

# Flying high underground

## A visit to a Swedish air museum

*Sandy Morrison*

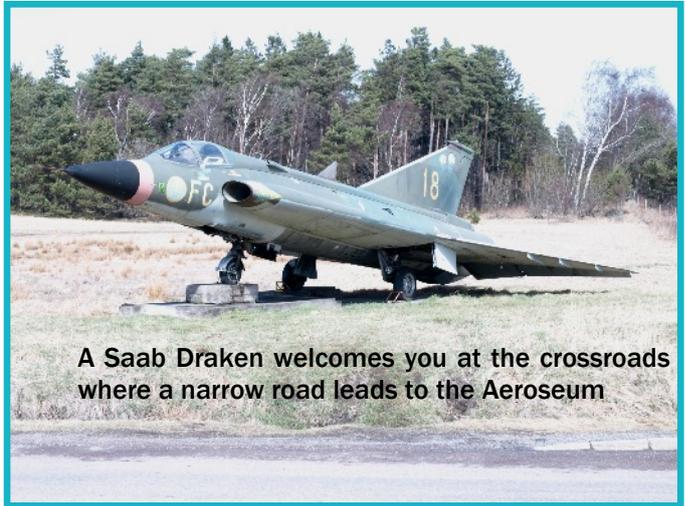
Visiting Göteborg (better known in the UK as Gothenburg) in 2013 with my partner, I was left to explore the city sights most of the time while she attended a linguists' conference. The most interesting of the museums I visited were Maritiman (a collection of historic ships afloat by the quayside) and the Aerozeum, a relic of the Cold War turned into an aviation museum.

### Cold war background

An underground hangar was constructed at Säve Depot, next to Gothenburg City airport (otherwise known today as Ryanairport) during WWII, but afterwards it was clear that this would be of little use in the event of nuclear attack. Concern over the threat from Russia ran high in Sweden, due to its close proximity to its giant neighbour and a history of conquest.

In the early 1950s, a much larger hangar was built some 30 metres below ground, designed to withstand nuclear attack. During its active life, the hangar served as the base for the F9 Royal Gota Fighter Wing, established in 1940. At particularly tense times, some fighters were held close to the entrance with their pilots in attendance, ready to launch at a moment's notice.

Amazingly, this remained top secret until it was decommissioned at the end of the 20<sup>th</sup> century. At the start of 2003, it reopened as the Aerozeum. The total area underground is around 22,000 square metres – equivalent to three football pitches. The



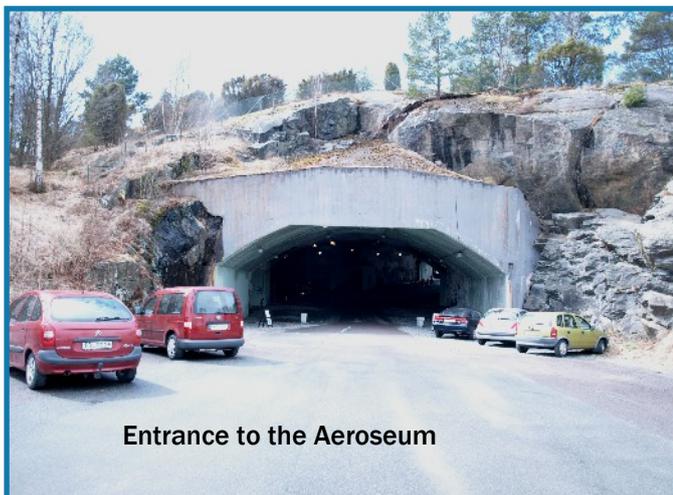
A Saab Draken welcomes you at the crossroads where a narrow road leads to the Aerozeum

thick blast doors are set back some distance behind the mouth of the entrance tunnel. Behind them, the spine corridor curves round and is then crossed at right angles by three transverse fighter parking bays. The range of aircraft on display is rather limited, with a lot of duplication of similar machines, but this is offset to some extent by the uniqueness of the location. The exhibits major on helicopters and surplus Saab fighters – partly because the headroom and width are too restricted to accept larger aircraft. Indeed, the photo on the museum's current brochure shows a Saab Viggen being towed out with its rudder folded sideways to reduce its height. There are also a few exhibits above ground, including a 'crashed' aircraft, but I only had time to visit the underground area, which houses all the other aircraft.

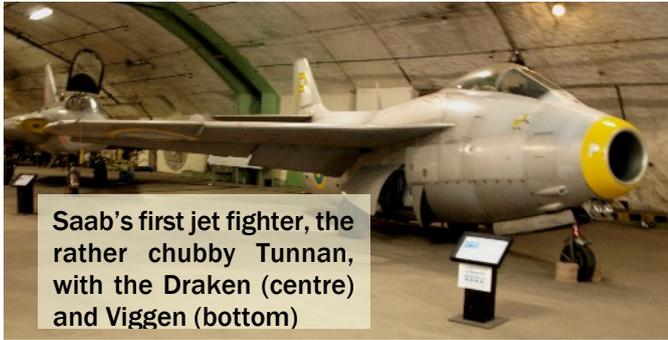
### A history of Saab fighters

The tunnels of the Aerozeum give the appearance of being dominated by Saab fighters, with at least one example of each model on show. There are no less than four Draken variants there, and the two complete Viggens are supplemented by nose sections from several others. If you're feeling nimble, you are allowed to climb into the cockpit of some of the aircraft.

