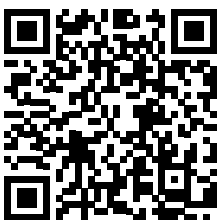




**SAAB**





**SAAB**

# **FLIGHT CONTROL AND ACTUATION SYSTEMS**

SAFETY ASSURED



# RELIABLE PRODUCTS

Saab's flight control and actuation systems are based on more than 70 years' experience, both as an aircraft OEM and system supplier. We understand our customers; we know how to build aircraft.

Our offering includes all parts of the product lifecycle, and encompasses full responsibility, from the definition phase through to specification, development, verification/qualification, production and customer support. Saab continuously invests in R&D within Flight Control and Actuation Systems. As a result, we can offer proven and reliable solutions that utilise our **thinking edge**.

## QUALITY MANAGEMENT AND CERTIFICATES

Saab is continuously working to improve our quality and environmental management standards. We hold EN 9100:2009 and AS9100 revision C certificates, as well as ISO 9001:2008 and ISO 14001:2004.

Saab holds a European Aviation Safety Agency (EASA) Part 21 Subpart G Production Organisation Approval certificate, with capability to deliver with EASA Form 1.

Saab is also an EASA Part-145, Federal Aviation Administration and Transport Canada Civil Aviation certified maintenance organisation, with capability to deliver with EASA Form 1 triple release.

## FLIGHT CONTROL SYSTEMS

We provide primary and secondary Flight Control Systems for fixed wing aircraft, helicopters and UAVs. Our capabilities mean that we can provide the complete system: from cockpit controls through safety-critical control computers, to motor control electronics and electromechanical actuators. Software is developed and integrated to the level desired by customers, from bare hardware to complete application.







# VAST EXPERIENCE **PROVEN SOLUTIONS**

## UTILITY CONTROL SYSTEMS

Saab's offering within Utility Control Systems is extensive and includes full system responsibility. One example is our state-of-the-art cargo door system, which offers a complete cargo door, including the door structure as well as the door actuation system and associated control electronics. It is designed and optimised on the system level for high reliability, low weight and cost efficiency.



## ELECTROMECHANICAL ACTUATION

Since the beginning of the century, Saab has been dedicated to the development of electromechanical actuation products. Today, Saab offers flight-proven electromechanical actuation equipment for integration in all types of airborne control systems. We can provide both linear and rotary electric actuators and associated control electronics that are adapted and optimised to your needs, based on our modularised product platform.



# RELIABLE SUPPLIER

Saab has been designing and manufacturing cutting-edge aircraft for both the military and civil markets for more than 70 years, including the Saab 340, Saab 2000 and Gripen fighter.

We combine the competencies of an aircraft manufacturer, large systems integrator and provider of avionics capabilities at the technical frontier. The primary goal for Saab is to maximise your aircraft's availability and operational efficiency, both now and in the future.

## A400M

Saab develops and delivers the High Lift Control and Monitoring System for the Airbus A400M military transport aircraft.

The Saab shipset includes high lift control computers, four different types of sensors and a cockpit flaps lever. Both hardware and software (including application) is civil certified with EASA, in accordance with highest design assurance level.



## BOEING 787

Saab develops and delivers electromechanical actuation equipment for high lift drive in the B787.

The equipment is used for in-flight aerodynamical optimisation through trailing edge tuning, resulting in reduced fuel burn. It also serves as a back-up high lift system, in case of failure in the hydraulic system, and is used for drive of the high lift system during maintenance operations.





## EXPERIENCE MAKES A DIFFERENCE



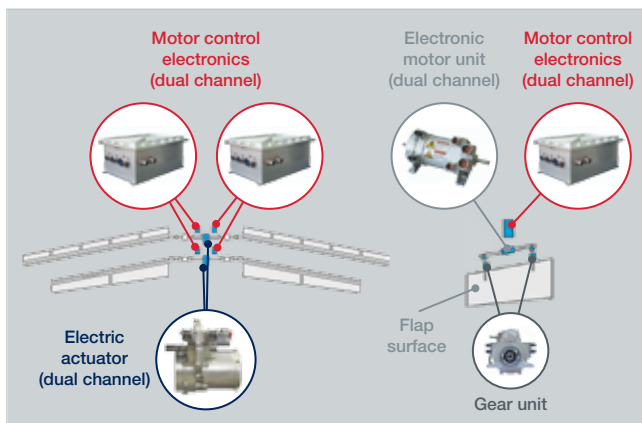
The Saab 29, colloquially called 'Flygande Tunnan' (English: 'The Flying Barrel'), 1948

