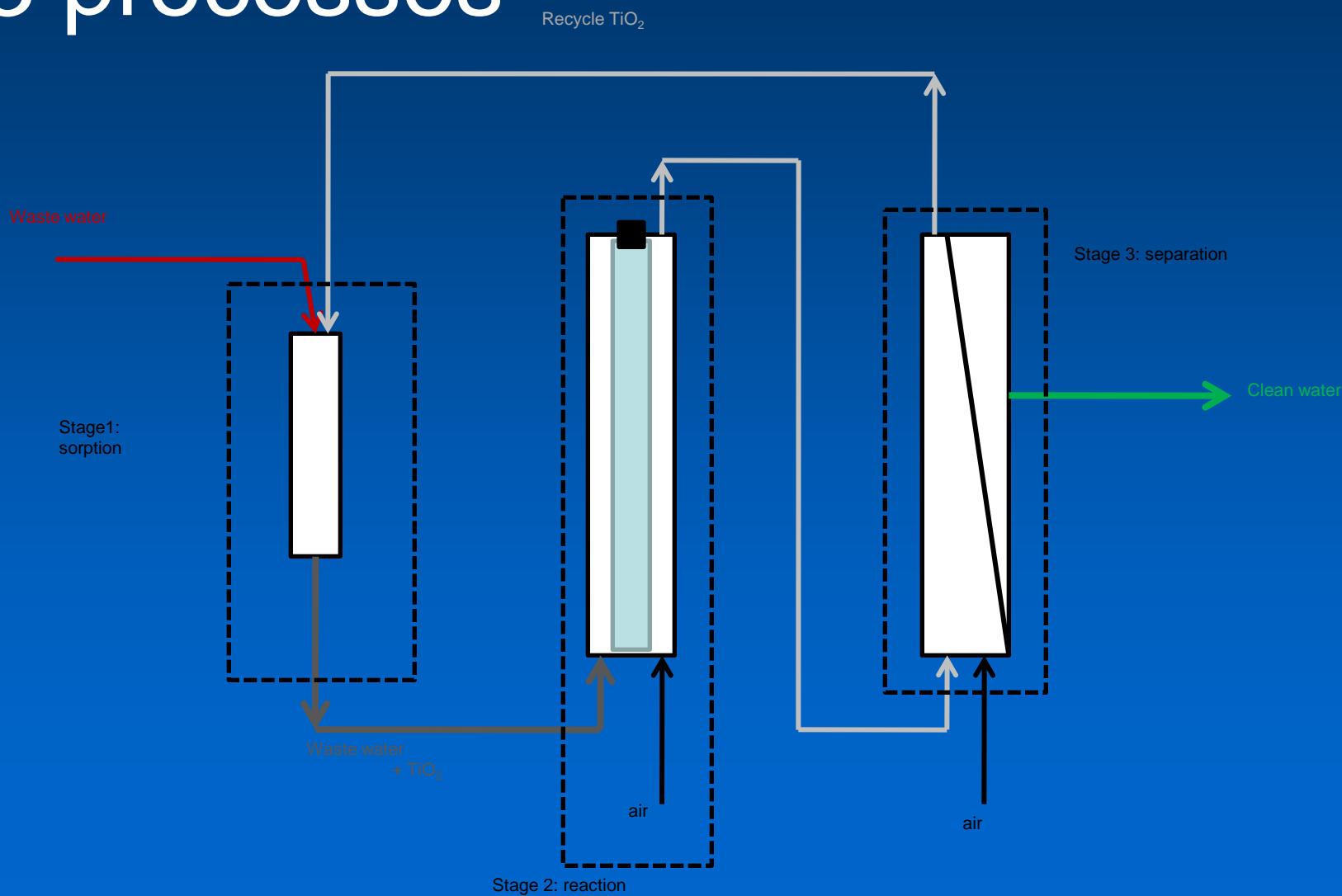
Acc.V Spot Magn Det WD Exp | 5  $\mu\text{m}$   
