

On-site Effluent Treatment National Testing Programme (OSET NTP)

PERFORMANCE CERTIFICATE EXTENSION 2016 AdvanTex® AX-20 Mode 3 and Mode 3B On-site Domestic Wastewater Treatment System, OSET NTP Trial 5, 2009/2010

System Tested

AdvanTex® AX-20 Mode 3 recirculating textile packed bed reactor treatment unit. Rated design capacity 2,000 litres/day. Total liquid volume 7,200 litres (primary treatment 4,000 litres; aeration treatment textile surface area 5,019 m²; recirculation 2,000 litres; pump chamber 1,200 litres). Emergency storage 2,000 litres. No tertiary treatment (such as UV disinfection) is incorporated. Testing was undertaken November 2009 to August 2010

Test Flow Rate

The **AdvanTex® AX-20 Mode 3** was tested at a flow rate of 1,000 litres/day (equivalent to servicing a 3-bedroom 5 to 6 person household) over an 8 month (35 week) period followed by a 5 week high load effects period involving 5 days at 2,000 litres per day then 1,000 litres/day over the following 4 weeks.

Testing and Evaluation Procedures

A total of 16 treated effluent samples of organic matter (BOD₅), suspended solids (TSS), total nitrogen (TN) and ammonia nitrogen (NH₄-N) at generally six day intervals during weeks 23 through 40 were benchmarked and rated on their median values. In addition, the energy used by the treatment and effluent pumping system was assessed on the mean of consumption levels over the 16 sample days, weeks 23 to 35.

Meeting AS/NZS 1547:2000 Secondary Effluent Quality Requirements

These requirements are that 90% of all test samples must achieve a BOD₅ of ≤ 20 g/m³ and TSS of ≤ 30 g/m³ with no one result for BOD₅ being >30 g/m³ nor no one result for TSS being >45 g/m³. The **AdvanTex® AX-20 Mode 3** already holds a performance certificate issued on 9 April 2010 under Trial 3 (2007/2008) which states that the system **achieved** a performance level of **100%** for both BOD₅ and TSS.

Benchmark Ratings

The **AdvanTex® AX-20 Mode 3** system **achieved** the following effluent quality ratings:

Indicator Parameters	Median	Std Dev.	Rating	Rating System				
				A+	A	B	C	D
BOD ₅ (g/m ³)	2.0	0.7	A+	<5	<10	<20	<30	≥30
TSS (g/m ³)	2.5	4.1	A+	<5	<10	<20	<30	≥30
Total nitrogen (g/m ³)	12.3	1.3	A	<5	<15	<25	<30	≥30
NH ₄ -Nitrogen (g/m ³)	0.6	0.21	A+	<1	<5	<10	<20	≥20
Energy (kWh/d) (mean)	0.92	--	A	0	<1	<2	<5	≥5

Performance Certificate Extension

In August 2016 Innoflow Technologies Ltd applied for an Extension of Time related to the Performance Certificate issued in 2011 for their **AX-20 Mode 3** plant and requested that it be applied to their **AX-20 Mode 3B** plant. They provided a signed and legally witnessed statement that there have been two changes to the mode 3 plant tested in 2011 comprising:

- Change from a concrete tank (Mode 3) to a fibreglass tank (Mode 3B), and provided full technical drawings for review.
- Change from a locally sourced AXPTRO V5 control system to an Orenco MVP-AX20 B2/DM(NZ) control panel, with no change in control logic or control timer settings.

AND that these changes are not considered to have resulted in reduced performance in terms of all effluent quality parameters listed in the original OSET-NTP certification.

On-site Effluent Treatment National Testing Programme,
c/- Technical Manager, 2/12 Mt Blanc Pl, Northpark, Howick, AUCKLAND 2013
Mob: 021 626 772 E-mail: ray@hedgland.co.nz



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SWANS-MAG reviewed the changes and concurs with the Innoflow Technologies Ltd statement that no reduction in performance is expected. Hence the plants performance results and Benchmark Ratings above, as tested in 2009, can be expected to remain unchanged in 2016 for either the Mode 3 or Mode 3B plant and the previous Performance Certificate can be extended for a period of 3 years from its previous expiry date.

This Performance Certificate is specific to the **AdvanTex® AX-20 Mode 3 and Mode 3B plants** as specified above when operated at a flow rate of 1,000 litres/day, **and is valid to 22 March 2019**. The Trial 3 Performance Certificate of 9 April 2010 includes effluent quality ratings for TP (total phosphorus) and FC (faecal coliforms).

For the full OSET NTP Trial 5 report on the performance of the **AdvanTex® AX-20 Mode 3** system contact Innoflow Technologies Ltd at Dairy Flat, Auckland, on *0800innoflow*.

Authorised By:

Ray Hedgland,
Technical Manager, OSET NTP

13 October 2016