



Team Results for Clean Snowmobile Challenge 2015 Team 6



2015 Clean Snowmobile Competition - Lab Emission Event Emission Data Sheet

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Test Date       : 2015/03/05 09:05:05
Team Name      : Platteville
Team Number    : 6
Model         : Yamaha
Engine        : 130FI
Displacement[cc] : 1049.00
100% Speed    : 9300
100% Torque   : 77.3
No of Strokes : 4
Fuel          : GASOLINE           H/C: 1.92       O/C: 0.03
  
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ModeNum	:	1	2	3	4	5
Weighting	:	0.12	0.27	0.25	0.31	0.05
Power kW	:	69.3	31.5	18.8	8.1	0.0
HC_m g/hr	:	104.21	73.15	119.96	0.87	23.28
CO_m g/hr	:	12525.91	3759.79	3189.01	23.14	1024.51
NOx_m g/hr	:	109.28	9.26	2.30	20.04	0.01
Soot_m mg/hr	:	66.76	4.38	4.51	1.53	1.95
N2O_m mg/hr	:	0.35	0.09	0.08	0.01	0.04
CO2_m g/hr	:	54135.88	36050.79	24436.26	18985.97	2944.02
CH4_m g/hr	:	32.80	33.26	38.46	0.39	6.53
W_HC g/hr	:	12.51	19.75	29.99	0.27	1.16
W_CO g/hr	:	1503.11	1015.14	797.25	7.17	51.23
W_NOx g/hr	:	13.11	2.50	0.57	6.21	0.00
W_HCNOx g/hr	:	25.62	22.25	30.57	6.48	1.16
W_Soot mg/hr	:	8.01	1.18	1.13	0.48	0.10
W_N2O g/hr	:	0.04	0.02	0.02	0.00	0.00
W_CO2 g/hr	:	6496.31	9733.71	6109.06	5885.65	147.20
W_CH4 g/hr	:	3.94	8.98	9.61	0.12	0.33

Total Weighted Power [kW] 24.041

Weighted Emissions

	HC	CO	NOx	HC+NOx
Total Mass [g/hr]	63.68	3373.90	22.40	86.08
Specific Mass [g/kW-hr]	2.65	140.34	0.93	3.58
BSFC [g/kW-hr]	510.7			

Total Soot [mg/hr] 10.89 Specific Soot [mg/kW-hr] 0.45

Not Used for Competition

Total N2O [mg/hr]	0.09	Specific N2O [mg/kW-hr]	0.00
Total CO2 [g/hr]	28371.93	Specific CO2 [g/kW-hr]	1180.14
Total CH4 [g/hr]	22.98	Specific CH4 [g/kW-hr]	0.96
RMC BSFC [g/kW-hr]			

EMISSION TESTS:

	Value	Limit	Result
Power	75.26	<96.94 kW	PASS
Soot	0.45	<100 mg/kW-hr	PASS
CO	140.34	<275 g/kW-hr	PASS
HC + NOX	3.58	<90 g/kW-hr	PASS
E-Score	172.53	>100	PASS
Valid Data for All 5 Modes			PASS

LAB EMISSION TEST PASS



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Modal Raw Data : Engine / Environmental

