Missions

Mission Challenges

The Dornier 228 is the platform of choice for special mission operations taking place between low level and 10,000 ft. Military and government law enforcement organisations operate the Dornier 228 worldwide for maritime patrol (pollution control, search and rescue, border control, fishery patrol), research flights, surveillance and reconnaissance, and light transport operations (cargo, paratrooper, passenger, medevac).

Maritime Patrol

A challenging environment
– Discharge and spill of oil from ships, especially tankers
– Increased demand in Search and Rescue (SAR)
– High economic damages caused by piracy (4.9 to 8.3 billion US$ in 2010)
– Continuously increasing illegal immigration due to political and social instability
– Enforcement of international Individual Fishing Quotas (IFQs)

Light Transport

A challenging environment
– Increase demand in MedEvac operations
– A wide range of runway surfaces (remote airstrips)
– Famine – Providing food to people in hard-to-access regions
– An increasing number of global catastrophes
– Disease control
– Water scarcity
The Dornier 228 is the most advanced aircraft in its class, offering unsurpassed effectiveness and efficiency with superb versatility. This is why authorities all over the world count on it when it comes to demanding special missions of various kinds.

Key features are the long range, high utilization rates and high payload – and all this at impressively low operational costs. With the aircraft’s state-of-the-art technology, pilots are able to maintain superior situational awareness throughout the most demanding missions. No other plane in this category combines safety and efficiency to the level offered by the Dornier 228.

### Best platform in its class

**Operational advantages**
- Speed performance: high speed cruise and range of operating speeds
- Endurance: up to 10 hours loitering
- Range: well in excess of 1000 Nm with a significant payload
- Productivity and flexibility: largest payload/range envelope

**Economic advantages**
- Lowest fuel consumption per Nm
- Lowest operating cost per Nm

**Mission advantages**
- Equipment installation flexibility – large square cabin cross-section
- UNIVERSAL® military grade avionics

**Payload advantages**
- PAX space/seating comfort in individual seats
- Cargo transportation volume and loading
- Cargo/PAX versatility
- Quick swap cargo door
Missions

Mission Match – All Around the World

Central Command for Maritime Emergencies
Germany
“The Dornier 228 is used as a mission aircraft for pollution control in the North and Baltic Sea on a daily basis. For this task the aircraft fulfills all requirements for low level flights and long endurance over sea.”

Hans-Werner Monsees,
Head of CCME, Cuxhaven

Italian Army Aviation
“Owing to their versatility and their STOL capability the Dornier 228 have been employed for different tasks (passenger transport, cargo) in different environments, including the training of the Italian Army paratroopers unit.”

Lieutenant Colonel Stefano Lagorio,
Commander 28° Gr. Sq. AV. ES. “Tucano”

Finnish Border Guard
“The aircraft’s performance and mission equipment enables us to provide reliable, accurate and real time maritime situational awareness to maintaining border and maritime security, and fighting against illegal immigration as well as maritime pollution.”

Colonel Antti Pesari,
Commander, Air Patrol Squadron, Finnish Border Guard

Lufttransport AS Norway
“Our Dornier 228 has been specially equipped for passenger transport in the arctic climate of Svalbard. It has already proven that it was the right choice for operations under such harsh conditions.”

Stig Naesh,
Managing Director, Lufttransport AS, Longyearbyen, Svalbard, Norway

Royal Thai Navy
“The Dornier 228 complies with our squadron slogan ‘All Day, all Night, all Purpose’ as we are convinced by its capabilities and easy maintenance. And it is economical to operate. Every day it is a pleasure to work and fly with it.”

CDR Sanit Kongpetch,
Commander of Squadron101, Wing1, Naval Air Division, Royal Thai Fleet

DLR Research Flight Facility
“ Atmospheric science and earth observation are the main activities of the DLR research flight facility in Oberpfaffenhofen. The Dornier 228 has been specifically chosen for operations using radar, multispectral and camera instrumentations.”

Dr. Monika Krautstrunk,
Head of Research Flight Facility Oberpfaffenhofen
Missions

Maritime Patrol

The Dornier 228 in customized maritime patrol configuration is the most suitable and economical solution for your mission. The Dornier 228 ergonomics, outstanding field of view, and comfortable environment substantially reduce crew fatigue and workload, thus a high level of vigilance is maintained throughout low level operations and long missions. Our aerodynamic expertise and system integration experience will ensure a seamless integration of your choice of sensors and mission systems, and make the Dornier 228 as cost effective as it gets.

