

# DIGESTER TYPE PERFORMANCE COMPARISON

DAIRY MANURE (ONLY) EXAMPLE



	COVERED LAGOON	COMPLETE MIX	LINEAR VORTEX™	COMMENTS	citations
Design generation	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	Assumes all designs are periodically updated	
Plant longevity (average), years	5-10	15	20 - 30	Steel tanks & flexible membranes degrade faster than concrete	a
Design shorthand	Plug-Flow	Mixed / CSTR	Mixed Plug-Flow	DVO's 2- Stage MPF combines the best aspects from older generation designs	
Biogas output "per milking cow" (avg), ft <sup>3</sup> /day	50	85	110	DVO's unique design produces more than 2x the output of "covered lagoon" AD	b
Processes 100% of the dairy manure	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Covered lagoon systems MUST bypass dairy solids (this is not a "feature")	c
Performance is not "seasonal"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Covered lagoon performance varies widely & is dependent upon the weather	d
Lowest cost per installed kW	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	A key indicator reflecting a positive "Return on Investment"	e
Flush, Scrape & Vac -collection dairies served	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Every modern dairy design is represented by DVO farmers	f
Processes more dairy waste than any other	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DVO is (by far) the largest biogas company in North America	g
Animal bedding quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Greatly influences herd health and milk quality	h
NO composting of solids is needed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Bypassed solids from Covered Lagoons must be separately composted	i
Pathogen destruction (e-coli, salmonella etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Harmful bacteria that causes mastitis and other problems for cattle, and humans	j
Odor and weed-seed destruction	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Complete digestion = more effective odor, vector & weed seed control	k
Methane emissions avoided "per cow"	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DVO avoids the CH4 from solids composting, & unspent liquid that bypass AD	l
GHG impacts overall avoided	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Composting emits some CH4, and also creates N2O (310x worse than CO2!)	m
Renewable power generated "per cow"	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	More biogas "per-cow" = more power generated "per cow" too	n
Positive carbon footprint	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Higher operating efficiency/kW generated, longevity & thorough digestion	o
Digester is certified "Newtrient Recognized"	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	By independent dairy organization "Newtrient, LLC"	p
Optional "Ammonia Recovery" step	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	"AR" is a proven method to greatly reduce ammonia emissions from lagoons	q
Optional Phosphorus Recovery" step	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	"PR" offers a proven method to remove 80-95% of Phos from manure slurries	r
Suitable for Co-generation (i.e. food wastes)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Active mixing is required for most offsite organics	s