ModeNum		1	2	3	4	5
Total Points	points	600	916	1200	1200	1200
PtsInMode	points	1210	2961	1800	3470	1800
Speed	rpm	8927.59	7663.33	6975.02	5424.03	1486.45
Torque	Nm	74.07	39.30	25.70	14.34	0.00
Power	kW	69.25	31.54	18.77	8.14	0.00
BSFC	g/kw-hr	339.39	424.07	503.72	740.54	**
Fuel	g/hr	23502.87	13373.18	9454.12	6030.61	1466.74
T_int	degC	29.03	29.05	27.40	30.64	29.61
RelHumid	%	15.00	12.98	14.91	12.84	12.85
Baro	in Hg	29.15	29.15	29.16	29.15	29.16
Baro	mmHg	740.48	740.52	740.74	740.51	740.72
Pvap_kPa	kPa	0.48	0.42	0.44	0.45	0.42
Pvap_inHg	inHg	0.14	0.12	0.13	0.13	0.13
AbsHumidity	grains/lb	21.35	18.48	19.49	19.86	18.83
SatPres	kPa	98.24	98.31	98.32	98.28	98.33
Hum Factor		0.80	0.79	0.79	0.79	0.79
F_fac		1.02	1.02	1.01	1.02	1.02
K_fac		1.03	1.03	1.02	1.03	1.03
Humidity	g/kg	3.05	2.64	2.78	2.84	2.69
H2		1.47	0.69	0.84	0.01	1.57
WetDry Factor		0.87	0.87	0.87	0.88	0.92



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Modal Emissions Concentrations

ModeNum		1	2	3	4	5
THC	ppmC1	631.18	757.64	1752.12	16.85	1712.25
CO	%	3.78	1.94	2.32	0.02	3.75
N2O	ppm	6.79	2.84	3.74	0.41	8.23
CH4	ppm	173.22	300.31	489.76	6.53	418.65
CO2	%	10.39	11.84	11.31	11.70	6.86
O2	%	0.00	0.06	0.43	2.62	6.23
CNOx	ppm	200.70	29.10	10.17	118.18	0.13
AHC	ppm	20.45	14.33	49.04	0.32	65.31
C2H2	ppm	3.39	2.51	1.57	0.98	0.74
C2H4	ppm	65.64	88.68	215.26	1.55	115.84
C3H6	ppm	9.42	5.19	36.26	0.38	29.08
C4H6	ppm	27.43	13.58	16.48	0.59	3.14
ETOH	ppm	8.47	6.21	6.47	2.76	4.72
H2O	%	13.30	13.36	13.17	11.88	8.14
HCHO	ppm	0.62	0.80	0.90	0.78	2.65
HCN	ppm	12.66	3.64	4.23	0.54	0.22
HNCO	ppm	11.86	4.96	1.48	0.98	0.06
MECHO	ppm	0.22	0.01	0.00	0.00	0.00
NC5	ppm	3.48	1.61	9.48	1.65	45.74
NH3	ppm	757.38	328.59	315.93	8.47	52.25
NO	ppm	250.95	35.90	11.73	147.78	0.01
NO2	ppm	0.44	0.90	1.10	1.10	0.46
Soot	mg/m3	0.25	0.03	0.04	0.02	0.08
AFR	:1	12.15	12.95	12.74	16.10	16.52



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Measurement Accuracy (SAE paper 961804)

ModeNum	H2_XLS %	ModalHC_Dry %	ModalFTIR_H2O %	N2 %	Ar %	AFR :1	Tr_Eff -
1	1.700	0.073	13.299	77.489	0.896	12.830	1.000
2	0.792	0.087	13.357	80.082	0.926	13.703	0.997
3	0.966	0.202	13.169	79.761	0.922	13.673	0.978
4	0.008	0.002	11.876	82.632	0.955	16.844	0.868
5	1.714	0.186	8.140	75.774	0.876	17.772	0.687

ModeNum	ModalWHC %	ModalC1 %	ModalC8 %	ModalSUM_HC %	ModalT_Emiss %	ModalError %
1	104.214	0.073	0.009	0.082	96.541	3.459
2	73.151	0.040	0.005	0.045	97.815	2.185
3	119.965	-0.145	-0.018	-0.163	97.679	2.321
4	0.866	-1.757	-0.220	-1.976	97.916	2.084
5	23.281	-3.495	-0.437	-3.932	92.774	7.226

Power Run

Team 6

TeamNumber	6
TeamName	Platteville
Model	Yamaha
Engine	130FI

Displacement cc	1049.00
RatedSpeed	9300
RatedTorque	77.3

