The SA GROUP

Complete Turn-Key

AVIONICS SOLUTIONS

DENMARK - HQ | NORWAY | SWEDEN | LATVIA | CZECH REPUBLIC | AUSTRIA | BAHRAIN | INDIA | MALAYSIA

40 1978 - 2018 ANNIVERSARY

THE SA GROUP

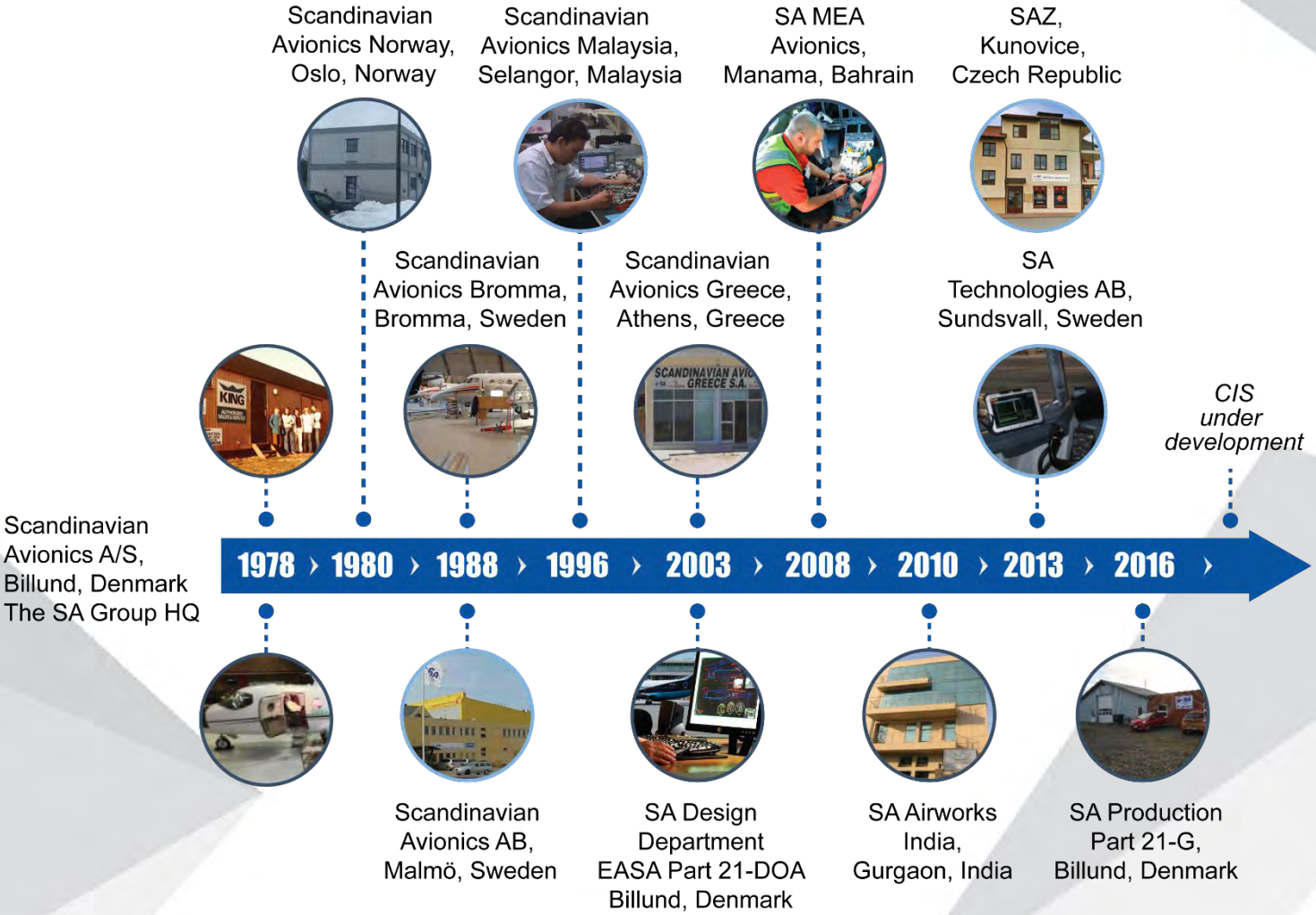
Based on relevant approvals, The SA Group provides complete turn-key avionics solutions, including:

- **Logistics Support**
- **Maintenance (MRO)**
- **Certification**
- **Design / Engineering**
- **Installation**
- **Product Development**
- **Consultancy Service**
- **Training**

With the primary business platforms being larger civil and military helicopters, corporate aircraft, regional airliners and defense electronics.

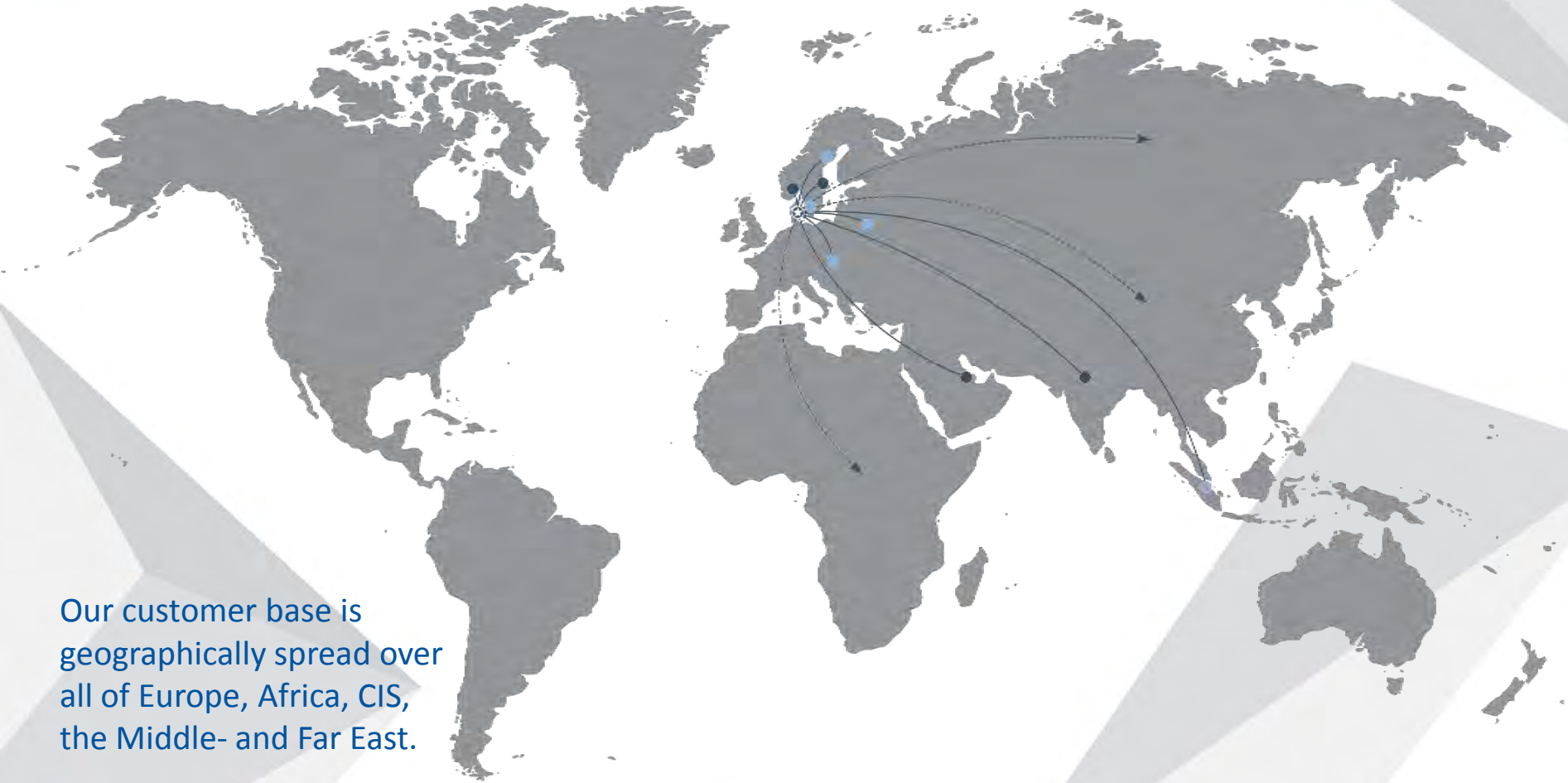
The SA Group derives from the corporate headquarters Scandinavian Avionics A/S in Billund, Denmark and since the foundation in 1978, core values like capability, reliability and flexibility have been deeply rooted in the organization and are the main causes for the excellent reputation among aircraft operators around the world today.

