Terma and F-35
Global supplier to the Joint Strike Fighter program
The world’s largest defense industrial project

The F-35 project is headed by Lockheed Martin, with Northrop Grumman and BAE Systems as principal partners. Nine nations are partnering in the F-35’s system development and demonstration (SDD) phase: The United States, United Kingdom, Italy, the Netherlands, Turkey, Canada, Denmark, Norway, and Australia.

Together with the F-22 Raptor, the F-35 Lightning II is the only true fifth generation fighter aircraft, and it utilizes the latest technologies within advanced aerostructures, design, sensor systems, electronics, and stealth capabilities.

Global supplier to the Joint Strike Fighter

Terma has participated in the F-35 development since 2004 to provide complex composite structures to the program’s prime contractors and pods and pylons to tier 1 companies. Terma is a major strategic supplier to the F-35 Lightning II (Joint Strike Fighter), a role that highlights Terma’s unique position in the program.

The program is based on a best-value approach, and Terma’s extensive participation is a result of world-class high-tech solutions at competitive prices and conditions. Terma delivers more than 70 mission-critical parts for the F-35.

Lockheed Martin expects to manufacture more than 3,000 aircraft, and when full-rate production is initiated in 2020, Terma will produce parts for 170 aircraft per year.

Terma’s journey to become a world-class manufacturing facility

- **2017/18**: Implementation of additional precision milling, coordinate measurement, and ultrasonic test machines will be finalized, and the factory capacity will be ready for the full-rate pace of up to 170 aircraft per year.
- **2016/17**: Considerable expansions completed, including new layup room, tool warehouse, and autoclave area.
- **2016**: The Danish Ministry of Defence declared that Denmark will acquire 27 F-35As as replacement for the F-16s.
- **2009**: More than MDKK 300 is invested to upgrade manufacturing capabilities and infrastructure.
- **2004**: Terma starts development of complex composite structures for the F-35.

Capabilities

Terma is a world-leading aerospace manufacturer with more than 25 years of experience in design and manufacture of advanced aerospace structures. With our experienced engineering staff and cutting-edge composite facilities, we manufacture parts for fighters, commercial airliners, business jets, rotorcraft, and missiles. Beyond Built-to-Print (BTP) manufacturing, we create value for our customers by offering a full range of design and engineering services and have established ourselves as a low-risk, high-quality provider of composite structures at commercial terms and pricing.

Design and engineering

Terma offers design and build based on a long tradition for solutions to military aircraft and commercial platforms. We provide design and manufacturing that consistently meet customer needs. Our constant focus on production innovation and quality assurance in all aspects of the process enables us to deliver unique solutions from concept to final delivery.

One-stop shop

Terma’s aerostructures manufacturing includes high precision composite trimming, composite machining facility, manufacturing of complex metal solutions, surface treatment, and assembly. Our facility is continuously modernized to stay industry leading and now comprises more than 30,000 m², including cleanroom for layup, material rack, autoclaves, and tool storage.

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Airborne electronics

Terma develops and produces complex electronics solutions for aircraft, satellites, and missiles. Our solutions are used in mission-critical applications such as aircraft survivability equipment or satellite mission control computers. In addition to the production capability, our know-how and test facilities are used to provide maintenance service and upgrades for previously delivered equipment.

Affordability

At Terma, we live by continuous improvements. In all areas of our company, we strive for improved processes and efficiency. The target is zero defects on quality, on time delivery, and pricing in line with customer expectations. Our high commitment to quality and on time delivery has won us numerous Raytheon 3-Star Excellence Awards, the Northrop Grumman Platinum Source Award, and others.

Partnerships

We know that close, long-term strategic partnerships with our key customers, suppliers, and partners are a precondition for success and for remaining at the technological edge. Terma is well positioned as a global player with an expanding international presence. Each partnership is unique and built on the capabilities, requirements, and strategic needs of our partner.

When working with Terma, you will experience our dedicated engineering and manufacturing organization, which forms an agile company that accepts the challenges of meeting even the most stringent requirements.

Fighter competition in Denmark

On 9 June 2016, the Danish Ministry of Defence declared that Denmark will acquire 27 F-35As that are expected to be fully operational in the Royal Danish Air Force from 2027 as replacement for Denmark’s F-16s.
Terma’s involvement in F-35

- Air-to-Ground Pylons
- Gun Pod
- Flight Test Pod (weapons bay)
- Radar electronics
- Composite Fuselage panels
- EO DAS modules
- Engine Rings
- Horizontal and Vertical Tail composite skins
- Horizontal Tail Leading Edges
Terma currently runs eight production programs within advanced composites structural parts and electronics for the F-35. Terma has been working on the program since 2004, when we entered into the first contract with General Dynamics on the Gun Pod.