10.0 kV 4.0 5078x SE 10.5 17

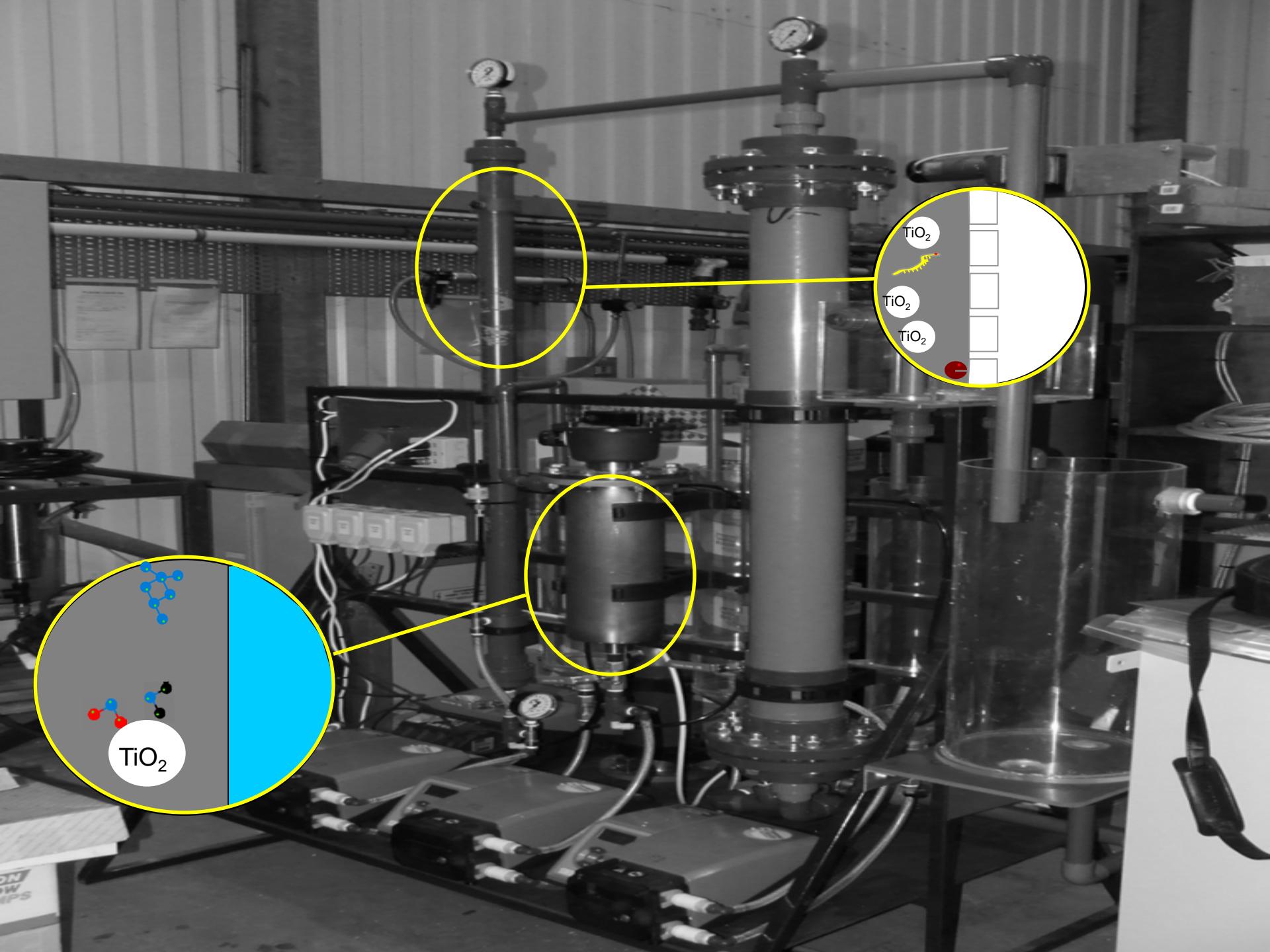


# Attractive attributes