HISTORY OF THE SA GROUP



THE SA GROUP LOCATIONS

DENMARK HQ | NORWAY | SWEDEN | LATVIA | CZECH REPUBLIC | AUSTRIA | BAHRAIN | INDIA | MALAYSIA



Our customer base is geographically spread over all of Europe, Africa, CIS, the Middle- and Far East.

SA GROUP

THE SA GROUP ORGANIZATION

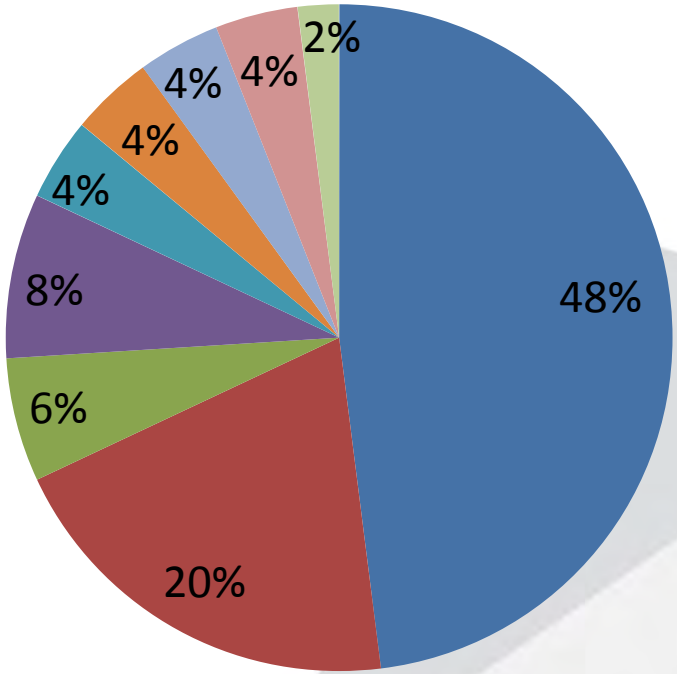
SA GROUP

THE SA GROUP WORKFORCE

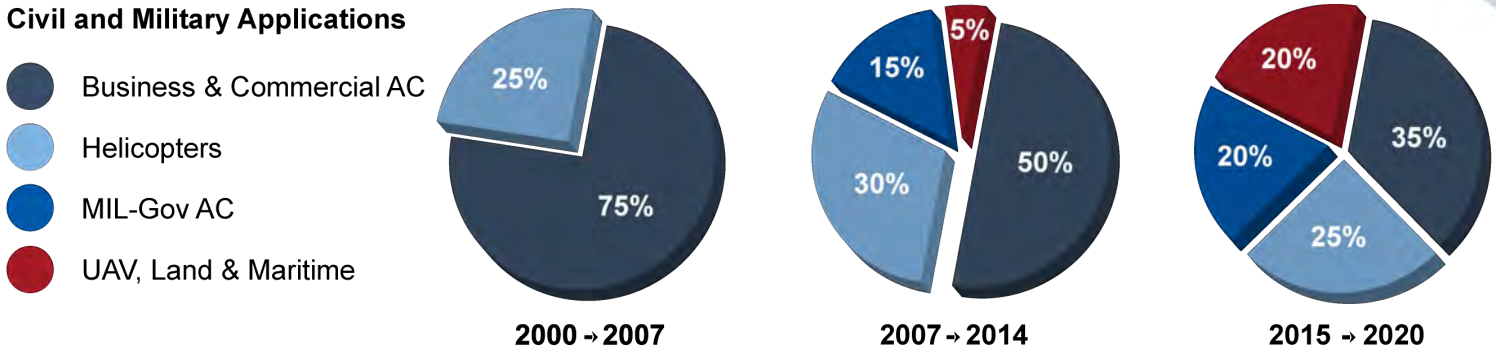
Approximately 150 employees in The SA Group

Workforce by function

- Technical **(48%)**
- Design/Engineers **(20%)**
- Administration **(6%)**
- Sales - Civil **(8%)**
- Sales - Defense **(4%)**
- Finance/Accounting **(4%)**
- Logistics **(4%)**
- Training **(4%)**
- Quality Assurance **(2%)**

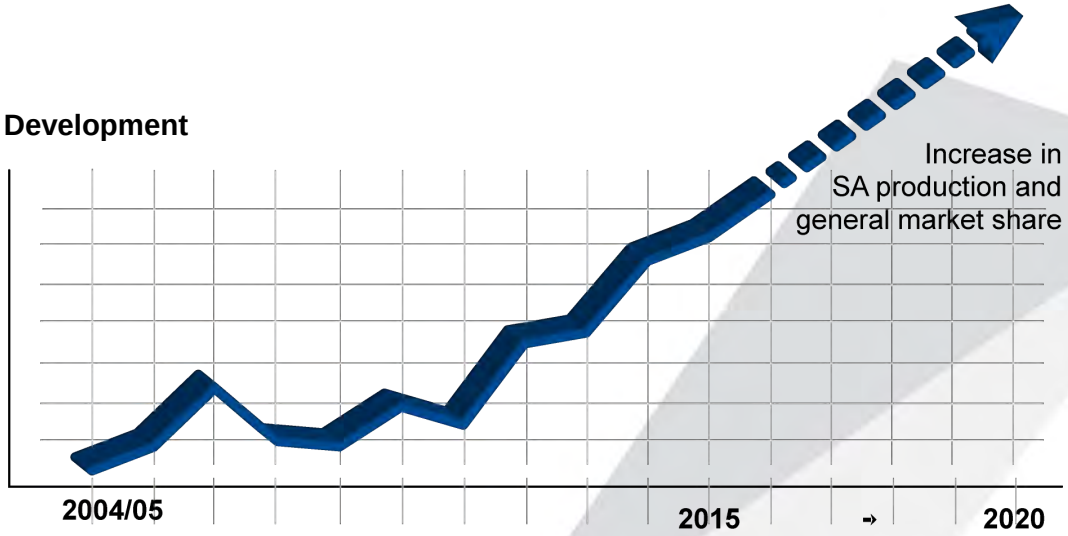


BUSINESS ACTIVITY & DEVELOPMENT



No. of employees: approx. 150 people

In addition comes also significant activity with defense and government organizations on agent and commission basis which are not included in SA Turn-over figures. Results implemented through substantial investments in new business areas and markets.