**Partnerships**

**Lockheed Martin Aeronautics Company**

With first delivery in 2008, Terma manufactured a series of Flight Test Instrumentation Pods for the F-35 to Lockheed Martin Aeronautics Company (LMI), Fort Worth, Texas. The Flight Test Instrumentation Pods have provided a structurally and environmentally protected housing in aluminum for the flight test data acquisition system on the mission systems test aircraft during flight testing of all F-35 variants. Contracted in 2009, also by LMI, Terma supplies composite Leading Edges for the aircraft Horizontal Tails, parts which require highly skilled employees and cutting-edge technology.

**BAE Systems**

Based on an initial contract signed in 2009 with BAE Systems, for the delivery of machined aluminum parts for the Horizontal Tail for the STOVL version of the aircraft, Terma today provides BAE Systems with complex and large composite skins for the Horizontal and Vertical Tail across all variants.

**General Dynamics**

In 2004, General Dynamics Armament and Technical Products awarded Terma a contract for design, development, and manufacture of the F-35 Joint Strike Fighter Missionized Gun Pod. It is a several meters long container, produced in both metal and composite materials to contain the aircraft gun. In the most common version of the JSTF, the gun is integrated into the aircraft structure. In the B and C versions, the gun is mounted in the pod, which is mounted at the aircraft centerline.

**Marvin Engineering Company**

Based on Terma’s multi-year experience from the manufacture of more than 12,000 F-16 Air-to-Ground Pylons, Terma collaborates with Marvin Engineering (ME) on the production of aircraft pylons, which are mounted on aircraft structural “hard points,” providing real estate for carriage equipment. In 2003, Terma entered into a preliminary agreement with ME to manufacture Air-to-Ground Pylons for all three F-35 variants. ME has been responsible for managing and supporting the Alternate Mission Equipment package on the F-35.

**Northrop Grumman Corporation**

In 2012, Terma entered into a long-term contract with Northrop Grumman Corporation (NSC) for the manufacture of composite parts for the Center Fuselage. The contract covers production through 2019 of composite components, including door, panel, skin assembly, and struts for all three aircraft variants. Following fierce competition, NGC in 2012 selected Terma among five international companies as supplier of electronics for the EO DAS sensors (Electro Optical Distributed Aperture System). It is an advanced infrared sensor-based EW system for the F-35. The EO DAS protects the aircraft and pilot from attacks from enemy aircraft and missiles, but it also provides data for navigation and situational awareness purposes in general.

**Supplier partnerships**

Dedicated partnerships with our suppliers are an essential part of Terma’s growth strategy and our way of doing business. Terma has extended relations with several Danish and international suppliers in crucial niche areas. In order to develop efficient and reliable high-tech solutions, we are dependent on Best-in-Class sub-suppliers. In recent years, Terma has developed close ties with several Danish companies which have transformed into true partnerships.

As part of the outsourcing strategy, we have subcontracted some of our manufacturing tasks to partners who have demonstrated the ability and willingness to complete tasks better and more cost effectively than we are capable of in Terma.

**Sustainment**

Next to our design and production activities, Terma is ambitious to add all its knowledge and expertise in the upcoming sustainment cycles of the F-35. We focus on maximum added value by means of innovative solutions that add to the affordability and availability of the aircraft.

Terma has sustainment facilities in Denmark; at the Woensdrecht Air Base, the Netherlands; next to the European F-35 warehouse; and in the U.S. outside the Warner Robins Air Base. Leveraging on our own OEM Avionics and EW products, Terma aims to be a valid partner in testing and repairing F-35 avionic components as well as using our production expertise for repairing composite structures in future repair cycles. The same principle applies to our partnership with ME in which we aim to establish a European sustainment solution for Alternate Mission Equipment.
Operating in the aerospace, defense, and security sector, Terma supports customers and partners all over the world. With more than 1,300 committed employees globally, we develop and manufacture mission-critical products and solutions that meet exacting customer requirements.

At Terma, we believe in the premise that creating customer value is not just about strong engineering and manufacturing skills. It is also about being able to apply these skills in the context of our customers’ specific needs. Only through close collaboration and dialog can we deliver a level of partnership and integration unmatched in the industry.

Our business activities, products, and systems include: command and control systems; radar systems; self-protection systems for ships and aircraft; space technology; and advanced aerostructures for the aircraft industry.

Terma has decades of hands-on know-how in supporting and maintaining mission-critical systems in some of the world’s most hostile areas. Terma Support & Services offers Through Life support of all our products to maximize operational availability, enhance platform lifetime, and ensure the best possible cost of ownership.

Headquartered in Aarhus, Denmark, Terma has subsidiaries and operations in the Netherlands, Germany, Belgium, UK, India, UAE, Singapore as well as a wholly-owned U.S. subsidiary, Terma North America Inc. Terma North America Inc. is headquartered in Arlington, in the Washington D.C. area, with other offices in Georgia, Texas, and Virginia.