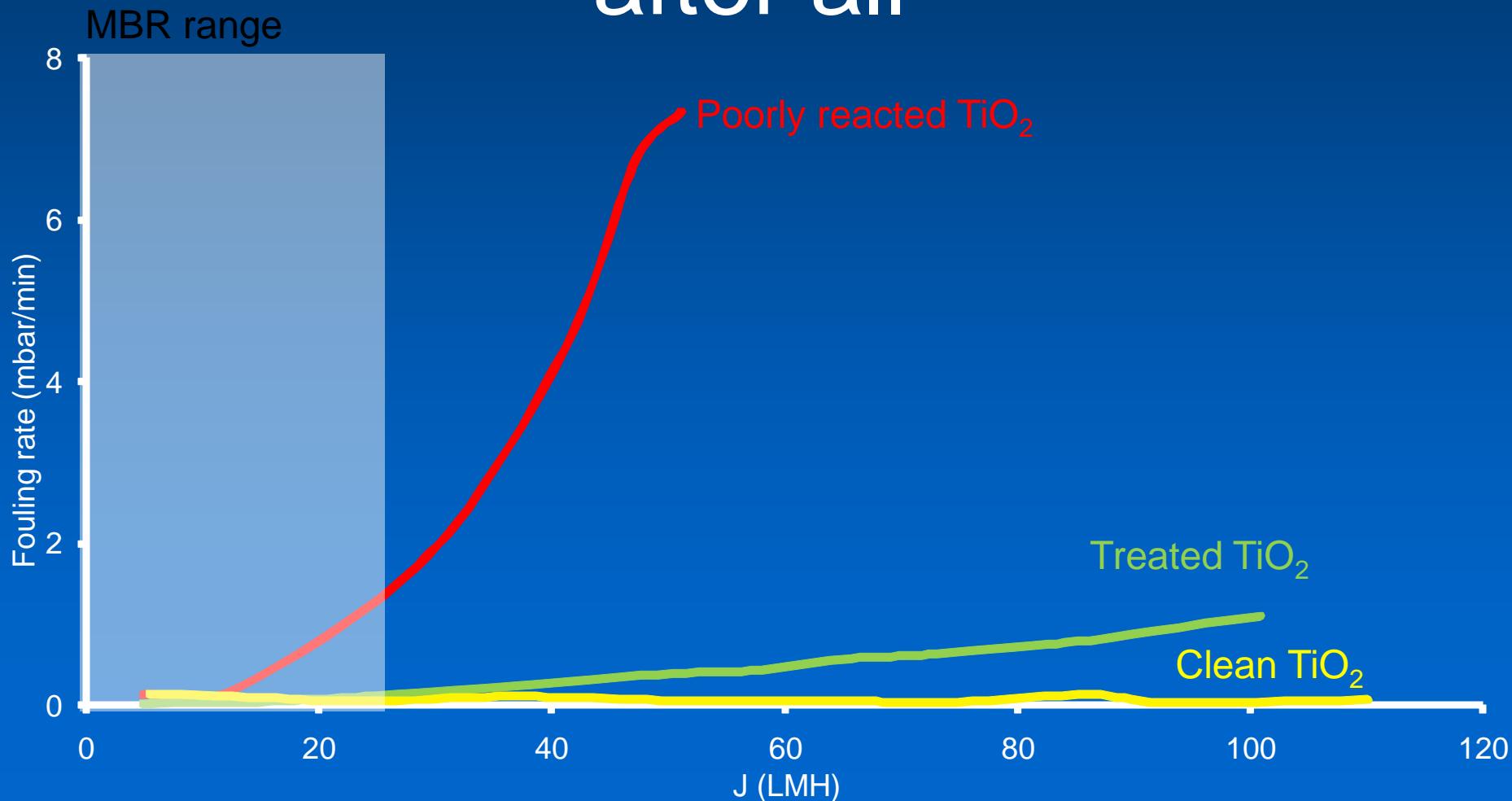


# 3 processes



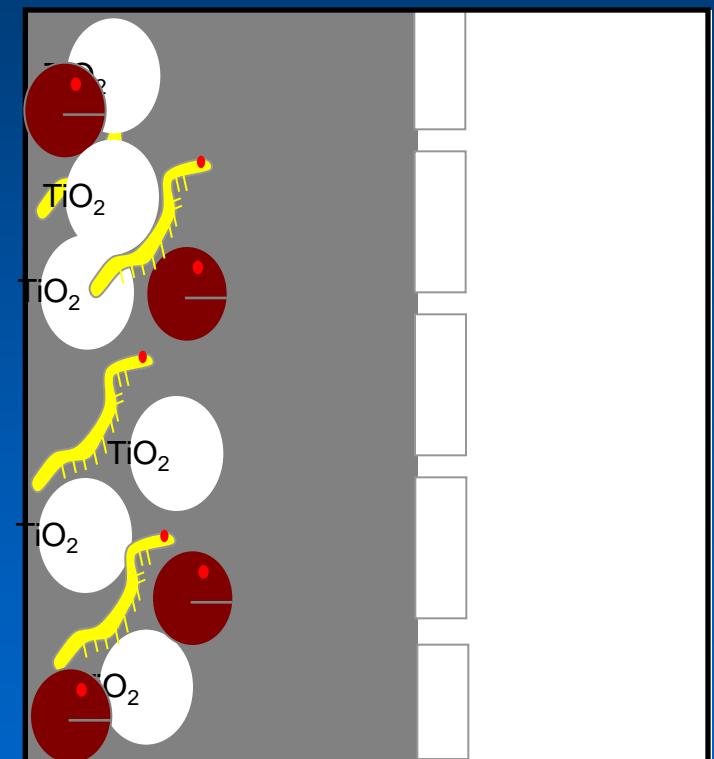