COMPLETE TURN-KEY AVIONICS SOLUTIONS

QUALITY ASSURANCE

CONSULTANCY SERVICES

MAINTENANCE - MRO SERVICES - PART 145

LOGISTICS & PARTS SERVICES

DESIGN, CERTIFICATION & STC'S - PART 21J

INSTALLATION SERVICES

PRODUCT DEVELOPMENT

PRODUCTION SERVICES - PART 21G

TRAINING SERVICES - PART 147

SA GROUP

QUALITY ASSURANCE

The SA Group currently holds the following approvals:

- **EASA Part-145 for Maintenance & Services**
- **EASA Part-21J for Design & Certification**
  - Design Organisation Approval (DOA)
- **EASA Part-21G for Production**
  - Production Organisation Approval (POA)
- **EASA Part-147 Training**
- **FAA Part-145 Repair**
- **TCCA Part-145 Repair**
- **BCAA Part-145 Maintenance**
- **GAR Part 145 Maintenance**
- **DOT RIN N083 Hydrostatic Cylinder Requalification**

Furthermore, AQAP regulations are considered as background for modification, repair and other technical activities mainly in the military area in order to obtain required approvals and ensure the highest external and internal quality standards.
In order to fulfill the SA policy of being a flexible, competent and reliable source of products and services, the ISO system is respected for all relevant activities in order to maximize effectiveness and customer satisfaction.

PARTNERSHIP AGREEMENTS

- **Own logistics center ensures quick and effecient shipping**
- **Widespread purchasing network**
- **Agreements and close cooperation with leading avionics manufacturers, ex.:**

DESIGN, ENGINEERING & STC'S

Design of aircraft avionics modification (EASA P21J, AQAP, FAA)

- Concept, pre-investigation, cockpit lay-out, cable routings,
- Engineering, interface, technical, operational & human factor assessments

Documentation of aircraft avionics modification (EASA P21J & Others)

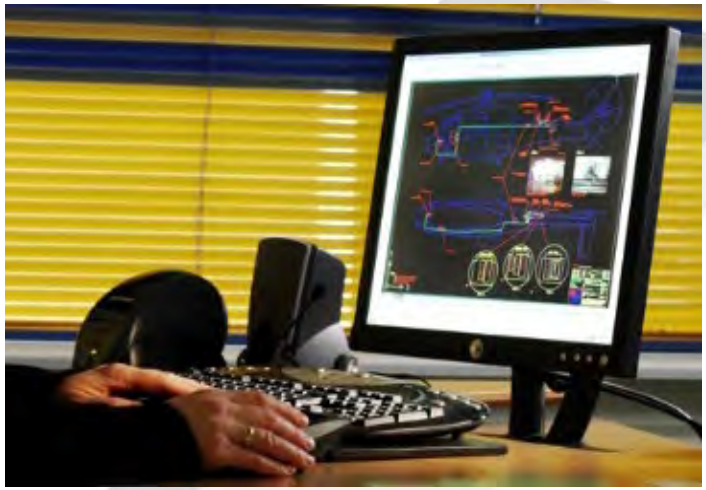
- Technical orders with wiring and structural drawings
- Flight Manual & Operating supplements
- Ground & flight test procedures

Certification of aircraft avionics modification (EASA P21J & Others)

- Certification programs, compliance records, load analyses, weight-balance calculations, EMI assessment and required reporting to involved customer and authority
- SA currently holds more than 700 EASA Supplemental Type Certificates (STC)

SA Part-21J approval covers all electrical and structural modifications as well as interrior upgrades

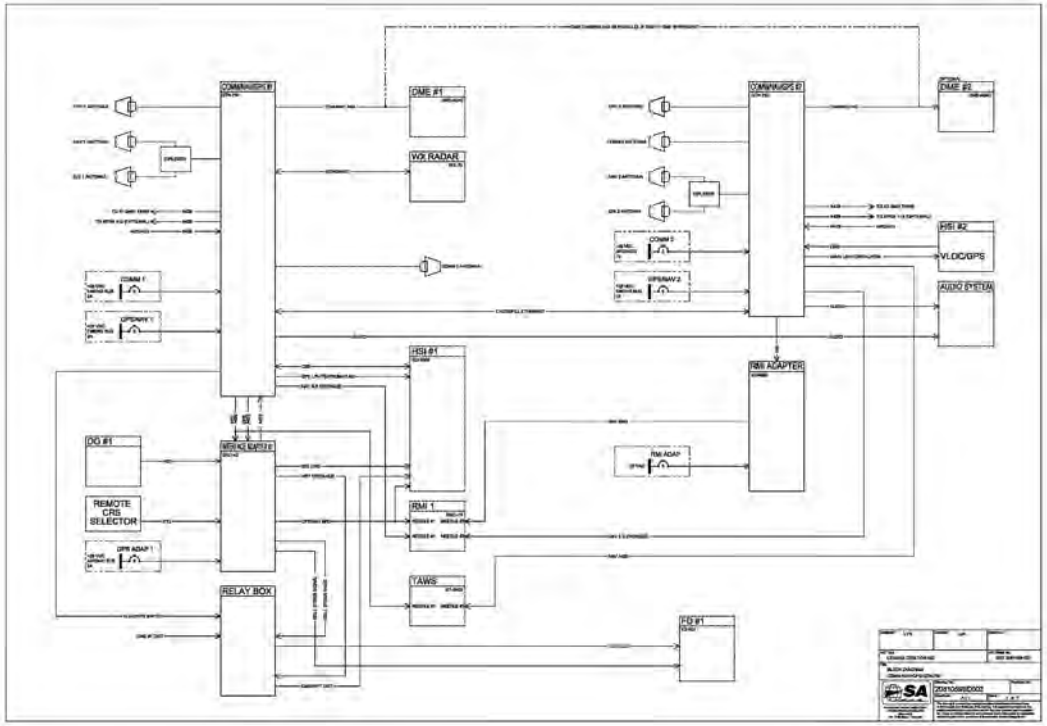
All documentation available in Auto-CAD format



ENGINEERING SERVICES

Development of essential documentation for a.o. certification of avionics modifications, such as:

- Technical & Engineering orders
- Certification programs
- Cockpit layouts, wiring manuals
- Structural drawings & diagrams
- Structural strenght calculations
- Compliance records
- Load analyses
- Weight and balance calculations
- Ground and flight test procedures
- Continous airworthiness
- Flight manual supplements
- EMI assesments



CABIN INTERIOR CERTIFICATION

- EASA Part-21J Design Approved
- SA provides certification for any type of cabin/interior upgrade or modification in any type of aircraft
- In-flight Entertainment systems, LCD-screens, furniture etc.

PRODUCT DEVELOPMENT

Customized avionics and electronic products

The SA Group has developed a number of intelligent electronics products for various applications:

- Fleet Management Control Systems
- Ground Radios for control towers
- Control Units for Aircraft Belly Loading Systems
- Navigator Guidance Systems for ships
- Electronic Flight Bag (EFB) Solutions / Cockpit Door Surveillance System
- UAV-ID system designed to help identify drones and unmanned vehicles

The customized products are designed to meet a certain demand or niche within the field of electronics, primarily aimed at the aviation industry. However, The SA Group also offers development programs for land mobile and maritime applications.

