

SAE CSC2006 SNOWMOBILE DESCRIPTION FORM

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Team Name Clarkson Winter Knights Team Number: 2

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-stroke

Engine Displacement (cc or electric motor size) 600

Engine Manufacturer Suzuki

Engine Modifications —

Compression Ratio 8:1

Turbocharged? Supercharged? Turbo

Engine Management System None

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure ?

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) 14:1

Catalyst? Type? 3-stage catalytic converter

Secondary Air Injection? —

Exhaust Gas Recirculation? —

Other —

Noise Control

Muffler Design 2 stage Baffle system

Noise Treatment Directed out tunnel at track

Cooling

Describe Strategy Stock coolant system w/ louvers in body panels to cool matter.

Other Unique Features of Your Snowmobile

Describe Strategy Track skirt to cut down on noise from suspension, track, and snow coach

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Team Name UW - Madison Team Number: 3

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-Stroke

Engine Displacement (cc or electric motor size) 750 cc

Engine Manufacturer Weber 1 (Polaris FS)

Engine Modifications —

Compression Ratio 9:1

Turbocharged? Supercharged? —

Engine Management System Bosch

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure 42 psi

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) Stoich

Catalyst? Type? dual-inline platinum

Secondary Air Injection? —

Exhaust Gas Recirculation? —

Other —

Noise Control

Muffler Design 3 CHAMBER CYLINDER - HONEYCOMB

Noise Treatment FOAM INSULATION, SILENT TRACK, ARTIFICIAL AIR WEAR

Cooling

Describe Strategy USE STOCK COOLING RADIATORS, OIL COOLER FROM

MOTORCYCLE

Other Unique Features of Your Snowmobile

Describe Strategy 2 catalysts to optimize engine pollutant reduction, Tunnel

stiffeners for improved sound.

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Team Name V Maine ("sled bear") Team Number: 04

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-stroke

Engine Displacement (cc or electric motor size) 660 cc

Engine Manufacturer Arctic Cat

Engine Modifications ~~Engine~~ ^{Noise} Management, Micro Controller ^(No stock change)

Compression Ratio 12.04 unleaded gasoline

Turbocharged? Supercharged? None

Engine Management System Micro controller Basic Stamp 2

Fuel Delivery (Carburetors, EFI, DI): DFI

Fuel Pump Pressure unsure, need verification possibly varies

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) stoich 14.7:1 gasoline

Catalyst? Type? Catalytic Converter,

Secondary Air Injection? NO

Exhaust Gas Recirculation? NO

Other -

Noise Control

Muffler Design Arctic Cat 2003, stock ... chambered

Noise Treatment insulation, ~~padding~~ hole reduction

Cooling

Describe Strategy stock, custom hood ~~at~~ scoop

Other Unique Features of Your Snowmobile

Describe Strategy -

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Team Name Kettering Bulldogs Team Number: 5

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-stroke

Engine Displacement (cc or electric motor size) 749cc

Engine Manufacturer Weber

Engine Modifications larger injectors, modified fuel rail

Compression Ratio 9.0:1

Turbocharged? Supercharged? Turbocharged

Engine Management System Bosch M7.4.4

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure 60 psi + boost

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) stoich

Catalyst? Type? 2 three-way catalysts

Secondary Air Injection? no

Exhaust Gas Recirculation? no

Other _____

Noise Control

Muffler Design 2 flow thru absorption mufflers

Noise Treatment under tunnel sound coating, under hood foam

Cooling

Describe Strategy Our sled utilizes heat exchangers in the tunnel along with a radiator to reduce coolant temperature

Other Unique Features of Your Snowmobile

Describe Strategy We chose to implement Ethanol (E-85) along with a new fuel system capable of handling alcohol based fuel.

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Team Name MTU CLEAN SNOWMOBILE Team Number: 6

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-STROKE

Engine Displacement (cc or electric motor size) 954cc

Engine Manufacturer HONDA

Engine Modifications PIGGYBACK EFI CONTROLLER, COATED PISTONS, VALVES, ETC.