Performance features
- 8+ hours loitering on station with wing tanks
- For crew safety, no fuel tanks fitted in the cabin
- 223 KIAS cruise speed to the area of interest
- High manouevrability (fighter like roll rate)
- Less than 440 lbs total fuel burn per search hour
- Transport Category OEI take-off performance

Bubble window

Platform features
- Wide range of possible sensors
- Easy sensor installation/integration on the rectangular fuselage and flat bottom
- Large rectangular cabin cross-section that can accommodate all types of consoles
- Large roller door, openable in-flight
- On board toilet
- Air-conditioning system
- High ground clearance for sensor installation (0.76 m, 29 inch)
- 600 A of electrical power
- Multi-Mission Management System (MMMS) for FMS with search pattern and tactical waypoints
- Mission Management System duplex communication capability with operator’s console
- Night Vision Goggle (NVG) capable cockpit (optional)
- Position and size of bubble window for full downward looking view (180° view)
- Retractable gear – offering unobstructed 360° radar scan in flight
- High wing – excellent down view
Missions

Maritime Patrol

Maritime Patrol layout – 2 Operators, 1 Observer, 1 SAR Operator

Maritime Patrol layout – 1 Operator, 8 Passenger Seats, Toilet
The Dornier 228 is «flying flexibility». The aircraft can be quickly re-configured from passenger to cargo transportation layout with minimum personnel.

**Missions**

**Light Transport**

**Aircraft & performance features**
- Renown short-field performance
- Renown hot and high performance
- Unprepared airfield operations
- Simple single point refueling in 10 min
- Pax/cargo door swap in 15 seconds
- Pax to cargo configuration change in about 1h by one person

**PAX**

A high standard of passenger comfort is the primary consideration in the Dornier 228 design. The standard cabin consists of 19 individual passenger seats with 30-in pitch and offers airline standard passenger comfort in single seat configuration.

Its rectangular cross-section is the ideal shape for utility applications and provides passengers with ample space at shoulder height, extra passenger headroom and cargo storage. Passengers enter through a passenger door with built-in steps on the LH side of the rear fuselage. An 18 seats layout, with a toilet located aft of the cabin, is also available.

**PAX layout – 19 passenger seats**

**PAX layout – 18 passenger seats, toilet**
Cargo

Seats can be quickly removed to convert the cabin for cargo transportation; to ease loading the normal passenger door can be opened sideways, which together with the adjacent door, creates a massive opening for bulky or heavy cargo. Parcels and crates of all sorts can be distributed quickly and easily inside the cabin by means of the integrated roller system. While smaller and lighter cargo items can be secured with nets, bulky and heavier cargo stacked on pallets can be locked on the seat rails.

The rectangular cabin with its 23 ft of usable length significantly eases the transportation of bulky cargo or longer goods. Whatever your cargo may be, a total of 2 tons (512 cu ft) can be transported.

MedEvac

The ambulance equipment has been designed to cover different mission aspects. The complete equipment is sectionalized in separate specific modules, which enable quick change, if required, to support the multi purpose operation of the Dornier 228.

In accordance with MedEvac hygiene requirements, the cabin roof and walls of the Dornier 228 are covered with a polycarbonate lining with a washable surface and can be easily sanitised. The cabin floor is covered with a special washable, anti-skid coating to protect the aircraft's lower structure against contamination by fluids.

The cabin can be equipped with various combinations of forward and side facing seats and double stretcher as well as intensive care stations. The ambulance transport layout may be easily combined with troop and paratrooper transport layouts.
**Missions**

**Light Transport**

**Paratrooper**

In this configuration 21 paratroopers and 1 jumpmaster can be transported (limited to 19 parachutists when operated under civil registration).

The paratrooper version is easily changeable to the trooper version by removing the anchor line cable and jump master equipment.