FUTURE PROOF EFB SOLUTION

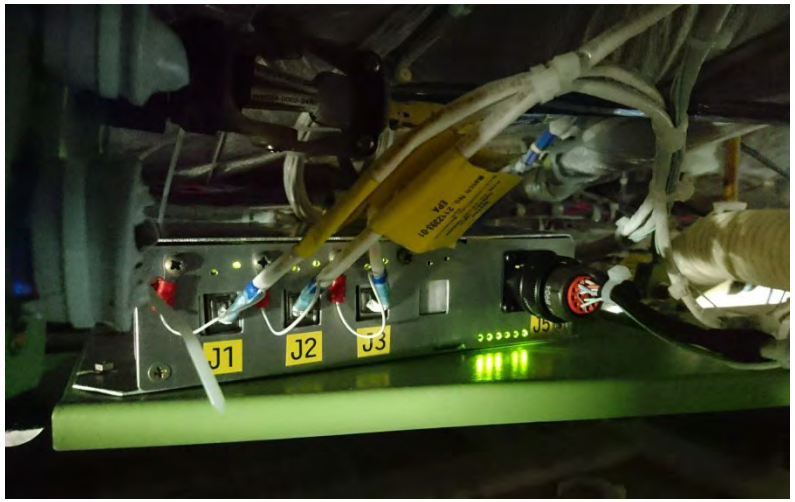
SA Electronic Flight Bag Solution

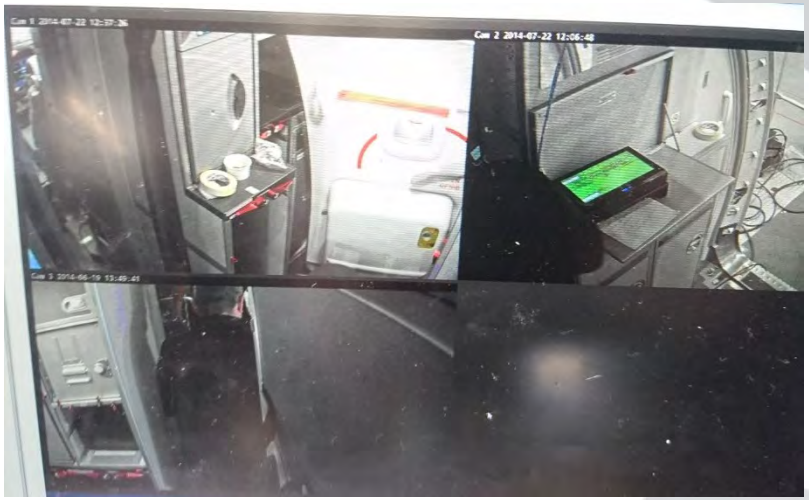
- Intelligent future-proof infrastructure
- Light weight solution to lower operational costs
- Ruggedized windows based tablets for a wide range of features in a harsh environment
- Currently certified for B737, B757, A320, A330/340, RJ-series, Q400, MD-83, EMB-170

> "The concept from Scandinavian Avionics is excellent because it offers a long-term solution and provides all the capabilities we ask for in an EFB, at an acceptable cost level."
>
> *Lasse Nyberg*
> *EFB Administrator*
> *Danish Air Transport*

> "The Scandinavian Avionics EFB solution gives us the capabilities we require of an EFB system today and the flexibility of updating in the future to a top-notch [display] independent of the EFB architecture..."
>
> *Ole Christian Melhus*
> *Deputy Director*
> *Flight Operations Norwegian Air Shuttle*

COCKPIT DOOR SURVEILLANCE SYSTEM





UAV DATA-LINK & MANAGEMENT SYSTEMS

Collision Avoidance, Tracking & ID System for Drones

SA develops and manufactures transponders for UAVs with High Power and Low Power Data-Link Systems.

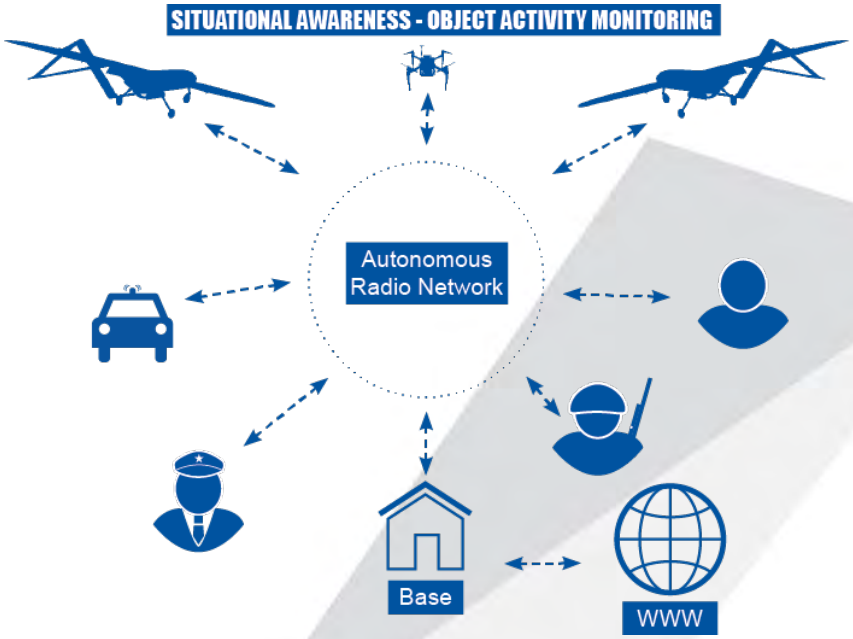
The High Power version is mainly for fixed installations with less size, weight and power restrictions.

The Low Power version is intended for applications where size, weight and power consumption is highly important.
SA provide transponders with a weight of less than 50 grams.

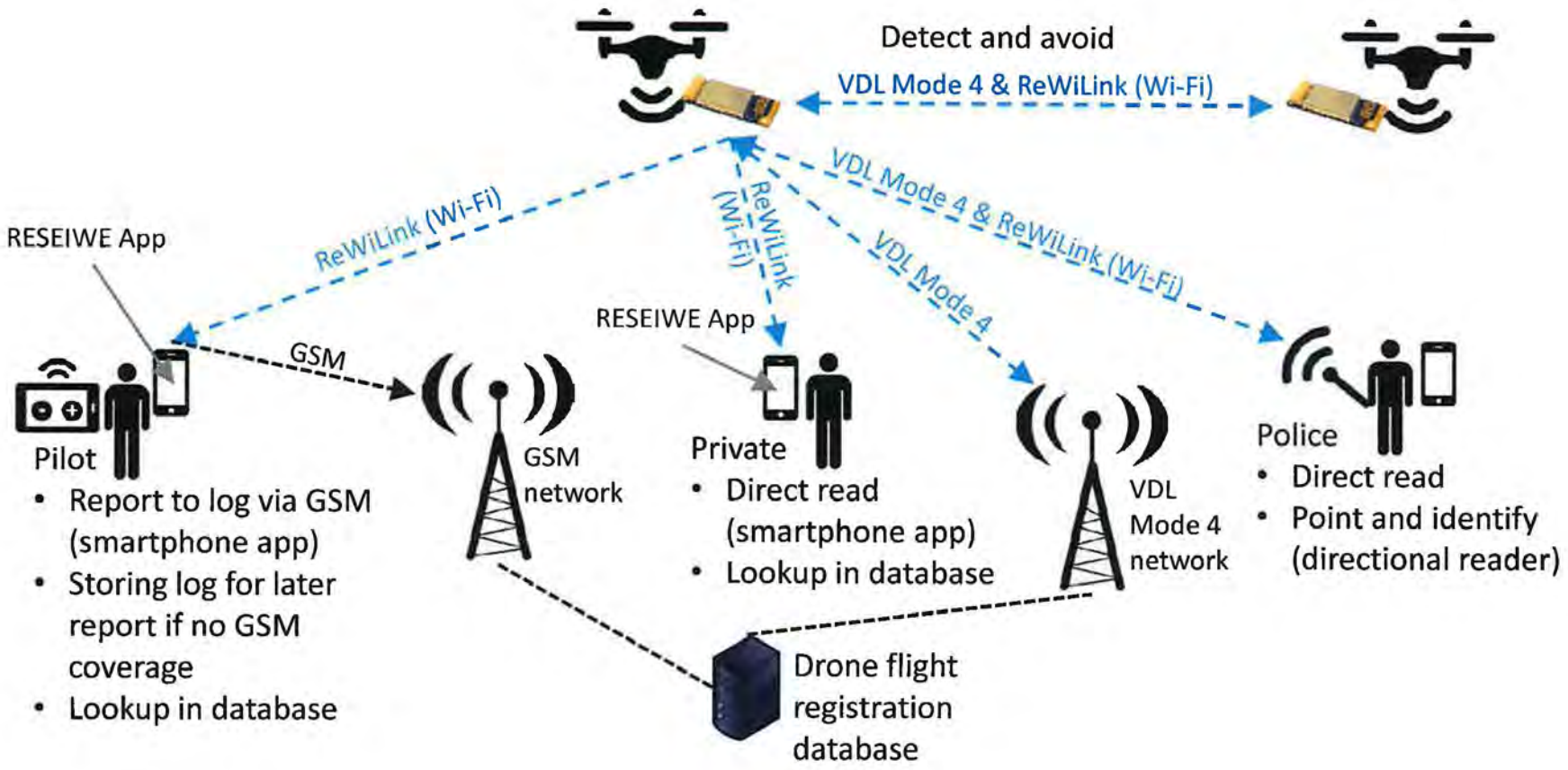
The transponders can exchange information as well as broadcasting to all available units.

