Information

Responsible Performance:

Rightsizing with Saab BioPower and Hybrid Assistance

The Saab 9-X Air features an ultra efficient powertrain which combines engine rightsizing and turbocharging with the use of bioethanol fuel and hybrid technology to deliver sporty performance with a significantly reduced environmental impact.

Optimized for E85 fuel (85% biothanol/15% gasoline), the small, 1.4-liter BioPower turbo engine generates a substantial 200 hp/147 kW on E85 and an even more impressive 280 Nm (207 lb.ft) of torque. With a full flex-fuel capability, it is a rightsizing formula backed by hybrid technology, giving projected fuel consumption on gasoline over the combined cycle of just 5.0 l/100 km and 119 g CO_2/km. On E85, CO2 emissions are projected to be even lower, at just 107 g/km, with estimated fuel consumption of 6.5 l/100 km.

Mated to a six-speed manual gearbox with an automatic clutch and steering wheel controls, it is a sophisticated powertrain tailored to meet the environmental and energy-saving priorities of modern day motoring.

BioPower Optimized

Saab already leads Europe's emerging flex-fuel vehicle segment through the sales of its current BioPower models, which produce more power with E85, as well as less CO2 emissions compared to gasoline.

The Saab 9-X Air now takes this proven flex-fuel technology further with an engine that fully exploits the high octane benefits of E85 fuel. It uses a higher compression ratio (10.2: 1) and

Saab Automobile AB
Communications
SE-461 80 Trollhättan
Sweden

Reg. Head Office
SE-461 80 Trollhättan, Sweden
Reg. No. 556258-8912

VAT. Reg No. SE556258891201

Telephone +46 520 850 00
Telefax +46 520 783 90

General Motors Corporation

turbo boost pressure (up to 1.6 bar) than would be possible with a gasoline-only engine. This is because E85 has a higher octane rating (104 RON) than pump gasoline (95 RON), which makes it more resistant to harmful pre-detonation, or 'knocking', as the fuel/air mixture is compressed in the cylinder.

Running on E85 fuel, this lightweight yet sophisticated BioPower engine delivers the power characteristics of a much larger powerplant. That impressive torque of 280 Nm (207 lb.ft), for example, is available all the way from just 1,750 to 5,000 rpm. It's another demonstration of Saab's rightsizing engine strategy – offering exceptional power without the greater weight, size, fuel consumption or emissions of a larger, naturally-aspirated engine.

Whilst optimized for E85, the engine retains a flex-fuel capability and will still run on gasoline, although it will not produce as much power. The engine management system is able to adjust the ignition timing and boost pressure to ensure there is no pre-detonation due to the higher compression ratio.

The advanced specification of this engine also includes direct injection (DI), with centrally-located fuel injectors, and continuously variable valve timing (VVT) on both the inlet and exhaust sides. The result is greater low-end torque and further improved fuel consumption.

Next-Generation GM Hybrid System

Fuel consumption and CO2 emissions are reduced yet further by the addition of the next-generation GM Hybrid system, which features a significantly higher power capability to capture more energy and more electric boost than the current GM Hybrid system. An electric motor/generator, belt-driven from the engine's crankshaft, replaces the conventional alternator. Electrical power is delivered and stored by the compact lithium ion battery pack, located under the rear cargo floor.

At take-off from rest and during overtaking maneuvers, the electric motor adds accelerative power. It is also used to re-start the engine, supporting the automatic fuel-saving function

whenever the car is stationary. To further improve efficiency, the hybrid system enables a longer fuel cut-off during deceleration and braking.

The electric motor also acts as a generator. It can be powered by the engine to charge the battery pack and support vehicle electrical loads. Or it can be used for 'regenerative braking' by capturing the vehicle's kinetic energy when decelerating and storing it in the battery pack. Sophisticated electronics manage AC/DC and all voltage interfaces, including the 12-volt in-car supply.

The combination of GM Hybrid and Saab BioPower technologies has significant synergies. The hybrid system adds accelerative power and, in effect, improves throttle response. This allows further rightsizing of the engine with additional fuel consumption benefits. Engine rightsizing and hybridization complement each other, the combined benefit being greater than that of the individual technologies.

Apart from saving fuel and energy, responsible performance means ensuring high standards of safety. In addition to a full arsenal of electronic stability and braking systems, the active safety measures also include a Lane Departure Warning (LDW) function. A front-mounted camera scans the road ahead and warning messages are flashed in the driver information display if the car veers across lane markings. The same camera is also used to monitor light sources at night. Small shutters automatically 'hood' the high headlamp beam when on-coming traffic is approaching. For additional occupant protection, pop-up roll bars are fitted behind the rear seats.

# # #

http://media.saab.com/