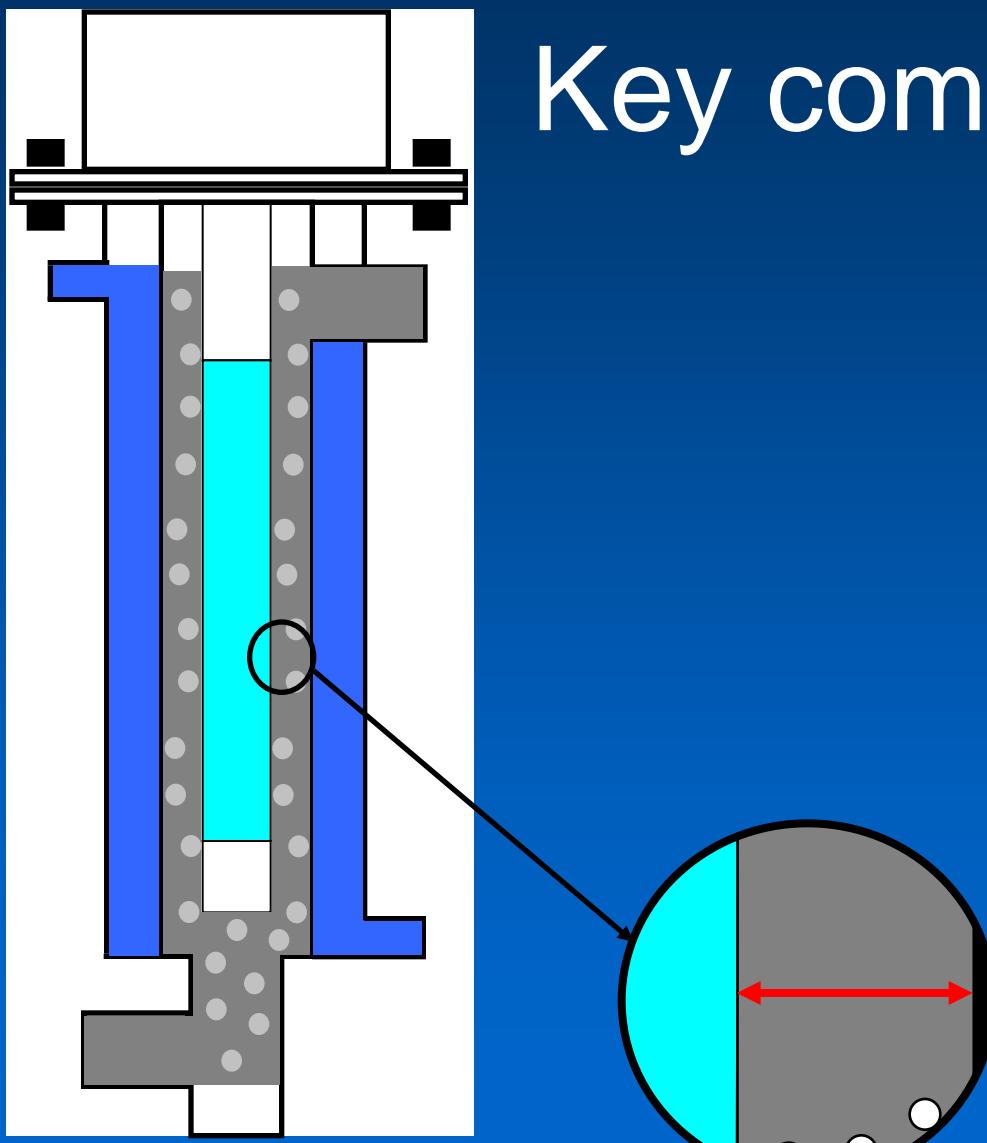


# Not really about the membrane after all