All communication is encrypted, and performed on a single narrowband frequency.

UAV-ID
Size: 19mm x 23mm x 69mm



UAV MANAGEMENT SYSTEM CONCEPT



PRODUCTION SERVICES

Scandinavian Avionics holds the EASA Part 21G Production Organization Approval (POA).

This approval enables Scandinavian Avionics and The SA Group to provide an even wider range of avionics services to even more customers in the aviation industry.

The SA Group has always delivered equipment and kits along with our STC's, however the EASA Part 21G approval enables us to deliver complete kits, including wiring looms and custom manufactured electrical and structural parts, with an EASA Form 1.

In addition the Part 21G approval enables us to perform final assembly and test of electrical and avionics equipment in-house, delivering the equipment with a Form-1.

LASER WIRE MARKING SERVICES

Our wire marking system uses the latest technology to deliver the fastest and most cost effective laser wire marking on the market according to standards required by the authorities.

We are highly experienced within laser wire marking and kit manufacturing with an extensive military and civil customer base.

- **High & Low Voltage Testing of Cables, Wires, and Harnesses**
- **Testing of Aerospace, Transit, Power Cables and Connectors**
- **Testing of Medical Cables, Electrodes and Other Multi-Connection**

Wire and Harness analyzing

- The SA Group offers versatile wire and harness analyzing, including testing of wires, cables and harnesses for opens, shorts, mis-wiring as well as components within a cable or fixture assembly.
- Testing can be performed with up to 1500VDC and 1067VAC and opens and shorts detection tests up to 500 wires per second.

TRAINING SERVICES

AEROTEAM Training Solutions – Part of The SA Group

- We offer complete turn-key training solutions, aimed at the aviation industry as a whole. Besides offering a wide range of high quality training courses in many areas of the aviation environment, we are providing a complete solution taking care of competence control, scheduling, consultancy, coordination and execution of the entire training scheme for your organization, leaving your key personnel focussed on their primary tasks.
- All training courses can be performed at any of The SA Group facilities, or at the customer's facility if more convenient.

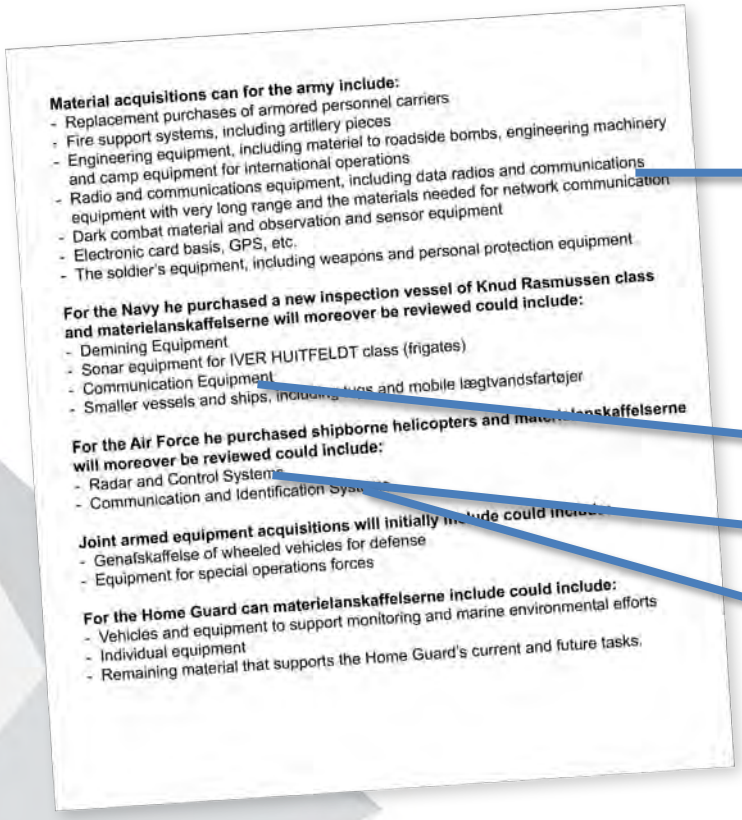
CONSULTANCY SERVICES

The SA Group offers consultancy services for any type of avionics and electronics requirements in any type of constellation.

Military and Government Consultancy Services includes:

- Market intelligence
- Operational Requirements
- Project management
- Bid Preparation
- Industrial Co-operation
- System Procurement
- Field Trials
- Project Marketing
- Offset Support

OFFSET PROJECTS



Material acquisitions can for the army include:
- Replacement purchases of armored personnel carriers
- Fire support systems, including artillery pieces
- Engineering equipment, including materiel to roadside bombs, engineering machinery and camp equipment for international operations
- Radio and communications equipment, including data radios and communications equipment with very long range and the materials needed for network communication
- Dark combat material and observation and sensor equipment
- Electronic card basis, GPS, etc.
- The soldier's equipment, including weapons and personal protection equipment

For the Navy he purchased a new inspection vessel of Knud Rasmussen class and materielanskaffelserne will moreover be reviewed could include:
- Demining Equipment
- Sonar equipment for IVER HUITFELDT class (frigates)
- Communication Equipment
- Smaller vessels and ships, including [illegible] and mobile lægtvandsfartøjer

For the Air Force he purchased shipborne helicopters and materielanskaffelserne will moreover be reviewed could include:
- Radar and Control Systems
- Communication and Identification Systems

Joint armed equipment acquisitions will initially include could include:
- Genafskaffelse of wheeled vehicles for defense
- Equipment for special operations forces

For the Home Guard can materielanskaffelserne include could include:
- Vehicles and equipment to support monitoring and marine environmental efforts
- Individual equipment
- Remaining material that supports the Home Guard's current and future tasks.