The paratrooper version is characterized by the following equipment:
- Side facing, lightweight fold-up troop seats
- Roller door with ladder
- Anchor line cable
- Side wall protection

**Paratrooper layout (21 Paratroopers, 1 Jumpmaster)**
**Aircraft Specifications**

### Dimensions

#### Overall dimensions
- **Height**: 15 ft 11 in (4.86 m)
- **Length**: 54 ft 4 in (16.56 m)

#### Wing
- **Span**: 55 ft 8 in (16.97 m)
- **Area**: 344.3 ft² (32.00 m²)
- **Aspect ratio**: 9.0
- **Taper ratio**: 0.7
- **Sweepback of leading edge inboard**: 0°/outboard 8°

#### Vertical stabilizer
- **Height**: 8 ft 10 in (2.70 m)
- **Area**: 64.6 ft² (6.0 m²)
- **Aspect ratio**: 1.50
- **Taper ratio**: 0.46
- **Rudder area**: 16.1 ft² (1.5 m²)
- **Rudder deflection**: -24°/+24°

#### Passenger compartment
- **Overall length, max.**: 23 ft 3 in (7.08 m)
- **Maximum width**: 4 ft 4 in (1.32 m)
- **Maximum height**: 5 ft 1 in (1.55 m)

#### Horizontal stabilizer
- **Span**: 21 ft 2 in (6.45 m)
- **Area**: 89.6 ft² (8.33 m²)
- **Aspect ratio**: 5.00
- **Taper ratio**: 1.00
- **Elevator deflection**: -30°/+25°

#### Ailerons
- **Span**: 8 ft 10 in (2.70 m)
- **Area**: 2.6 m² (2.83 m²)
- **Deflection (Flaps 0°)**: 25° up/18° down
- **Chord**: 30%

#### Doors (height x width)
- **Cockpit door**: 2 ft 9 in x 2 ft 2 in (0.84 m x 0.65 m)
- **Passenger airstair door**: 4 ft 5 in x 2 ft 1 in (1.34 m x 0.64 m)
- **Passenger/cargo door**: 4 ft 5 in x 4 ft 2 in (1.34 m x 1.27 m)
- **Baggage door (front)**: 3 ft 11 in x 1 ft 8 in (1.2 m x 0.5 m)
- **Baggage door (rear)**: 2 ft 11 in x 1 ft 9 in (0.89 m x 0.53 m)
- **Emergency exits (3)**: 2 ft 2 in x 1 ft 7 in (0.67 m x 0.48 m)

### Weights

<table>
<thead>
<tr>
<th>Weights</th>
<th>lb</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. take-off weight (MTOW*)</td>
<td>14,110</td>
<td>6,400</td>
</tr>
<tr>
<td>Max. landing weight</td>
<td>13,448</td>
<td>6,100</td>
</tr>
<tr>
<td>Max. zero fuel weight (MZFW)</td>
<td>13,095</td>
<td>5,940</td>
</tr>
<tr>
<td>Operating weight empty (with 2 Pilots) (OWE)</td>
<td>8,598</td>
<td>3,900</td>
</tr>
<tr>
<td>Mission equipment (incl. operator and console)</td>
<td>1,047</td>
<td>475</td>
</tr>
<tr>
<td>Max. fuel</td>
<td>4,156</td>
<td>1,885</td>
</tr>
</tbody>
</table>

* e.g. optional MTOW increase to 6,575 kg (14,550 lbs) possible
Aircraft Performance

With its Transport Category OEI field performance, control and engine responsiveness and wide range of operational speeds (74 to 223 KIAS), the Dornier 228 ensures safe margins throughout the entire mission envelope.

**Range of take-off distance**
- 2,600 ft at MTOW, ISA, SL
- 3,150 ft at MTOW, ISA+10°C, 2000 ft elevation
- 4,000 ft at MTOW, ISA+20°C, 4000 ft elevation

**Accelerate stop distance range**
- 2,500 ft at MTOW, ISA at SL
- 3,000 ft at MTOW, ISA+10°C at 2000 ft elevation
- 3,600 ft at MTOW, ISA+20°C at 4000 ft elevation

**Range of unfactored landing distance**
- 1,480 ft at MLW, ISA at SL
- 1,590 ft at MLW, ISA+10°C at 2000 ft elevation
- 1,730 ft at MLW, ISA+20°C at 4000 ft elevation

**Climb at ISA, SL conditions**
- normal 1570 ft/min
- single engine 400 ft/min

**Speed**
- max. cruise 223 KIAS
- minimum control 74 KIAS

Certification Basis

The Dornier 228 is the only 3rd-generation aircraft in its class. It has been purposely designed to match the FAR23/CS23 commuter category airworthiness standard, which assigns safety margin equivalents to transport category aircraft. Its advanced design provides the Dornier 228 with unmatched performance, payload capacity, operational flexibility and efficiency.

