GSEE, Inc.

Environmental Services

ASCE OXYGEN TRANSFER DETERMINATION

PROJECT: Colorite - Paddle Wheel - 1 HP
DATE: 8-Jan-07
RUN: 10 - 35,000 mg/L NaCl

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	Initial	Mid Point	Final		
Barometric Pres. (PSIA)	14.352	14.352	14.352	C' Air Flow Device 1 (Annubar)	NA
(mm Hg)	742.20	742.20	742.20	Air Flow Device 1 (SCFM)	NA
Ambient Temperature (°F)	60.60	60.10	59.20	C' Air Flow Device 2 (Orifce)	NA
Relative Humidity (%)	44%	44%	44%	Air Flow Device 2 (SCFM)	NA
Line Pressure (PSIG)	NA	NA	NA	TDS Water Density @ 20ºC (kg/m³)	1,024.18
(In. Hg)	NA	NA	NA	Standard Density @ 20ºC (kg/m³)	998.23
Line Temperature (°F)	NA	NA	NA	Temp. Correction Factor (τ)	1.21
ΔH Air Flow Dev. 1 (Annubar)	NA	NA	NA	Pressure Correction Factor (Ω)	0.98
ΔH Air Flow Dev. 2 (Orifice)	NA	NA	NA	Average Air Flow (SCFM)	NA
$C_{sm}T$ (Standard Methods, mg/l at 0 TDS))		11.017	β (C^*_{20TDS}/C^*_{20CW})	Effective Depth Correction (f)	0.00
C^*_{20} (mg/L at 0 TDS)		9.091	**0.789**	Headloss (In. H_2O)	15.00
Water Temp. (°C)	11.25	11.06	10.81	C* (mg/l)	8.48
Orifice Diameter (in)		1.840		$C_{sm}T$ (Standard Methods, mg/l at test TDS))	8.69
Number Of Aeration Devices		217		C^*_{20} (mg/L at Test TDS)	7.17
Side Water Depth (ft)		4.00	(1.22 m)	Tank Volume (Ft³)	1,385.4
Air Release Depth (ft)		2.13	(0.65 m)	(Gallons)	10,363.8
Tank Length (ft)		0.00	(0.00 m)	(m³)	39.2
Tank Width (ft)		0.00	(0.00 m)	(Million Pounds)	0.089
Tank Diameter (ft)		21.00	(6.40 m)	#Na_2SO_3 @ 160% Stoichiometric	9.50
Gear Reducer or Belt Efficiency		100.0%		Cobalt Concen. (mg/l)	0.100
Motor Efficiency		80.0%		Grams Cobalt Chloride	16.6
Blower HP_{wire}		1.50	(1.12 kw)	Blower HP_{motor}	0.00
Total HP_{wire} av.		1.50	(1.12 kw)	Total HP_{motor} av.	1.20
Actual Air Flow (ACFM)		NA		TDS (mg/L)	34,200.00

NON-LINEAR REGRESSION RESULTS

Probe	KLaT	KLa20	SOTR	SOTR/Dev	SAEmotor	SAE_{wire}	C*	Std. Err.
1	4.26	5.27	4.32	0.02	3.59	2.87	8.64	0.0424
2	4.39	5.43	4.38	0.02	3.64	2.91	8.48	0.0221
3	4.42	5.47	4.40	0.02	3.66	2.92	8.47	0.0204
4	4.74	5.86	4.63	0.02	3.84	3.08	8.31	0.0843
5	4.35	5.38	4.33	0.02	3.60	2.88	8.47	0.0690
6	4.33	5.35	4.33	0.02	3.60	2.88	8.51	0.0454
avg.	4.42	5.46	4.40	0.02	3.65	2.92	8.48	0.0473
Avg	*4.37*	*5.41*	*4.36*	*0.02*	*3.62*	*2.90*	*8.48*	Exclude Max&Min
	/hr	/hr	#O2/hr		#O2/hr-HPm	#O2/hr-WHP		

OXYGEN TRANSFER

Total SCFM:	**NA**	**NA**	**:Nm³/Hr**	**#VALUE!**	**L/s #O2/Hr:**	**4.40**	**1.995**	**:KgO2/Hr**
SCFM/Diff.:	**NA**	**NA**	**:Nm³/hr/Diff**		**#O2/Hr/Diff.:**	**0.02**	**0.009**	**:KgO2/Hr/Diff.**
SCFM/KCF:	**NA**	**NA**	**:Nm³/hr/m³**		**#O2/Day:**	**105.6**	**47.9**	**:KgO2/Day**
Total ICFM:	**#DIV/0!**	**#DIV/0!**	**L/s**		**#O2/Day/1000 Ft³:**	**76**	**1.22**	**:KgO2/Day/m³**

LINEAR REGRESSION RESULTS

Probe	KLaT	KLa20	SOTR	SOTR/Dev	SAEmotor	SAE_{wire}	C*	Corr.Coeff.
1	4.26	5.27	4.29	0.02	3.57	2.85	8.58	0.9992
2	4.46	5.52	4.43	0.02	3.68	2.94	8.44	0.9998
3	4.48	5.55	4.44	0.02	3.69	2.95	8.44	0.9998
4	4.47	5.53	4.39	0.02	3.65	2.92	8.37	0.9976
5	4.51	5.57	4.45	0.02	3.69	2.96	8.40	0.9990
6	4.40	5.44	4.40	0.02	3.66	2.92	8.51	0.9991
avg.	4.43	5.48	4.40	0.02	3.66	2.93	8.46	0.9991
Avg	*4.45*	*5.51*	*4.42*	*0.02*	*3.67*	*2.94*	*8.45*	Exclude Max&Min
	/hr	/hr	#O2/hr		#O2/hr-HPm	#O2/hr-HPw		

EUROPEAN STANDARD

Probe	KLaT	KLa20	SOTR	SOTR/Dev	SAE	C*	
1	4.26	5.27	1.91	0.01	1.71	8.64	
2	4.43	5.48	1.95	0.01	1.74	8.48	
3	4.45	5.51	1.96	0.01	1.75	8.47	
4	4.60	5.69	1.99	0.01	1.77	8.31	
5	4.43	5.48	1.95	0.01	1.74	8.47	
6	4.37	5.40	1.93	0.01	1.72	8.51	
avg.	4.42	5.47	1.95	0.01	1.74	8.48	
Avg	*4.42*	*5.46*	*1.95*	*0.01*	*1.74*	*8.48*	Exclude Max&Min
	/hr	/hr	kg O_2/hr		kg O_2/hr-kw	mg/L	

OXYGEN TRANSFER AT TEST 34200 mg/L TDS CONCENTRATION

	KLaT	KLa20	OTR	OTR/Dev	OTE	AE_{wire}	C*
Average	4.423	5.47	3.39	0.02	2.82	2.26	8.48
	/hr	/hr	#O2/hr		%	#O2/hr-HPw	