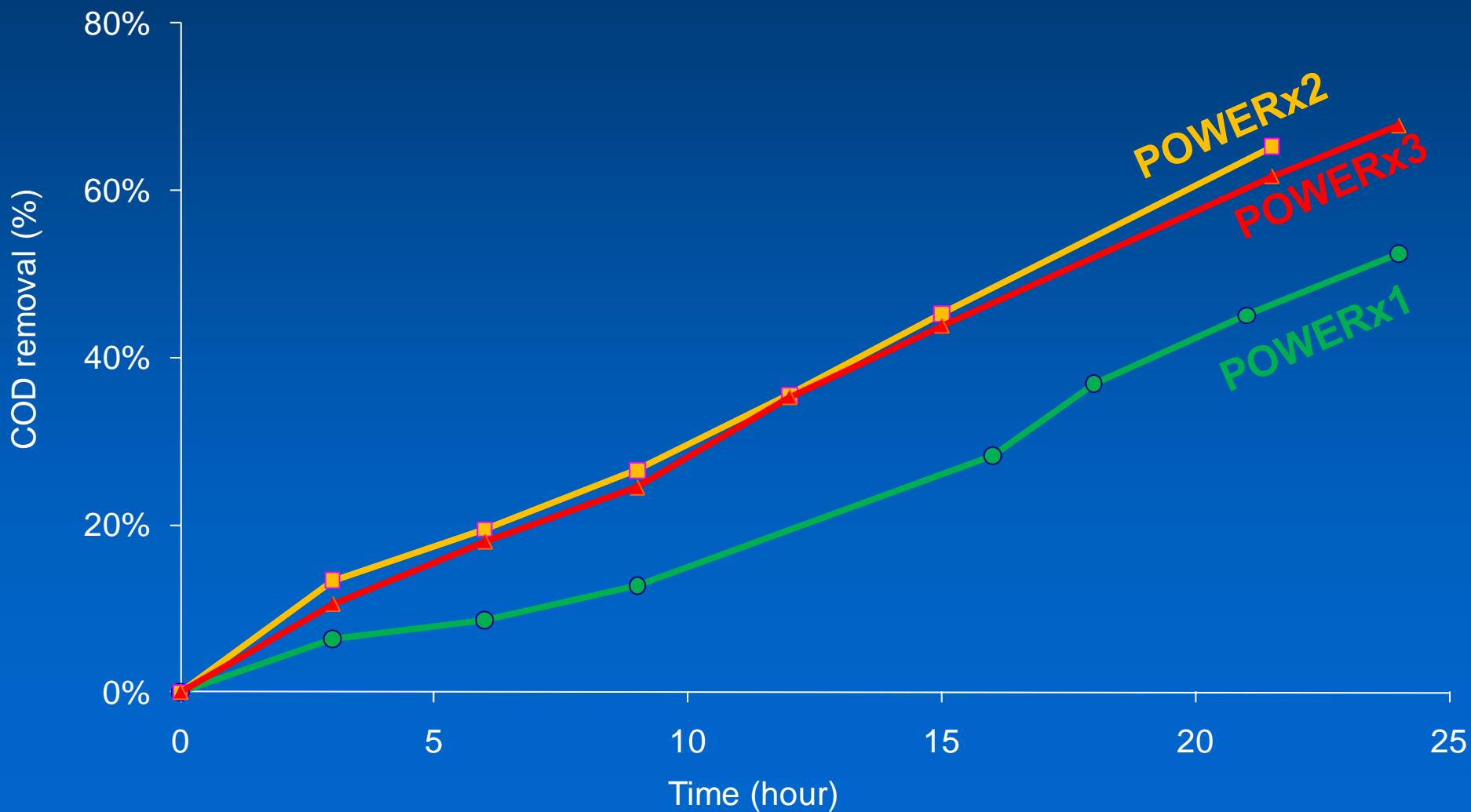




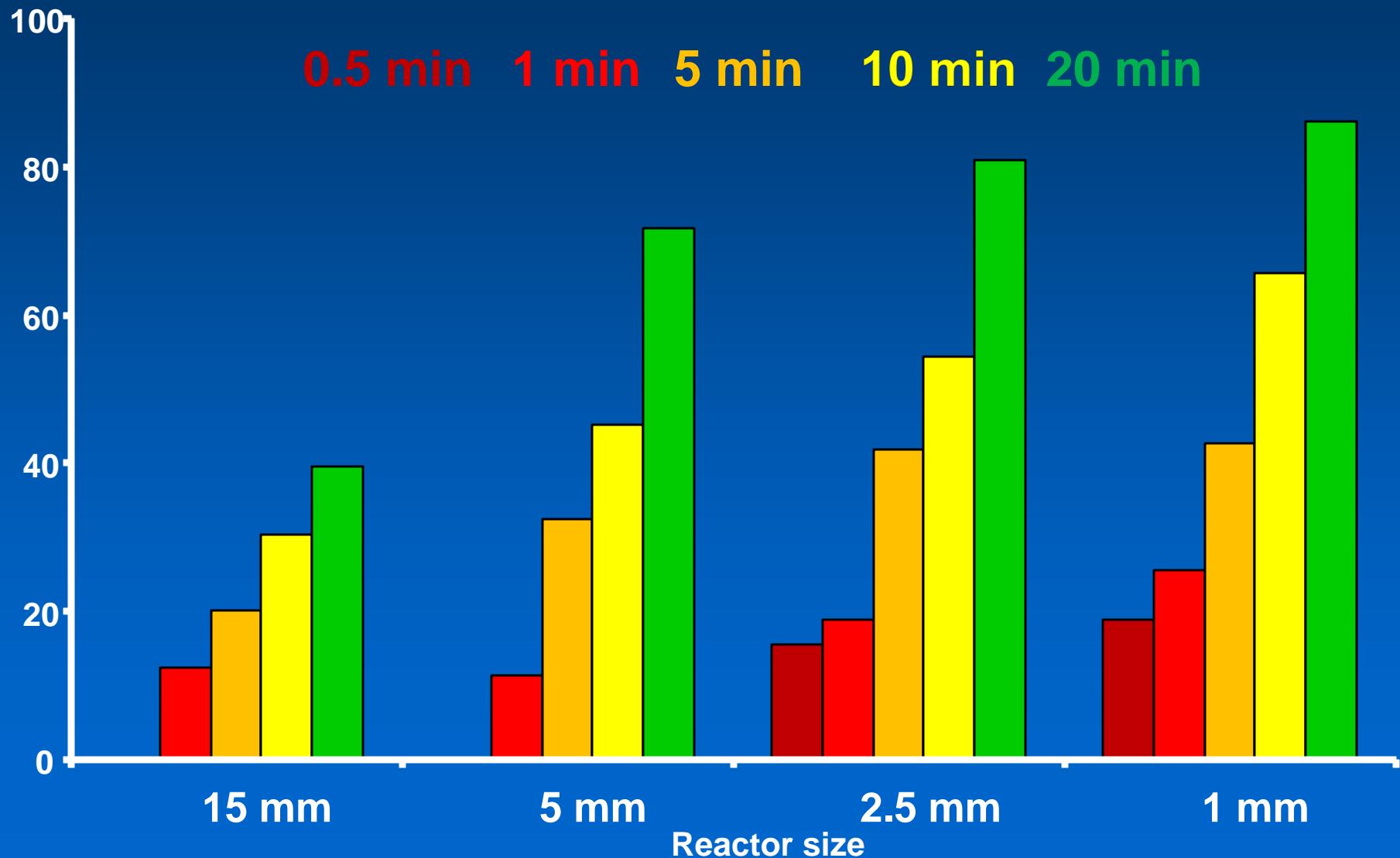
# Key components