The Dornier 228 success is proven by the over four million hours flown to date. Based on continuous improvements and innovations, the Dornier 228 offers a high level of safety, even in its standard version, and is one of the most reliable aircraft in the world with its perfect mix of a mature design and innovative technologies.

Due to its advanced aerodynamics, the Dornier 228 is able to match or exceed the STOL performance of competing aircraft at the same payload, all while cruising up to 50 kts faster.
Aircraft

Construction and Fuselage

The structure of the fuselage is a conventional alloy construction (non-pressurized fuselage).

The structure of the wing is new technology. While a conventional wing has a main and a secondary spar, ribs and stringers and sheet metal skin – riveted together – the Dornier 228 wing structure is a box formed from four integrally milled alloy panels. Leading edge is conventional alloy sheet metal with ribs and stringers, trailing edge and Fowler Flaps are made from Kevlar®.

Empennage is conventional alloy construction
Aerodynamic cowlings (e.g. landing gear) are Kevlar®

Key advantages
Square cross-section and volume
– Allow for large operator console(s) and still guarantee safe egress path
– Floor structure offering several spot for sensors installation without a need for structural reinforcements
– Flat bottom and side for easy sensors integration and low fuselage interference
– Retractable gear allowing for unobstructed 360° radar scan
– Aft cargo area configurable and accessible in flight (drop-hole possible)
– 30 second quick change pax/cargo door
– Roller door, capable of in-flight operation (optional)

– Conventional frame/stringer/sheet metal construction with 4 seat rails (Douglas 1 inch)
– Cables and air condition tubing installed

Emergency exits
(front right and centre left)

Electronic racks
Airfoil specification

The outstanding wing design is the key element behind the Dornier 228 best-in-class performance.

- The supercritical profile Do A-5 reduces drag by up to 30%, retains good characteristics in icing conditions, and ensures roll control even in full stalls.
- The optimised wing shape keeps secondary drag as low as possible (reduced wing vortex by triangular shape of wing tips).
- The box type structure and the manufacturing process ensure the highest possible accuracy over the life cycle.

Wings of excellence: the Wing of New Technology

The high performance wing of the D228 was developed by Dornier as part of the “Wing of New Technology for General Aviation Aircraft” programme funded by the German Federal Ministry of Education and Research. The objective of this program was to improve the performance and efficiency of general aviation aircraft at speeds of up to 250 KTAS. The Dornier 228 wing stems directly from this research program, the most radical evolutions being:

- Supercritical profile designed specifically for this aircraft (50% laminar flow).
- Trapezoidal wing with raked wing tips for enhanced pressure distribution and reduced vortex drag.
- Integral milled wing panel for structural performance and reduced parasite drag.

Performance with the Wing of New Technology was increased by more than 25% overall. Another reason for the better performance is the Fowler Flaps, which ensure an improved take-off and landing performance. Finally, the triangular wing tips ensure a reduction in induced drag and gentle stalling characteristics.

The high wing design makes the aircraft less prone to FOD and stone damage when operating on unprepared runways. The wing box, panels and root ribs are integrally milled and serve as the integrated fuel tank. While conventional sheet metal construction is used for the leading edge part, glass-fiber reinforced plastic is used for the trailing edge, outboard wing and wing tips.
Aircraft

Engines and Propellers

The Dornier 228 is currently the most productive, most reliable and most up-to-date aircraft in its class. And this unmatched performance has even been significantly improved by the new 5-bladed propeller in combination with the fuel-efficient TPE331-10 engine. The results are unique and outstanding mission performances and improvements over the whole flight profile.

Our complete support of the Dornier 228 includes the competence required for the regular MRO, certified safety and continued support of the TPE331 engine over its entire life cycle. RUAG is your experienced partner of choice as a Honeywell Authorised Service Centre and we invest our expertise in providing full support for TPE331-5 & -10 engines, offering both line and major maintenance, as well as hot section inspection.