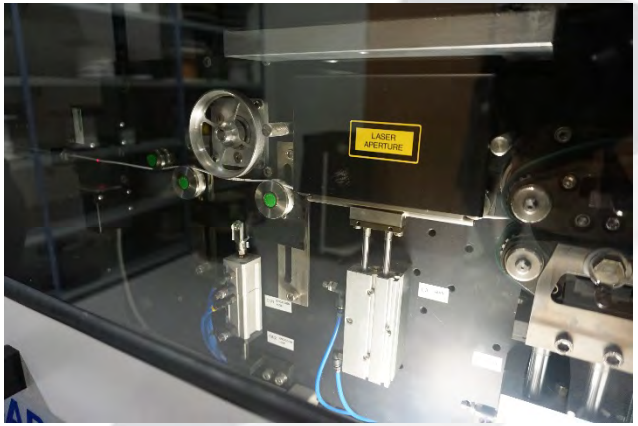
- **Radio and communications equipment, incl. data radios and communications equipment with very long range and the materials needed for network communication**
- **Communications Equipment**
- **Radar and Control Systems**
- **Communication and Identification Systems**

LOGISTICS & PARTS SUPPORT

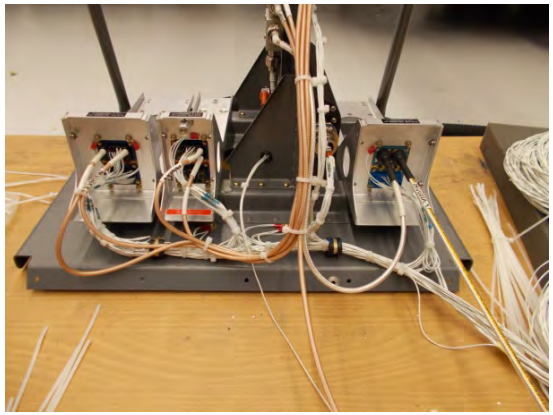
- The whole SA Group organized and supported by connection to central computer system in Billund HQ
- All SA services and supplies registered and managed via unique customer reference number
- All data filed (10 years or more) and available via customer reference number
- Equipment exchange services
- Equipment rental services
- Maintenance documentation library
- Certification documentation library (STCs)

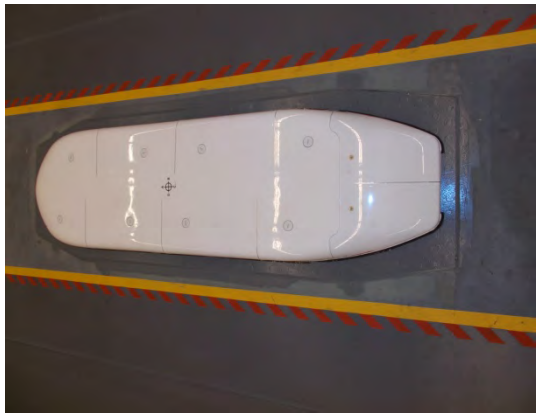
INSTALLATION SERVICES

- More than 3500 avionics installations performed on more than 225 aircraft types in 40 years
- High quality installations with high quality materials and fast turn-around-time
- Ground and flight testing
- From minor modifications to majors and complete ”turn-key” upgrades
- Field service teams of experienced and skilled techncial staff for world wide ”on-site” installations
- Laser cable marking and wire-loom manufacturing



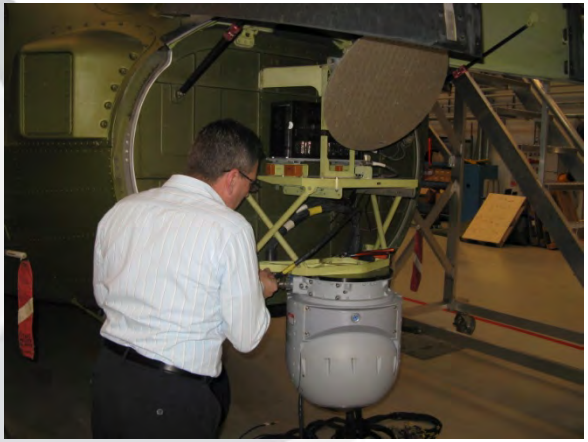
C130 AND C604 - SATCOM





C130 EFIS & COMPLETE AVIONICS UPGRADE

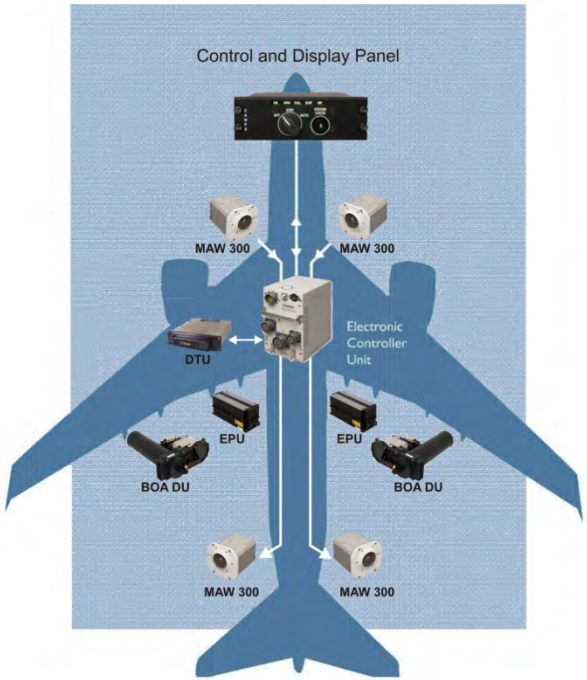
EH101 FLIR MODIFICATION



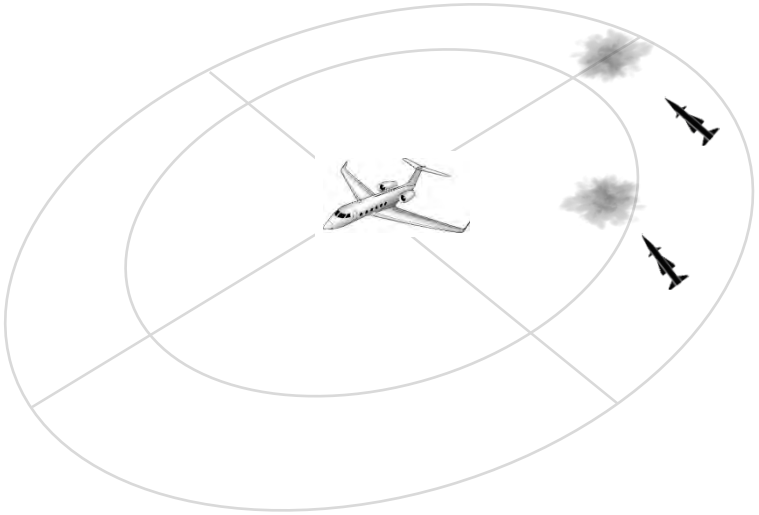
MILITARY HELICOPTER PROJECTS

AIRCRAFT SELF-PROTECTION UPGRADE

Military & Civil applications



CAMPS – Concept of Operation
The incoming missiles steers towards the counter-measure instead of towards the aircraft.



