



# Information

Saab 9-X Air:

## How Saab Raised the Roof with its Canopy Top

*The Saab 9-X Air redefines the look of a four-seat convertible by exploiting the distinction between a folding roof and a folding soft-top. "This has allowed us to completely alter the shape of the car," explains designer Anthony Lo.*

Lo and his team set out to bring convertible design closer to the looks of an open sports car or a closed coupé, depending on the configuration. They also wanted to improve open-top comfort for passengers. The result is Saab's unique Canopy Top concept, an alternative to soft-tops or hoods with rear windows that leave the back of the cabin open when stowed.

A 'stand alone' rear screen - separate from the soft-top assembly - is located between the 9-X Air's raked rear pillars. These support the Canopy Top, a development of the 'Targa' top principle. But instead of having a manually detachable roof section, the Saab Canopy Top is fully powered in operation and folds away for stowage in the trunk. Saab has already filed a patent application for this feature.

"Convertibles are traditionally developed from a sedan body and have a flat, open rear deck when the hood is down," says Lo, Director of Advanced Design at General Motors Europe. "The Canopy Top has allowed us to introduce the rear pillars, which completely change the usual appearance of a convertible, giving it a more dynamic, coupé look. The pillars also anchor a complete wraparound glasshouse, which shelters the occupants from buffeting when the car is open."



## **Design Efficiency**

The 9-X Air was conceived in parallel with its 9-X BioHybrid sibling and, as a result, it is a design free from compromise or adaptation. The shape of the windshield and frontal styling, for example, was designed to work in both applications. The two cars share a focus on efficiency, with a powertrain that uses engine rightsizing, turbocharging, biofuel and hybrid technology to deliver sporty performance together with a significantly reduced environmental impact.

Improved efficiency is also a major benefit of the Canopy Top. As there is no rear screen and supporting material to fold away, it is smaller and lighter than a conventional soft-top. That means it takes up less trunk space when stowed.

Reduced weight was another consideration and that dictated the choice of fabric instead of metal for the Canopy Top. "It is the best material, as we save about 100 kilos in weight compared to using metal," explains Lo. "We have chosen the fabric used for the current Saab Convertible. It is extremely durable and provides effective road noise insulation. For good handling and a lower center of gravity, you also don't want any extra weight high up. All in all, we thought of quite a few drawbacks, and not so many gains, from going with a metal roof."

As the 9-X Air was designed alongside the 9-X BioHybrid, the team was also able to keep weight down by minimizing the amount of structural reinforcement necessary to compensate for the removal of a fixed roof. The small strengthening members that were required are in aluminum for further weight saving.

With its Canopy Top stowed, the 9-X Air's 'surround glass' cabin offers improved driver and passenger comfort by managing air flow to reduce turbulence and wind buffeting. The rear screen works in tandem with a small wind deflector on the top edge of the windshield header rail. This is actively deployed, rising and falling according to vehicle speed. At the rear, the screen helps prevent back drafts, as the air flow over the car is no longer sucked back in through an open rear deck.

The Canopy Top design also provides another practical benefit. Compared to the 'stitched in' screen of a conventional soft-top, the glass area of the 9-X Air's rear screen is larger, offering the driver a wider field of vision.

### **Saab Signature**

In evolving the 9-X Air and its sibling, Lo and his team worked in co-operation with colleagues from the Saab Brand Center in Sweden. This is a cross-functional group tasked with nurturing and developing all the qualities that go into making a Saab a Saab. It is a unique organization within GM's global structure, with a unique way of working.

Visually, the 9-X Air carries forward signature features that reflect Saab's Scandinavian design heritage and its roots in aviation. These include the extended wraparound effect of the windshield and side glazing, the Aero X-inspired frontal styling, the clean body surfaces, 'ice block' lighting themes and distinctive 3-D blue/green instrument graphics. Even the raked rear pillars echo the prominent C-pillar line seen in all Saab cars.

"Overall, the 9-X Air maintains our focus on efficiency," adds Lo. "We have produced a sporty, innovative design that offers the sort of functional benefits you would expect from a Saab. It's the design direction we're exploring for a future Saab convertible."

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