<table>
<thead>
<tr>
<th>Engine data</th>
<th>TPE331-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>1080 – 518 – 676 (mm)</td>
</tr>
<tr>
<td>(length – width – height)</td>
<td>42.5 – 20.4 – 26.6 (in)</td>
</tr>
<tr>
<td>Weight</td>
<td>385 lb</td>
</tr>
<tr>
<td>Pressure Ratio</td>
<td>10.55</td>
</tr>
<tr>
<td>Power</td>
<td>940 shp</td>
</tr>
<tr>
<td>Compressor bleed (max.)</td>
<td>10%</td>
</tr>
<tr>
<td>TBO (commercial operation min 800 h/year)</td>
<td>7,000 h</td>
</tr>
<tr>
<td>ESFC (Eqiv. Specific Fuel Consumption T/O)</td>
<td>0.534 lb/hp-h</td>
</tr>
</tbody>
</table>

N.T.S.

Negative Torque Sensing (N.T.S.) provides automatic and instantaneous prop drag reduction

TPE331 Engine Benefits

- Low Specific Fuel Consumption (SFC)
- Efficient “front-to-rear-flow” turbine design
- Very high ram pressure recovery
- Low frontal area reducing drag to a minimum
- Instantaneous power response in all flight modes
- Automatic torque and ITT limiting system
- Automatic start sequence
- Simple Engine Anti-Ice System
- 940 SHP de-rated to 776 SHP
- Flat rated up to ISA + 30°C at SL
- Low Direct Maintenance Cost
- Time between overhaul up to 7,000 hours
- Engine Health Monitoring (optional)

5-bladed Composite Propeller

- Lighter propeller: Reduced stress on the engine and electrical system during start up
- Smaller propeller diameter: Reduced noise and increased ground clearance
- Retrofit ready: EASA STC A.S.02755, MT-Propeller
Glass Cockpit

The cockpit is fitted with 4 large UNIVERSAL® displays, featuring one Primary Flight Display (PFD) and one Multi Function Display (MFD) in front of each crew member located on the central panel, additionally an Electronic Standby Instrument System (ESIS) is installed between the two MFD. Those crystal clear, sunlight readable HD displays provide the pilots with the specific information required during each phase of the mission.

Key features
- Four (4) 8.9 inch liquid crystal HD displays
- Designed for increased situational and flight safety awareness
- Primary Flight Display (PFD) with multiple display setting to match mission segment requirements
- Navigation display with TAWS overlay,
- Terrain cross-section analysis along flight path
- Multi-sensors FMS with LPV Monitor
- Duplex communication capability between FMS and operator’s consoles
- Emergency ESIS with navigation capability
- Charts and airport diagrams (optional)
- Checklist (optional)
- Moving Map (optional)
- Native NVG PFD/MFD display available (not add-on filters)
- Obstacle cross-section view along flight path
- Synthetic vision (optional)

Main Instrument Panel

1. ELT Control Panel
2. Pilot and Co-pilot PFD Control Unit
3. Pilot and Co-pilot MFD and WXR Control Unit
4. DF Control and Display Unit
5. Air Conditioning Control Panel
6. Landing Gear Lever
7. Pilot and Co-pilot Clock
8. Pilot and Co-pilot Master Warning
   Master Caution Annunciator/Buttons
9. Pilot and Co-pilot NAV and Annunciator Panel
10. Engine Fire Handles
11. Emergency ESIS
Cockpit

Avionics

Navigation and Pitot Static Systems
- UNIVERSAL® UNS-1Ew Flight Management System (FMS)
- Multi-Mission Management System Software upgrade (optional)
- Dual Revue Thommen Air Data Computer
- Dual Northrop Grumman Litef Attitude Heading Reference System
- Rockwell Collins Radar Altimeter
- Rockwell Collins Distance Measuring Equipment
- Dual Rockwell Collins VHF Navigation System
- ACSS Transponder System
- Honeywell Weather Radar (optional)
- Universal Avionics Terrain Awareness and Warning System Class A (TAWS, optional)
- ACSS Airborne Collision Avoidance System (TCAS, optional)
- Flight Director/Autopilot (optional)
- L3-Com Airborne TACAN System (optional)

Indicating Systems
- Universal Avionics Electronic Flight Instrument System
- L-3 Com Avionics Electronic Standby Instrument Systems
- Dual AEE Analog-Digital Converting System (EIU)
- AEE Central Advisory and Warning System

Recording Systems
- L3-Com Solid State Flight Data Recorder with Flight Data Acquisition Unit (optional)
- L3-Com Solid State Cockpit Voice Recorder (optional)

Emergency Equipment
- Emergency Locator Transmitter

Communication Systems

Dual Rockwell Collins VHF Communication System
- two independent VHF COM transceivers and antennas

Digital Becker Avionics Intercommunication System
- two audio control units installed in the center pedestal and one remote electronic unit
- provides communication between pilot, co-pilot, operator and observers and monitoring of all COM and NAV radio equipment.