BOEING 737 MODE-S UPGRADE

A320 SATCOM UPGRADE

Similar installation performed on Boeing 757

VVIP B757 SATCOM

- Voice
- Fax
- Data
- Cabin WiFi

VVIP B757 IFE

ATP EFIS UPGRADE

DO228 EFIS & COMPLETE AVIONICS UPGRADE

SA GROUP

CESSNA 550 COMPLETE EFIS UPGRADE

Design

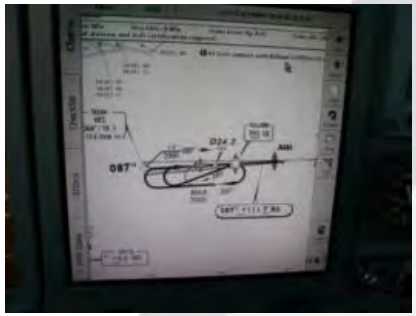
Integration

Installation

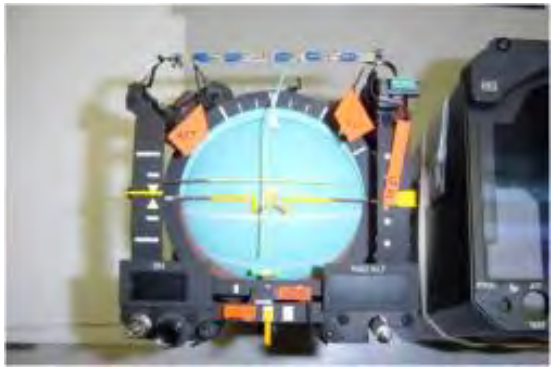
Documentation

Certification

Testing

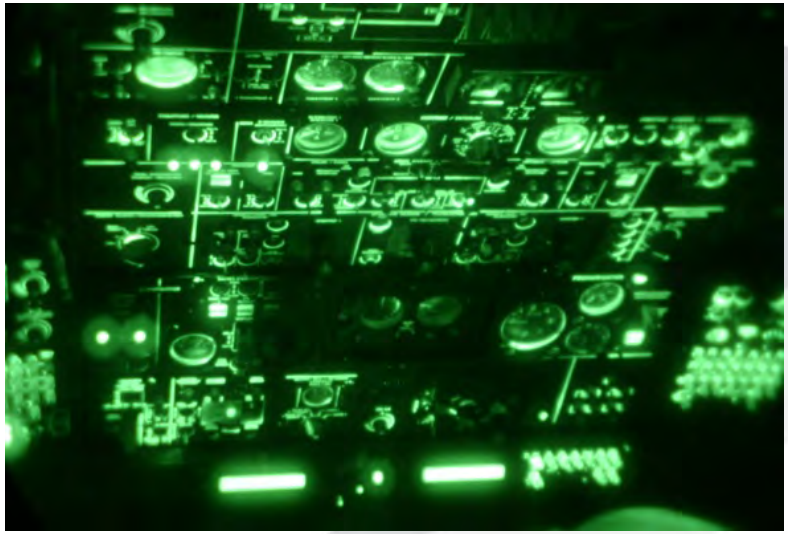


SA76 NVG UPGRADE



BELL 412 NVIS MODIFICATION

TRANSALL C160 NVG



AS332 S-PUMA DEPLOYABLE ELT UPGRADE

EC120B COMPLETE AVIONICS EFIS & AUTOPILOT UPGRADE

Design, installation and certification of complete Avionics, Autopilot and Flight Director systems.

AS365 DAUPHIN AVIONICS & RADAR UPGRADE

MI-172 HIGH-SPEED SATCOM UPGRADE

BELL 212 RADAR UPGRADE

SPECIAL MISSION UPGRADES

FLIR – Bell 206

SLAR – King Air 200

KING AIR 350 COASTAL SPECIAL MISSION UPGRADE

- **Side Looking Radar (SLAR)**
- **FLIR camera system**
- **SATCOM system (AVIATOR 300)**
- **Maritime Patrol & Surveillance System**
- **Drop tube system**

TETRA SURVEILLANCE & AMBULANCE PROJECTS

Supply of a TETRA solution in 40 different helicopter applications in Denmark and Norway (Government), including:

- Supply of radio terminals and associated equipment from Cobham Antenna Systems
- Installation/integration of the equipment
- EASA certification, testing and technical support

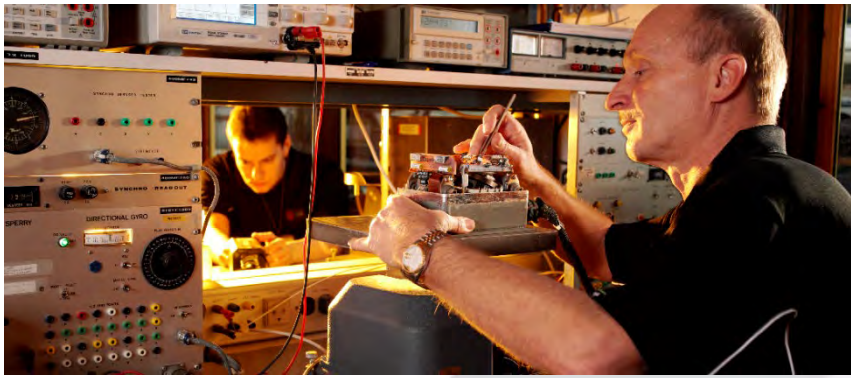
Combination of government and commercial operations:

- 4 x AW139
- 12 x Sea King
- 1 x EC135 T2+
- 10 x EC135 P2+
- 1 x BK117C-2
- 2 x B214
- 1 x AS350

AVIONICS INSTALLATION ON UAV

MAINTENANCE – MRO SERVICES

- EASA Part 145 Maintenance Organization Approval
- Avionics component maintenance (MRO)
- Instrument component maintenance (MRO)
- Electrical component maintenance (MRO)
- Aircraft system maintenance
- Field service teams for world wide ”on-Site” support
- 24/7 AOG technical support
- Support for more than 15.000 equipment P/Ns
- Testing with OEM certified test equipment
- Line, Intermediate and Depot Maintenance
- Repair/Overhaul
- Exchange/Rental
- Logistics support