Compression Ratio 11.0:1

Turbocharged? Supercharged? NO

Engine Management System STOCK HONDA W/ DYNOSJET FORDER COMMANDER

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure 60 PSI

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) STOICH

Catalyst? Type? 3-WAY EMITEC

Secondary Air Injection? NO

Exhaust Gas Recirculation? NO

Other _____

Noise Control

Muffler Design SUPER-CRITICAL / REACTIVE EXHAUST SYSTEM

Noise Treatment SOUND-PROOF ANECHOIC FOAM AND DYNAMAT RUBBER-LINED ENGINE COMPARTMENT

Cooling

Describe Strategy PARALLEL-ROUTED SYSTEM WITH 3 HEAT EXCHANGERS WITH FLUIDYNE RADIATOR (W/FAN)

Other Unique Features of Your Snowmobile

Describe Strategy TEAM-DESIGNED SPECIAL GEARBOX AND GEARS, CUSTOM

TUNNEL COVER AND LADDER FRAME (TO RELIEVE UNDER-SEAT HEAT), CUSTOM FTB ADAPTATION SYSTEM

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Team Name University of Wisconsin-Platteville Team Number: 7

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 2-stroke

Engine Displacement (cc or electric motor size) 594.4 cc

Engine Manufacturer Rotax

Engine Modifications None

Compression Ratio 12.25:1

Turbocharged? Supercharged? No

Engine Management System Ski-doo 2-TEC

Fuel Delivery (Carburetors, EFI, DI): Semi-direct injection

Fuel Pump Pressure 58 psi

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) stock cal. from ski-doo

Catalyst? Type? ~~Two-way~~ Three-way Catalyst

Secondary Air Injection? Yes

Exhaust Gas Recirculation? No

Other None

Noise Control

Muffler Design Redesigned automotive muffler with fiberglass packing

Noise Treatment Sound absorption and damping material lining the nose pan and hood

Cooling

Describe Strategy Use a heat exchanger in front of the track and a radiator with a fan in the nose pan.

Other Unique Features of Your Snowmobile

Describe Strategy Removed rear suspension idler wheels to reduce track noise and use a VespeL chain tensioner to reduce transmission noise.

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Team Name MSU X Team Number: 8

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 2- stroke cycle
Engine Displacement (cc or electric motor size) 499cc
Engine Manufacturer Suzuki
Engine Modifications Ignition, exhaust, Fuel
Compression Ratio 6.34:1
Turbocharged? Supercharged? NO
Engine Management System MoTec
Fuel Delivery (Carburetors, EFI, DI): SDI
Fuel Pump Pressure 90psi

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) Low RPM-stoich + High RPM - lean
Catalyst? Type? yes, two way catalyst
Secondary Air Injection? yes
Exhaust Gas Recirculation? NO
Other _____

Noise Control

Muffler Design OEM, silencer
Noise Treatment Noise dampening material

Cooling

Describe Strategy Stack

Other Unique Features of Your Snowmobile

Describe Strategy Seat - rider forward, Digatron - monitors exhaust gas temp.

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Team Name UNIVERSITY OF IDAHO CSC Team Number: 9

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 2-STROKE

Engine Displacement (cc or electric motor size) 600 cc

Engine Manufacturer POLARIS

Engine Modifications DIRECT INJECTION

Compression Ratio 6.5:1

Turbocharged? Supercharged? NA

Engine Management System MODIFIED MOTEC

Fuel Delivery (Carburetors, EFI, DI): DI

Fuel Pump Pressure 35 psi

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) STOICH/RICH

Catalyst? Type? YES, YAMAHA 1300 WAVEFLOWER

Secondary Air Injection? No

Exhaust Gas Recirculation? No

Other _____

Noise Control

Muffler Design Stock (MODIFIED)

Noise Treatment HOOD INSULATION

Cooling

Describe Strategy Stock LIQUID

Other Unique Features of Your Snowmobile

Describe Strategy DI 2-STROKE BATTERY-LESS ELECTRICAL SYSTEM

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Team Name UNA Sladcats Team Number: 11

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-stroke

Engine Displacement (cc or electric motor size) 599 cc

Engine Manufacturer Honda

Engine Modifications Re-gear'd transmission for proper clutch speed.