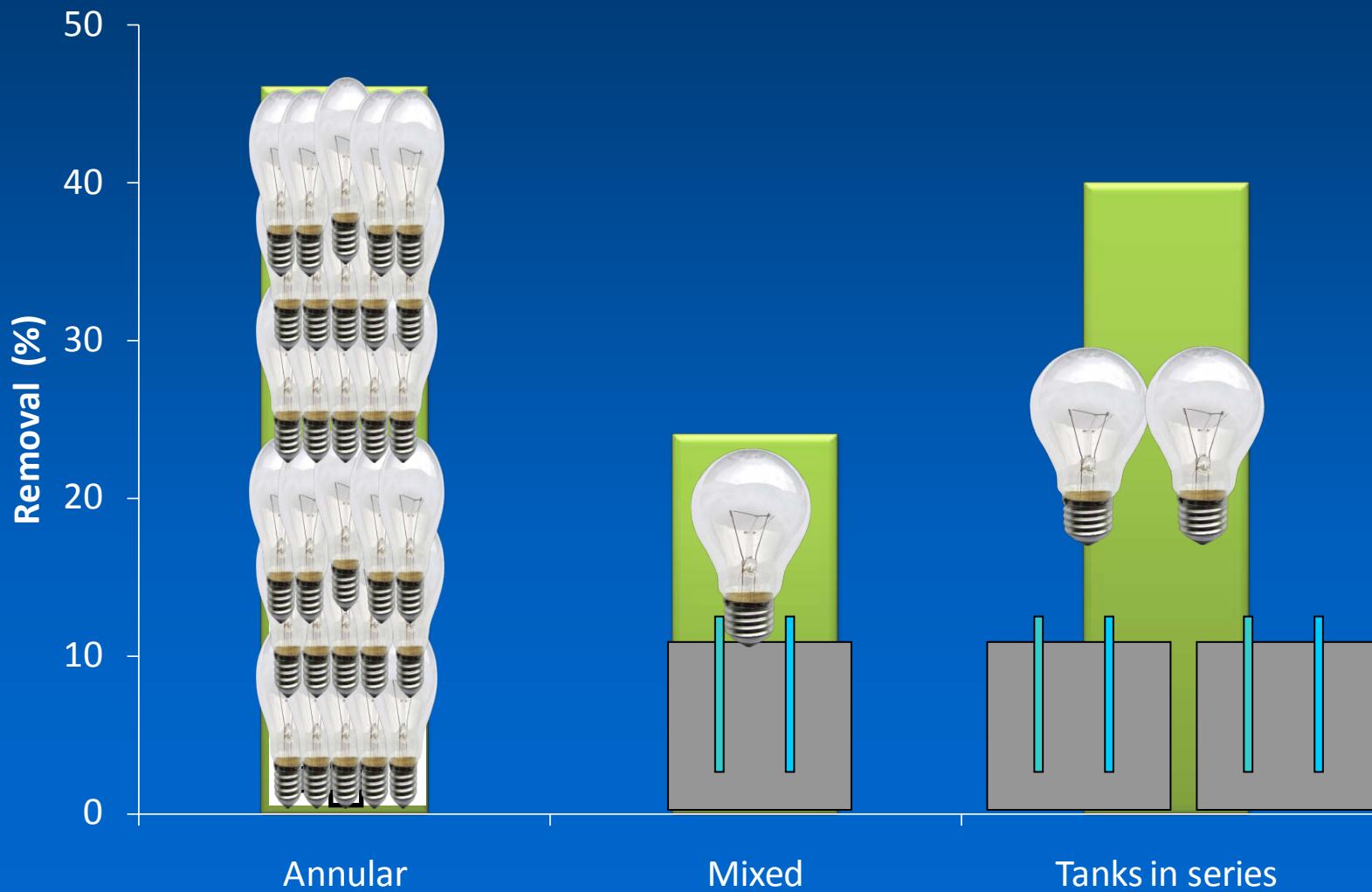
# So just turn the power up.....



