

Pulp & Paper Application

Esmil and our Partners have conducted much research and constructed many plants gaining vast experience in the pulp & paper industry. From bench scale studies right the way through to full scale plant operations we strive to offer BAT (Best Available Technology) using state of the art membrane separation and dewatering technologies.

Conventional Biological Systems

These systems are reaching the end of their product life cycle as they:

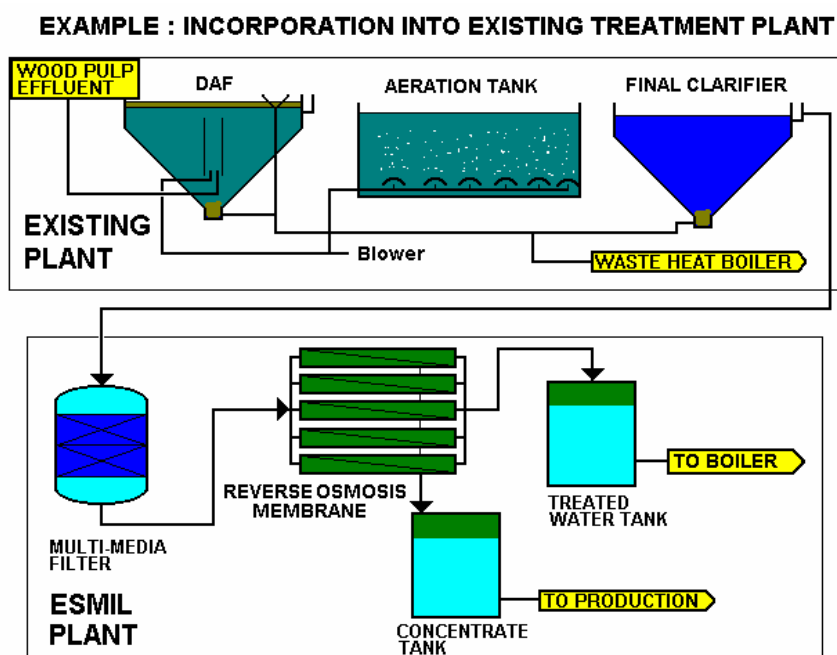
- are capital-intensive
- no longer satisfy the demands of the Environmental Agency or the Company Accountant
- produce two outputs, neither of which are amenable for recovery or re-use:
 - o a low quality final effluent containing inert solids, organic substances and residual biomass.
 - o waste activated sludge known as biomass.

Esmil have a particularly strong presence in the Pulp & Paper industry, building several effluent treatment plants. Our technologies range from simple dewatering (solids removal) all the way to effluent treatment obtaining ultra-pure water suitable for boiler feed and “Zero Discharge” processes.

Applications of Esmil Technology within the pulp & paper industry include:

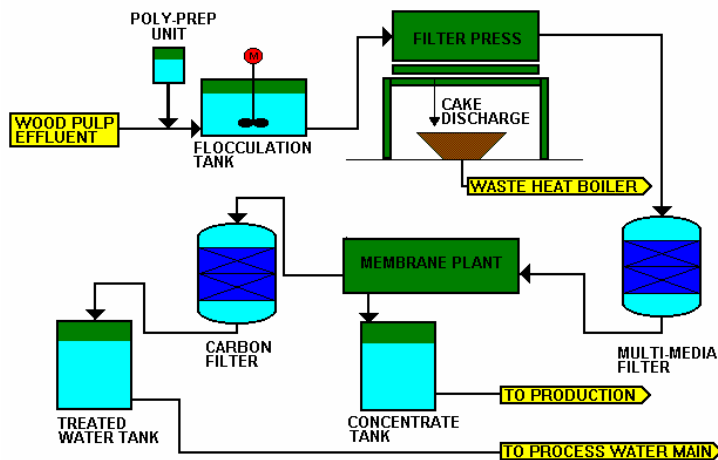
- Recovery of wire water by the removal of suspended solids down to 1 micron
- Removal of heavy metals from de-inking lines copper sulphate/ rinse water recovery
- Recovery of white water by the removal of residual organics and hardness
- Recovery of final effluent by the removal of residual organics and hardness

Depending on the process requirements, Esmil will explore a range of technological solutions to achieve the treatment, recovery and economical requirements.



The "Zero Discharge" Paper & Packaging Effluent Plant

The Esmil "Zero Discharge" Wood Pulp Effluent Plant combines the advantages of conventional physico-chemical processes with proven membrane technology. **All solid and liquid phase outputs may be recoverable thereby resulting in a "zero discharge" plant.**



Permeate for use as general site process water or boiler feed

Concentrate for use as chemical make-up water

Sludge for use in waste heat boiler

The plant can be substantially automated and an operator can be fully trained within a matter of weeks.

Other Technologies

- Dewatering – Filter press, Screw Press, Multidisc Screw Dehydrator.
- DAF – Dissolved Air Flotation
- MBR – Membrane Bio Reactors
- Polishing Units – Activated Carbon, Ion Exchange, Advanced Oxidation Processes
- And More!!!

Pulp & Paper Applications Design Philosophy

We strive to use the most appropriate solution to suit your treatment and/or recovery requirements. We are not limited to a single technology as we have a vast range of experience in the majority of treatment technologies. This includes membrane bio reactors, aerobic treatment, media filtration, ion exchange and other membrane technologies across a range of effluents and industries.

As no two processes are equal it is essential to follow a number of steps to ensure that your tailored pulp & paper application treatment/recovery process performs as well and economically as possible to achieve your treatment goals.

- Lab scale dewatering and membrane trial and selection to ensure process feasibility
- Long term site pilot trial to allow for feed variation and data gathering
- Extensive plant design and operating expense calculations
- Build, Installation and Commissioning
- Comprehensive service support including maintenance and system upgrades.

Pulp & Paper Industry References

- Kronospan ,Chirk, North Wales
- Binder, Hallein, Austria
- Finsa, Padron, Spain



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