The first Saab jet fighter was the Tunnan or 'barrel', so called because of its rather comical short and fat



Entrance to the Aerozeum



Saab's first jet fighter, the rather chubby Tunnan, with the Draken (centre) and Viggen (bottom)

design – apparently needed to accommodate the design of the jet engine that was used.

This was followed by the Lansen (Lance) in 1952, based on a more conventional design with low-mounted swept and tapered wings. 450 were produced between then and 1960 and it remained in active service till 1978. In 1953, it became the first Swedish aircraft to break the sound barrier (in a dive); normal maximum speed was Mach 0.95.

### Leading the world in wing design

Only three years later, the Draken (Dragon) was introduced. This was the world's first production aircraft to use the 'double delta' wing design used later on the Concorde and Space Shuttle. As in the case of the UK's Lightning fighter, this offered a



huge increase in speed over its predecessors, being capable of Mach 2.0. A modified and upgraded version remained in service till 1999.

The Saab Viggen (Thunderbolt) first flew in 1967. This too could be considered ahead of its time in featuring the canard wing design now found on the



Eurofighter Typhoon and other modern combat aircraft.

One advantage of the canard wing is that it increases manoeuvrability, but the museum's notes say that the design was adopted, along with reverse thrust, to allow short landing runs because the country's defence system included the use of roads as fighter bases.

One of the planes in the Aerozeum has the canards fully rotated to a position where they would obviously be very effective as airbrakes.

Today's combat offering from Saab (not on show at the Aerozeum) is the Gripen (Griffin), introduced in 1988 and with a design generally similar to that of the Viggen.



Cessna Skymaster. The front and rear propellers are just visible.

### Civil aircraft

Again the selection of aircraft is limited partly by the dimensions of the hangars, but several interesting machines are on show, including the Cessna F337G Skymaster. This has an unusual combined tractor plus pusher airscrew design, with each propeller driven by a separate piston engine. With a capacity for only two crew plus four passengers, this served mainly as a private aircraft and air taxi.

The Saab 91 Safir (Sapphire), trainer, finished in silver and red and proclaiming 'Triumph' on its side is the oldest airworthy example of its type to survive (see *next page*).

The hangar at the far end is used by local clubs as a repair shop, and consequently features various machines from microlights upwards in various states of undress and restoration.

Some machines are privately owned and airworthy; at the other extreme, a glider hanging from the ceiling has been stripped of most of its covering, revealing details of its construction.

There is also a replica of a Blériot XI, the first aircraft to fly the English Channel – this one being built for use in a 2001 Swedish film called "As White as in Snow".



## Helicopters

Although the museum's aircraft list shows it is home to around 15 helicopters, there is a lot of duplication, with no less than six Sud Aviation SE3160 Alouette III models on site, plus three Agusta Bell 2014s and a pair of Agusta Bell 206B Jet Rangers.

As with the fighters, you can climb inside some of the aircraft – but rather more easily.

## Vehicles on show

The entrance tunnel today houses a number of helicopters and ex-military vehicles. The most distinctive vehicle is the Volvo BM 202, a tracked all-terrain/all-weather vehicle developed for the Swedish Army and produced between 1964 and 1981 (*shown in the last photograph*).

It is notable for having rubber tracks rather than metal plates (to improve traction on boggy and snow-covered ground), and for the lack of any ability to brake individual tracks for steering! Instead, the pivot mechanism which delivers power to the rear unit 'bends' when the steering wheel is turned, producing controlled jackknifing.

Normal carrying capacity is up to ten troops in the rear unit, but the one on show has been converted to an ambulance. YouTube videos show it is capable of climbing very difficult obstacles and is also a (slightly unwieldy) amphibian.

## Practical notes for would-be visitors

Should you think of visiting the Aerozeum, check its website first at

[www.aerozeum.se/english/about.html](http://www.aerozeum.se/english/about.html)

- it can be closed on a few odd days.

If you are using public transport from Göteborg, it will take a while to get there: bus 35 from "Hjalmar Brantingsplatsen" interchange runs only once an hour (and the stop itself is not immediately obvious, being a hundred yards from the traffic interchange).

You get off at "Granhäll" then walk down the small road past the Saab jet on the right (10 minute walk).

Entry is not cheap, but like most attractions it, and the public transport cost, is included in the price of the "Göteborg card". There is a small shop and café inside. Other attractions include a flight simulator.

It's also worth noting that the Aerozeum is involved in the biennial Göteborg air show – details can be found readily online. The next one is due in 2015.

## Author's note

*This feature was published only in a small-circulation publication. I have made minimal changes to the text, but the layout is unrelated to that originally used. All photographs and text copyright Sandy Morrison.*