Dual Universal Avionics Radio Control Units RCU
- two radio control units installed in the center pedestal
- primary means of control for all onboard radios without a dedicated control unit

Rockwell Collins V/UHF Communications System (optional)
- accommodates full range of ECCM (el. counter-countermeasures) waveforms

Marine Band Radio (optional)
- Maritime VHF transceiver to provide the MPA with maritime communication in the VHF FM band and on the Distress and Safety Channel (DSC)

HF Communication System (optional)
- long range communication and data transmission
- inverted-V antenna between top of fuselage tail section and vertical stabilizer

SELCAL Decoder (optional)
- allows an aircraft crew to be notified of incoming communications even when the aircraft’s radio has been muted

SATCOM (optional)
- provides secure video, data, voice and IP

TAWS – A unique 3-D perspective view provides the optimum level of situational awareness.
Multi-Missions Management System (MMMS)

Search Pattern

The MMMS generates and steers the aircraft through the following six pattern types:

**Rising Ladder**
The Rising Ladder search pattern consists of an alternating series of parallel legs adjoined with flyover waypoints.

**Race Track**
The Race Track pattern consists of two parallel legs.

**Expanding Square**
The Expanding Square search pattern consists of a series of legs flow with conventional turn anticipation.

**Sector Search**
The Sector Search pattern resembles a cloverleaf and consists of a series of legs which pass through a centre waypoint.

**Orbit**
The Orbit search pattern consists of flying a constant radius circle in a predefined direction around a point.

**Border Patrol**
The Border Patrol pattern consists of flying a track between pilot-defined waypoints, or stored route, with course reversal at the final waypoints.
Sensors and Mission Systems

Overview

- MMMS
- AIS
- VIS Line Scanner
- Search/Surveillance Radar
- MMS and Operator Console
- MWR
- UV/IR Scanner
- SAR/DF
- EO/IR
- SLAR
Sensors and Mission Systems

Mission adaptable

Side Looking Airborne Radar (SLAR)

- Perpendicular beams (090/270)
- High resolution wave returns = sea clutter (if sea clutter is visible oil spills can be detected)
- Changes in waves are clearly visible (oil covered water, ship waves)
- Oil spill area can be measured
- All weather, day & night
- High sea state
- Range right and left 20/40 Nm
- Measurement of layer thickness not possible
- SLAR – Primary sensor for detection of oil spills

Search/Surveillance Radar

- 360° scan or sector scan
- Primary sensor for all search task (except oil spill search)
- Max range 200 Nm
- Small target (periscope, small boats, life rafts)
- High sea state range ~ 60 Nm
- Pulse compression
- Moving Target Indication (MTI)
- Weight: 35–100 kg (77–220 lbs)
- Different suppliers

SAR Direction Finder (SAR/DF)

The SAR Direction Finder combines a communication direction finder and a SAR (Search and Rescue) direction finder, thus allowing to track all coastal and maritime radio stations. The SAR Direction Finder allows the bearing of radio signals on different frequency bands as well as their traditional emergency frequencies in the VHF and UHF range, the common calling up channel 16 in the maritime radio band and the widely used Cospas-Sarsat emergency signal.

Automatic Identification System (AIS)

- Monitoring of Surface Traffic; keeps track of AIS equipped vessels and their destinations.
- Maritime Surveillance/Coast Guard Patrol; together with a radar system, aircraft can find vessels without AIS or faulty AIS parameters.
- Search and Rescue (SAR); helps locate vessels in distress and communicate help is on the way
- Mission Control and Coordination; in SAR and military operations involving several helicopters and vessels
Sensors and Mission Systems

Electro Optical/Infrared (EO/IR)

- Up to 9 sensors, HD resolution
- Typical sensor equipment
  - Thermal imager
  - Multi-spectral HD zoom camera
  - Multi-spectral HD spotter
  - Laser illuminator, laser pointer
  - Mission awareness positioning system
- Stabilized system, auto-tracking, layover mode
- System weight: 40–55 kg (88–121 lbs)
- Different suppliers