JOINT STRIKE FIGHTER F-35 PROJECT

Avionics Test Center Denmark
Scandinavian Avionics & Terma

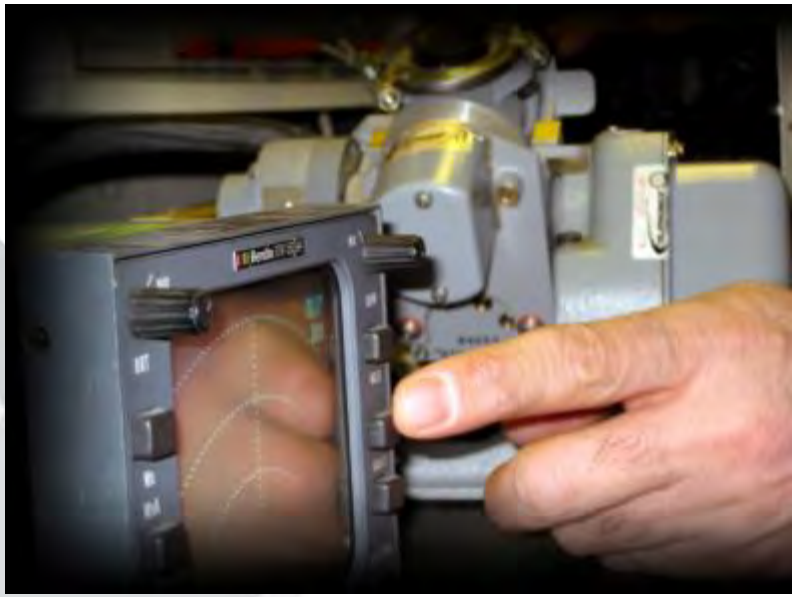
SA GROUP

ATE MRO

- IRIS ATE
- UASC EFI890
- UASC FMS

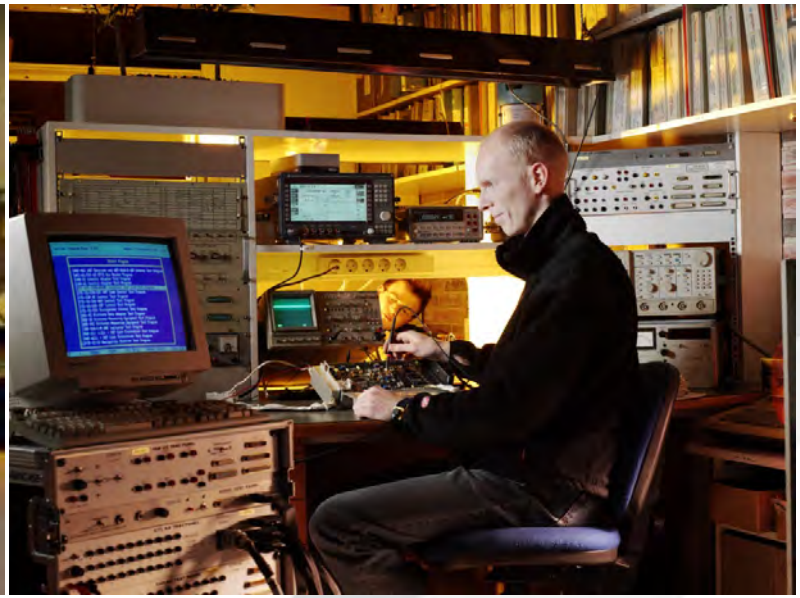
RADAR MRO

- Airborne Radar System component level repair and re-certification



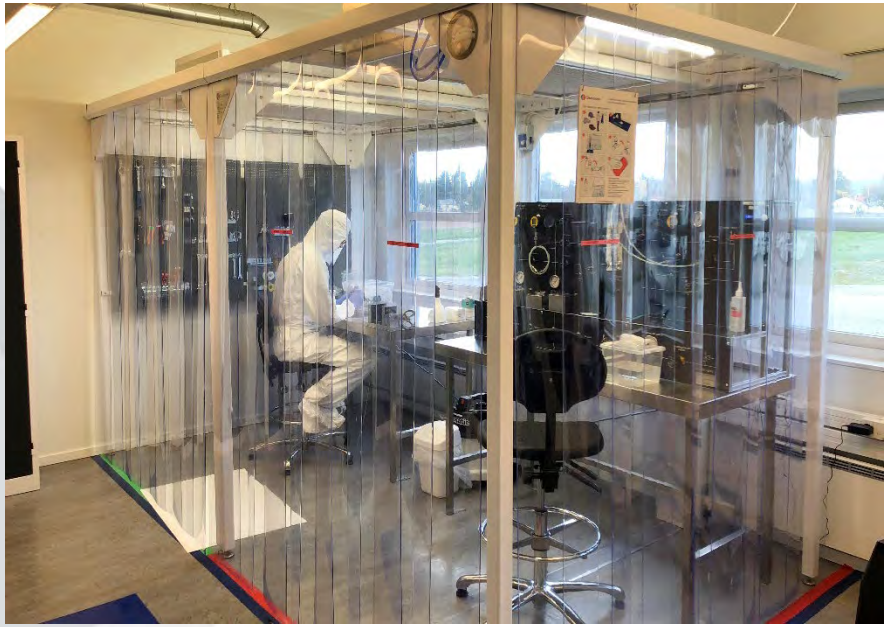
GPS & FMS NAVIGATION MRO

- Flight Management Computer repair and re-certification
- Integrated Navigation Computer maintenance service
- GPS receiver maintenance service



OXYGEN TEST LAB

- Wide scope of Oxygen systems MRO-sustainment services
- Hydro-static test-lab, Clean-room ISO 7 / Class 10 000
- Oxygen Refilling-lab and station to MIL-PRF-27210 requirements
- US DOT & EASA certified



SA GROUP

GALLEY EQUIPMENT MRO

- Stock and supply of a wide range of galley rotables, expendables, and consumeables
- Certification of galley equipment solutions
- Installation of galley equipment
- Cost-effective and flexible repair solutions

OVERALL EXPERIENCE

• A/C types modified	> 250
• A/C types maintained in avionics field	> 250
• Avionics installations performed & certified	> 5.000
• Avionics maintenance tasks on A/C, man-hours	> 50.000
• Avionics installation & certification, man-hours	> 400.000
• Avionics & Instrument maintenance, man-hours	> 500.000

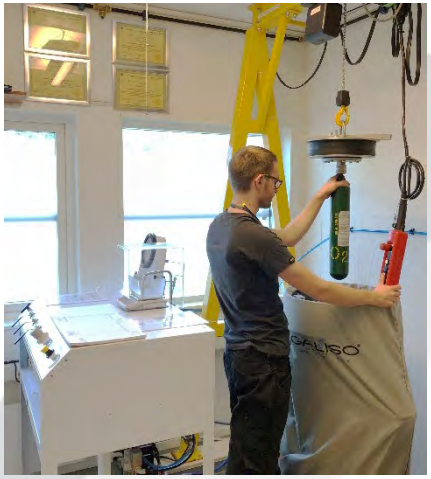
SCANDINAVIAN AVIONICS A/S

Headquarters - Billund, Denmark

SA GROUP

SCANDINAVIAN AVIONICS NORWAY

Oslo, Norway



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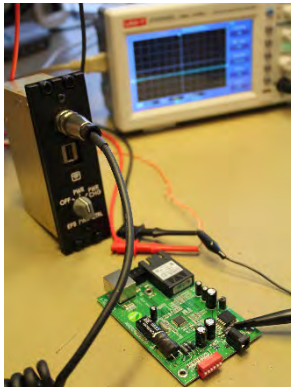
SCANDINAVIAN AVIONICS BROMMA AB

Bromma, Sweden

SA TECHNOLOGIES AB

Aakersberga, Sweden



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SAZ Aerospace s.r.o

Kunovice, Czech Republic

Certification & Engineering Support

SA GROUP

SCANDINAVIAN AVIONICS MEA

Bahrain

SCANDINAVIAN AVIONICS MALAYSIA

Malaysia

SA AIR WORKS INDIA

Gurgaon, India

BUSINESS AWARDS

Scandinavian Avionics has proudly received different prestigious awards and titles from various suppliers and organizations.

2020 Top Dealer International Award
Every year Universal Avionics announce two out of several hundred in its Authorized Dealer Network who have achieved outstanding sales performance for the year. Scandinavian Avionics receives with this achievement its seventh Top Dealer International Award in 10 years.

2019 King Elite Channel Partner

2019 Global Partner of the Year

As BendixKing approved Sales, Service and Repair Center for more than 40 years, Scandinavian Avionics are truely honored to receive both the King Elite Channel Partner 2019 and the Global Partner of the Year Award of 2019 from BendixKing.

Garmin Platinum Award
Scandinavian Avionics are proud to be recognized by Garmin, for the highest level of sales performance, technical expertise and customer service. This Platinum Award for Elite Performance is the 5th in history and places Scandinavian Avionics in the top tier of Garmin Aviation Dealers Worldwide. Scandinavian Avionics has provided sales, maintenance, certification, installation and support of Garmin aviation products for more than 25 years.

CONTACT INFORMATION

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THANK YOU

SA GROUP