

STP Technology Comparison Matrix

Technology	Treatment Process	Efficiency (%)	Operational Cost (per m ³)	Land Requirement	Advantages	Disadvantages
Activated Sludge	Aerobic biological treatment	85-95	\$0.50 - \$1.00	Moderate	High efficiency, established method	Requires energy, sludge management
Sequencing Batch Reactor (SBR)	Batch treatment with aeration and sedimentation	80-90	\$0.40 - \$0.80	Moderate	Flexible operation, lower footprint	Complexity in operation
Membrane Bioreactor (MBR)	Combination of biological treatment and membrane filtration	90-98	\$0.70 - \$1.50	High	High-quality effluent, compact	High capital and maintenance costs
Constructed Wetlands	Natural filtration through vegetation and soil	70-90	\$0.10 - \$0.30	High	Low energy use, ecological benefits	Space-intensive, longer treatment time
Moving Bed Biofilm Reactor (MBBR)	Biofilm treatment on moving media	80-95	\$0.30 - \$0.60	Moderate	Robust process, minimal sludge production	Requires maintenance of media

Sewage treatment plant (STP) technologies are represented in a matrix format for easy reference. The STP Technology Comparison Matrix evaluates key technologies based on treatment processes, efficiency, operational costs, land requirements, advantages, and disadvantages.