

Template for I/A Tech Comparison

SFR - Single Family Residence (330 permitted gpd, 165 gpd flow for cost effectiveness calculations)

Influent - Assume septic tank discharges at 65 mg/L TN and drainfield takes out another 25%, so 50 mg/L TN is reasonable baseline for comparisons.

Basics

Manufacturer / Parent Company	Lombardo Associates, Inc.
Model / Technology Name	Nitrex

Background

Patent Year	NA
Years in production	25+

Approach

Category (Media filter, ATU, Mebrane, sequencing batch, drainfield, etc.)	Media Filter
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Positioning

Ideal applications	Effluent Requirements <<< 5 mg/L or <10 mg/L
Capacity Range	330 - 1,000,000+

Performance

TN concentration output range category (<5 / <10 / <15 / <19 mg/L)	< 5 mg/L category, achieving <3 mg/L
TP concentration output range category (<0.5/<1.0 mg/L)	<0.5 mg/L
kg N removed/year beyond Ref'd 50 mg/L	10.73

Approvals

Residential Permits	VA, OR, NY, FL, UT, AZ, MT - approved to achieve TN < 10 mg/L
MA	Provisional (<25mg/L) Pilot (< 10 mg/L)
General/ Provisional (<50)/Pilot (<10)	MA & Suffolk County NY
RI	Previously approved for many years for TN < 10 mg/L. Not at this time
Other States	MA, CT, NY, NC, FL, AZ, UT, CA, OR. Approved in UT to achieve TN< 2.5 mg/L

Commercial Permits MA, CT, NY, NC, FL, AZ, UT, CA, OR. Approved in UT to achieve TN < 2.5 mg/L

Testing

Internal performance testing data - how many years / data points / sampling frequency? OR DEQ-2000-2001; MASSTC, 2001 (3 years of data); FL DoH, 2012; Suffolk County NY DHS, 2013. Testing frequency from 2/week to monthly

Internal performance testing data - Range, mean, median BOD/TSS/TN values BOD & TSS < 10 mg/L; TN < 3 mg/L

3rd party testing data - how many years / data points / sampling frequency? OR DEQ-2000-2001; MASSTC, 2001; FL DoH, 2012; Suffolk County NY DHS, 2013. Sampling frequency typically monthly

3rd party testing data - Range, mean, median BOD/TSS/TN/TP values BOD & TSS < 10 mg/L; TN < 3 mg/L; TP < 0.5 mg/L

3rd party testing source/organization (s) MASSTC; SCDHS; FLDoH; USEPA/ORDEQ; MTDNR

Cost

NEW SFR Construction (design+permit+equipment supply+install)	'\$28,000 - \$32,000	
Monthly operating costs (electricity etc.)	\$	5.00
Yearly O&M requirements		Yearly visit
Yearly O&M costs (without sampling)		\$225
Yearly O&M costs (with sampling)		MA - \$775
Expected system lifespan (range)		50 - 70+
Total Cost of system over over 20 years (design + install + operation + maintenance + repairs)		\$50,700
Beyond 20 years		\$72,200
		\$97,700

Cost Effectiveness

Cost per kg N removed beyond ref'd 50mg/L - 20 year	\$	236.00
Beyond 20 years		\$160

Retrofits

Ability to use tech in retrofit applications Yes, placed between septic tank and drainfield

Expected capital cost of a retrofit for SFR \$23,000 - \$27,000

Phosphorus Removal

Commentary Adds \$10,000 to capital costs + \$200 per year in O&M costs, effluent TP < 0.5 mg/L

Pitch

1. Lowest effluent TN

Unique aspects/advantages

2. Approved by MassDEP to achieve TN < 10 mg/L which eliminates Title 5 restrictions for nitrogen sensitive areas
3. Lowest operating cost
4. Used below parking areas for cluster systems

Why us?

1. Single source responsibility - Turnkey supplier
2. Effluent quality is guaranteed by registered Professional Engineer
3. 20+ year successful track record
4. Installations throughout the U.S.

Clusters

Cluster potential?

Yes, 20+ years of successful applications

Range (gal/day)

No limitations on range, which is dictated by site space availability

Contact Point

Local Representatives MA & RI

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