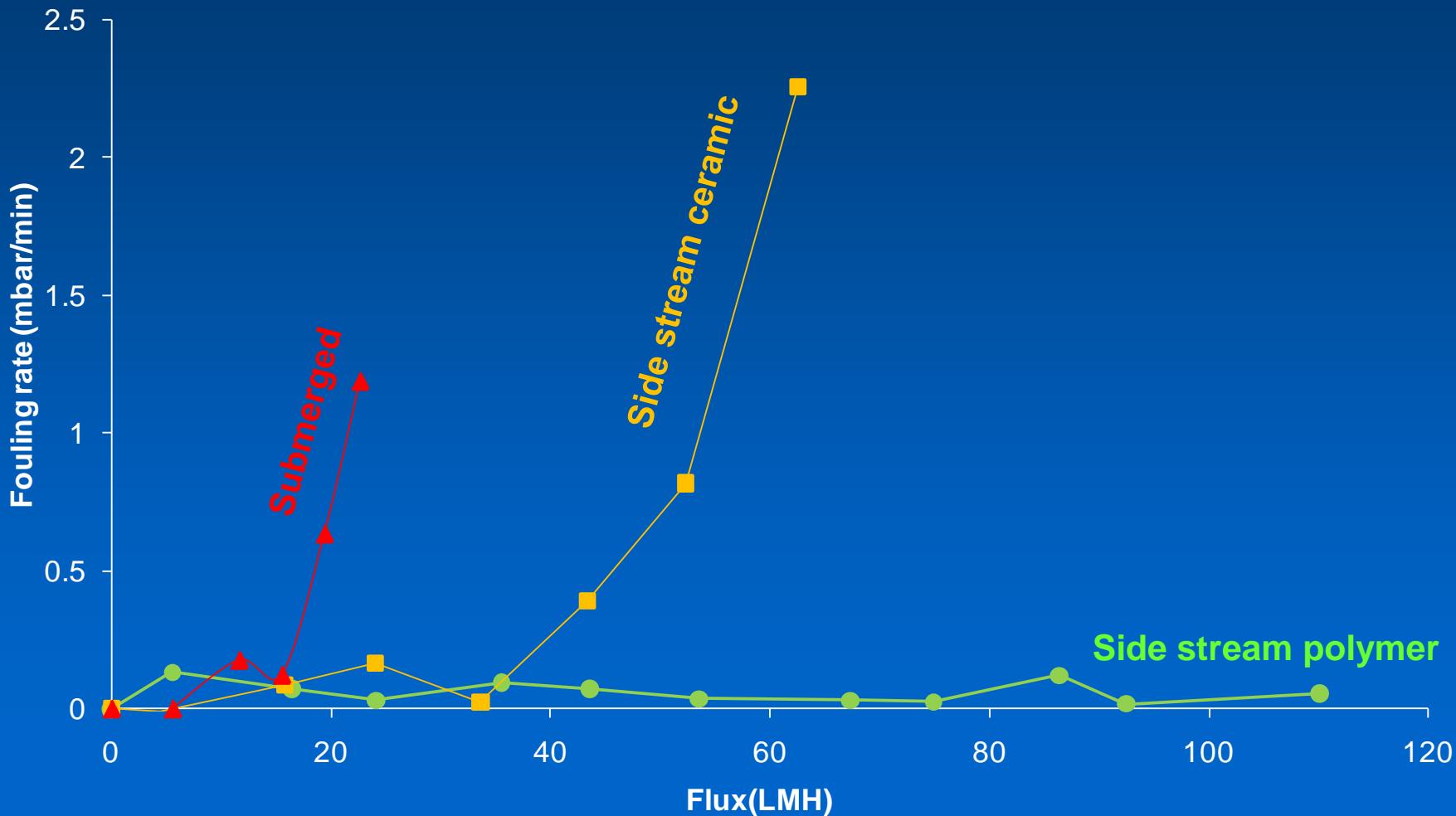
# OK, make the gap smaller.....



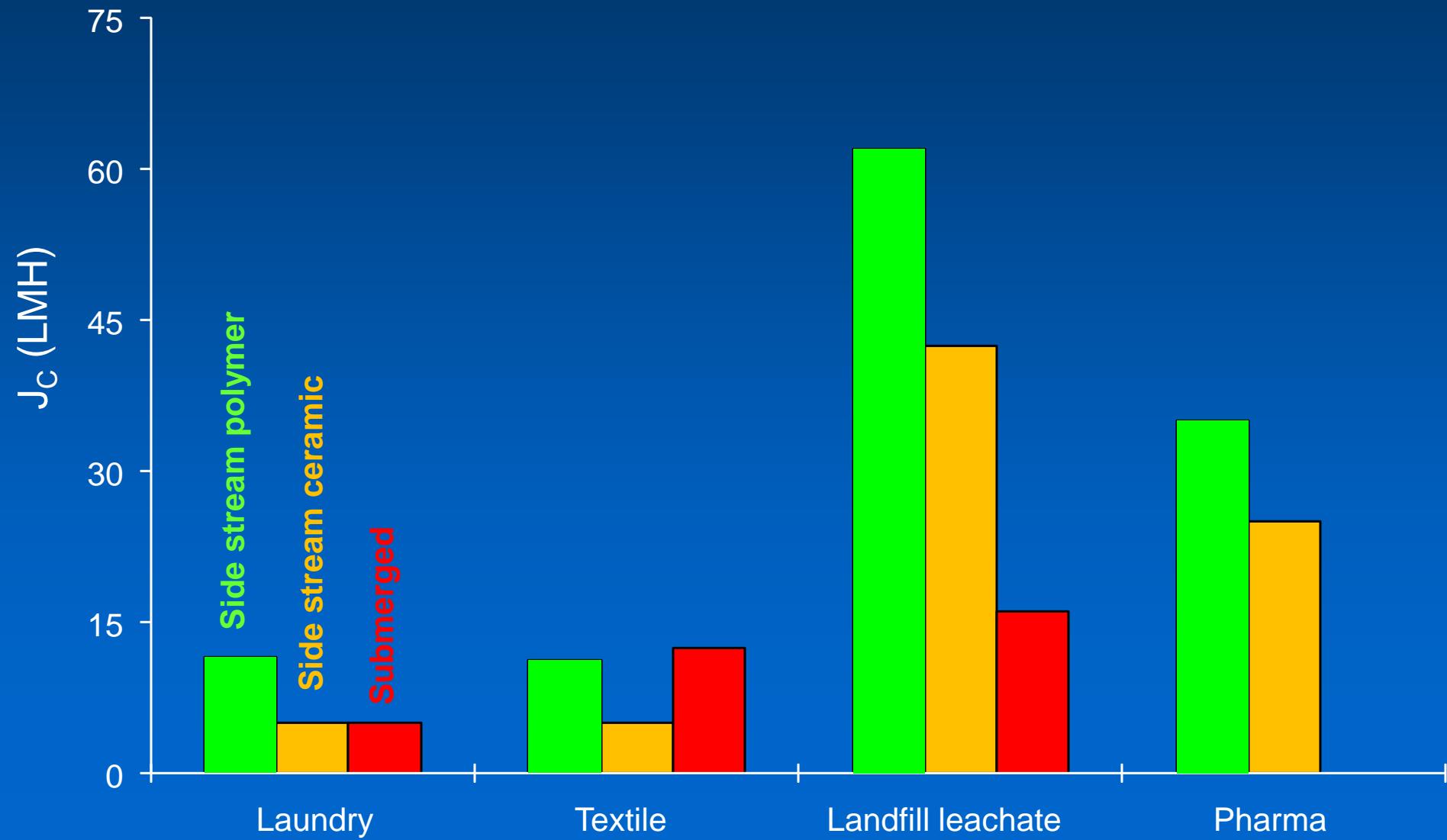
# Reactor design...



# Does the type of membrane matter?



# Does it hold for all waste types ?



# So what is important?