EO/IR + SAR = Optimal Sensor Package

- Cross cueing capabilities
- Workstation sensor calibration
- Best identification through combination of
  - long range, all weather, broad area radar surveillance (SAR)
  - short range, high resolution EO/IR imagery
- Cross cueing sensor software available
- System weight: 70–150 kg (154–330 lbs)

Visible (VIS) Line Scanner

- This passive sensor in the visible wavelength range is used as an auxiliary tool for various applications.
- In maritime surveillance: it can detect oil spills, chemical plumes and biogenic slicks (daylight only)
- Weight: 17 kg (37 lbs)
Sensors and Mission Systems

**Ultraviolet/Infrared (UV/IR) Scanner**
- Ultraviolet scanner makes different reflections of water and oil spill visible (daylight only)
- Infrared scanner makes different surface temperature of water and oil spill (less emissivity) visible (day and night)
- System weight: 29 kg (64 lbs)
- Both sensors allow measurements of oil spill thickness > 0.01 µm

**Microwave Radiometer (MWR)**
- This passive sensor measures oil spill thickness > 0.05 mm and < 3 mm by measuring microwave reflection and emission (all weather, day and night).
- System weight: 115 kg (253 lbs)
Mission Management System

The Mission Management System is one of the most important elements of any Maritime Patrol Aircraft and the true brain of the platform where all the sensors' data are fused together and analysed in real time. As an independent system provider, RUAG is able to flexibly cater to customer requests, integrate the requested Mission Management System and console into the Dornier 228 and work together with the system and sensor providers.

Key features
- Software and sensors form a unified presentation to the operator.
- Sensor data, maps and reports are presented in pre-assigned windows.
- All data is recorded digitally, allowing the operator to simultaneously operate a number of sensors and at the same time access stored data to work on the mission report without stress or risk of making errors.
- All sensor data, images, targets, etc. are annotated using navigation data from a single source, so that each piece of information becomes an integrated part of a Geographic Information System (GIS) on board the aircraft.

Operator's Console – Forward Looking Design

The operator console provides the Human Machine Interface (HMI) between the operator and the mission sensors.

Key features
- The operator can choose the sensors on the console in order to carry out an analysis on the colour monitor.
- The aircraft’s navigation system automatically includes the current flight data (position, course, time, etc.) in the images that appear on the monitor.
- The displayed screen shown at the operator console is handed over to the cockpit crew and can be selected by the cockpit crew to be imaged on the copilot MFD.
- The sensors selected are saved on the hard drive integrated in the system and can be analysed in an instant.
- What's more, this data can also be saved on a portable hard drive, which allows for additional analyses to be carried out on the ground, sensor images to be printed out and data to be transferred to another computer.
- Displays can be remotely controlled via a serial link.
Operations Support

Life Cycle Support

As manufacturer of the Dornier 228 RUAG also offers comprehensive support services, ensuring that the aircraft can be operated safely, economically and in accordance with the customer’s requirements at any time.

RUAG’s international, customer support services comprise technical support and supply of spare parts, documentation, field service and training. In addition, RUAG offers operators of special versions and small fleets of the Dornier 228 its Total Aircraft Care service, which provides full technical support and guaranteed availability for a fixed price per flight hour.

Technical and Operational Support

Between 1982 and 2002, well over 200 Dornier 228s were built in Oberpfaffenhofen and were marketed worldwide. About 150 machines are still in service today, and many of these are serviced by RUAG.

As holders of the type certificate of the Dornier 228 and licences EASA 21G, EASA 21J, EASA 145 and FAR 145, we offer comprehensive servicing for the Dornier 228 fleet operating worldwide. The scope of our services is as follows:

- Technical support beyond the basic documentation, e.g. with Service Problem Report (SPR) and Repair Approval Sheet (RAS) for complex repairs
- Modifications – e.g. customer-specific mission equipment, engine and avionic upgrades
- The whole range of maintenance work (Line & Base) including engine inspections
- Complete and partial painting in our state-of-the-art paint shop
- Service contracts, Power-by-the-Hour contracts
- Fleet management in line with CAMO
- Training for pilots and maintenance staff
- Spare parts support

24-hour – AOG Hotlines

Technical Support
Tel.: +49 8153 30 – 2280
Fax: +49 8153 30 – 3030
E-mail: custsupport.dornier228@ruag.com

Material Support
Tel.: +49 8153 30 – 2281
Fax: +49 8153 30 – 4633
E-Mail: matsupport.dornier228@ruag.com