- 1937** Saab is founded
- 1940** First flight for the Saab B17 bomber reconnaissance aircraft – the first Saab aircraft
- 1946** The Saab 90 Skandia short-to-medium-haul commercial passenger aircraft makes its maiden flight
- 1948** The Saab J29 Tunnan jet fighter makes its maiden flight. It was the first Western European fighter with a swept wing and later set two world speed records
- 1952** The Saab 32 Lansen flies for the first time, marking Saab's entry into the electronic age
- 1955** First flight of the innovative double-delta Draken, Sweden's first Mach 2 fighter
- 1971** The first Viggen fighter is delivered
- 1980** Development starts on the Saab 340 twin-turboprop regional airliner. By the end of production in 1999, more than 400 aircraft had been delivered
- 1987** The first Gripen tests are performed
- 1988** The Saab 2000 commercial turboprop is introduced and becomes the fastest turboprop airliner on the market
- 2005** Saab's participation in the Neuron UCAV programme starts
- 2013** Saab teams up with Boeing to develop T-X, the next generation fighter trainer for the USAF
- 2016** The next step in the evolution of Saab's Gripen fighter system, Gripen E is launched. It is equipped with the most advanced technology

### R&D

Saab continuously performs dedicated R&D in order to provide mature solutions with an operational edge, often in close cooperation with customers. One example are electric high lift systems graduated to high technology maturity for both centralised and distributed architectures. Another example is an electric cargo door actuation system jointly developed with Saab Aerostructures.

Examples of proven Saab electrical high lift systems



# RELIABLE PERFORMANCE

Saab has vast experience of successful project execution and certification, on all platform types. We can supply flight control systems at different levels of system completeness, and integrate software according to customer needs. With Saab's expertise, you know your aircraft will perform.



## SELECTED CAPABILITIES

- ▶ Rapid prototyping and short lead time to first equipment with full functional compliance
- ▶ RTCA DO-178/254 DAL A compliant
- ▶ RTCA DO-160 compliant (environmental)
- ▶ Safety critical control computers with high level of integrated platform functionality
- ▶ Highly reliable and efficient electric actuation systems
- ▶ High integrity control electronics based on a modular computer design



## MAIN SYSTEM COMPONENTS

### CONTROL COMPUTERS

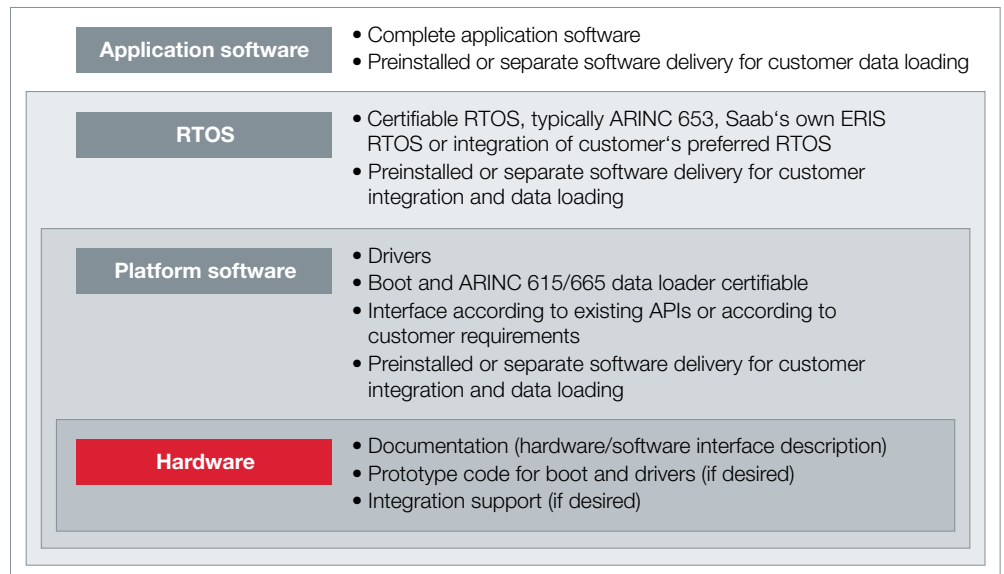
Saab offers safety critical control computers, with a high level of integrated platform functionality, such as:

- ARINC standard data loader
- AFDX/Ethernet

- Extensive built-in tests (PBIT, CBIT and IBIT)
- RTOS (ARINC653)

Saab can provide different levels of software content according to customer needs.

### SOFTWARE OFFERING



### ELECTROMECHANICAL ACTUATION

Our linear and rotary electromechanical actuators are high precision with an inherently high power-to-weight-and-dimension ratio, and are suitable for most airborne applications. They have a very robust design, making them well prepared for unprotected environments. They are also designed to be maintenance-free, meaning they are 'fit and forget' equipment. They are either a simplex or duplex design.

Saab motor control electronics are optimised for control and monitoring of electromechanical actuators, including fault handling. Focused features are high reliability and high efficiency power electronics. The Saab build standard enables simplex or duplex design, compact dimensions and robustness, which in combination with good thermal management allows for flexible placement in all types of aircraft and in all types of environmental conditions.