Compression Ratio 12:1

Turbocharged? Supercharged? No

Engine Management System Stock Honda ECU

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure 50 psi

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) Honda Factory programmed.

Catalyst? Type? Honda CBR600F4i California Catalyst.

Secondary Air Injection? Yes

Exhaust Gas Recirculation? No

Other _____

Noise Control

Muffler Design Honda CBR600RR Silencer

Noise Treatment Accumat sound matt under hood.

Cooling

Describe Strategy Liquid Cooled, Front mounted radiator with electric fan.

Other Unique Features of Your Snowmobile

Describe Strategy _____

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Team Name University of Minnesota-Duluth Snowdogs Team Number: 13

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4-stroke

Engine Displacement (cc or electric motor size) 750cc

Engine Manufacturer Polaris (Weber)

Engine Modifications stock

Compression Ratio 9.0:1

Turbocharged? Supercharged? turbocharged

Engine Management System Bosch (stock)

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure 43-44 psi

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) stoich

Catalyst? Type? 3 stage cat

Secondary Air Injection? yes

Exhaust Gas Recirculation? no

Other _____

Noise Control

Muffler Design 3 stage w/ air injection

Noise Treatment rubber noise dampening skirt

Cooling

Describe Strategy stock cooling w/ extra vents added

Other Unique Features of Your Snowmobile

Describe Strategy rubber noise dampening skirt to reduce chassis and exhaust noise

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Team Name McGill Electric Snowmobile Team Team Number: 71

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) Electric

Engine Displacement (cc or electric motor size) ≈ 9 kW

Engine Manufacturer eCycle

Engine Modifications —

Compression Ratio —

Turbocharged? Supercharged? —

Engine Management System Alltrac AXIS

Fuel Delivery (Carburetors, EFI, DI): —

Fuel Pump Pressure —

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) —

Catalyst? Type? —

Secondary Air Injection? —

Exhaust Gas Recirculation? —

Other —

Noise Control

Muffler Design —

Noise Treatment —

Cooling

Describe Strategy Fans & Radiator

Other Unique Features of Your Snowmobile

Describe Strategy Electric snowmobile

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Team Name Utah State University Team Number: 23

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) electric
Engine Displacement (cc or electric motor size) 8" Series DC
Engine Manufacturer ~~Advanced~~ Advanced DC
Engine Modifications series/parallel wiring
Compression Ratio —
Turbocharged? Supercharged? —
Engine Management System Curtis 1221C controller
Fuel Delivery (Carburetors, EFI, DI): —
Fuel Pump Pressure —

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) —
Catalyst? Type? —
Secondary Air Injection? —
Exhaust Gas Recirculation? —
Other —

Noise Control

Muffler Design —
Noise Treatment electric motor

Cooling

Describe Strategy —

Other Unique Features of Your Snowmobile

Describe Strategy clean, quiet, and strong. cost-effective electric technology

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Team Name Sony Buffalo Team Number: 1

Engine

Engine Cycle (2-stroke, 4-stroke, rotary, or electric) 4 stroke

Engine Displacement (cc or electric motor size) 750

Engine Manufacturer Weber

Engine Modifications None

Compression Ratio 10.9:1

Turbocharged? Supercharged? No

Engine Management System Bosch Motronic

Fuel Delivery (Carburetors, EFI, DI): EFI

Fuel Pump Pressure 3 bar

Emission Control

Air/Fuel Ratio Chosen (lean, stoich?) lean

Catalyst? Type? 3 way Lobitzol

Secondary Air Injection? No

Exhaust Gas Recirculation? No

Other _____

Noise Control

Muffler Design ~~Motor cycle~~ Motor cycle Muffler

Noise Treatment American Acoustical PDP, Melanion Metal, Metamine Foam

Cooling

Describe Strategy Stock Polaris Edge Chassis System

Other Unique Features of Your Snowmobile

Describe Strategy integrate a different EFI System to a snowmobile engine in a different chassis