



## Team Results for Clean Snowmobile Challenge 2010

### 2010 Clean Snowmobile Competition - Lab Emission Event Emission Data Sheet

Team Name : Univ of Wisconsin - Madison  
 Model : UW-M  
 Engine : UW-M  
 Displacement[cc] : 750cc  
 100% Speed : 6300  
 100% Torque : 80.0  
 No of Strokes : 4  
 Fuel : Gasoline H/C: 1.85 O/C: 0.07

ModeNum	:	1	2	3	4	5
Weighting	:	0.12	0.27	0.25	0.31	0.05
Power kW	:	42.1	23.6	13.4	7.4	0.0
HC_m g/hr	:	2.41	0.11	0.01	0.18	0.12
CO_m g/hr	:	325.15	143.20	82.33	59.58	11.49
NOx_m g/hr	:	3.60	0.41	0.25	0.05	0.01
N2O_m g/hr	:	0.00	0.00	0.00	0.00	0.00
Soot_m mg/hr	:	32.49	0.00	1.12	2.01	0.22
W_HC g/hr	:	0.29	0.03	0.00	0.05	0.01
W_CO g/hr	:	39.02	38.66	20.58	18.47	0.57
W_NOx g/hr	:	0.43	0.11	0.06	0.01	0.00
W_HCNOx g/hr	:	0.72	0.14	0.06	0.07	0.01
W_Soot mg/hr	:	3.90	0.00	0.28	0.62	0.01

Total Weighted Power [kW] 17.072

#### Weighted Emissions

	HC	CO	NOx	HC+NOx
Total Mass [g/hr]	0.4	117.3	0.6	1.0
Specific Mass [g/kW-hr]	0.0	6.9	0.0	0.1

Total Soot [mg/hr] 4.8 Specific Soot [mg/kW-hr] 0.3  
 BSFC [g/kW-hr] 457.5

#### Not Used for Competition

	CO2	N2O	CH4
Total Mass [g/hr]	49576	0.00	2.29
Specific Mass [g/kW-hr]	5949	0.00	0.27

#### EMISSION TESTS:

	Value	Limit	Result
Power	42.1	<96.94 kW	PASS
Soot	0.282	<100 mg/kW-hr	PASS
CO	6.87	<275 g/kW-hr	PASS
HC + NOX	0.06	<90 g/kW-hr	PASS
E-Score	208.2	>100	PASS
Valid Data for All 5 Modes			PASS

LAB EMISSION TEST PASS



## Team Results for Clean Snowmobile Challenge 2010

Modal Raw Data : Engine / Environmental

ModeNum		1	2	3	4	5
Total Points	points	311	1196	1202	1071	1196
PtsInMode	points	311	1196	1202	1071	1196
Speed	rpm	6310.41	5352.88	4718.07	4088.10	1610.96
Torque	Nm	63.68	42.05	27.21	17.31	0.00
Power	kW	42.08	23.57	13.44	7.41	0.00
BSFC	g/kw-hr	375.23	398.76	464.88	608.43	**
Fuel	g/hr	15789.55	9399.23	6248.57	4509.56	943.81
T_int	degC	18.95	24.49	22.00	24.67	25.10
RelHumid	%	61.62	68.38	56.71	58.70	66.90
Baro	in Hg	30.03	30.01	30.00	29.99	29.99
Baro	mmHg	762.76	762.26	762.00	761.75	761.75
Pvap_kPa	kPa	1.15	1.73	1.25	1.50	1.75
Pvap_inHg	inHg	0.34	0.51	0.37	0.44	0.52
AbsHumidity	grains/lb	50.02	75.45	54.49	65.27	76.31
SatPres	kPa	100.54	99.89	100.33	100.06	99.81
Hum Factor		0.89	1.00	0.91	0.96	1.01
F_fac		0.97	0.99	0.98	0.99	0.99
K_fac		0.98	0.99	0.99	0.99	0.99
Humidity	g/kg	7.15	10.78	7.78	9.32	10.90
H2		0.04	0.03	0.03	0.03	0.03
WetDry Factor		0.86	0.87	0.87	0.87	0.87



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### Modal Emissions Concentrations

ModeNum		1	2	3	4	5
THC	ppmC1	20.77	1.59	0.20	5.34	16.81
CO	%	0.14	0.10	0.09	0.09	0.08
N2O	ppm	0.06	0.01	0.03	0.02	0.01
CH4	ppm	17.08	5.91	4.23	3.32	13.40
CO2	%	13.45	13.53	13.56	13.55	13.55
O2	%	0.00	0.01	0.13	0.17	0.17
CNOx	ppm	9.35	1.79	1.63	0.41	0.51
AHC	ppm	0.00	0.00	0.00	0.00	0.00
C2H2	ppm	0.57	0.85	0.61	0.67	0.90
C2H4	ppm	0.10	0.14	0.06	0.07	0.12
C3H6	ppm	0.00	0.06	0.00	0.03	0.10
C4H6	ppm	6.77	3.98	5.97	4.96	3.71
ETOH	ppm	7.41	6.69	8.24	8.32	7.10
H2O	%	13.55	13.40	13.32	13.33	13.33
HCHO	ppm	0.22	0.15	0.13	0.15	0.13
HCN	ppm	0.38	0.37	0.28	0.41	0.35
HNCO	ppm	7.29	2.48	6.09	4.45	1.78
MECHO	ppm	0.00	0.00	0.00	0.00	0.00
NC5	ppm	1.80	0.15	0.26	0.00	0.00
NH3	ppm	224.31	115.47	195.06	159.06	105.59
NO	ppm	10.35	1.80	1.75	0.36	0.51
SO2	ppm	3.39	2.40	2.27	2.11	2.08
Soot	mg/m3	0.176	0.000	0.015	0.038	0.019
ModalAFR_MO	-	13.049	13.121	13.223	13.249	13.255