Aerial Target Systems

Customer Related Cost Optimised Solutions

Target Systems & Services

Low Subsonic Segment

DO-DT35 Dornier

DO-DT 25 Dornier

Perseas 2 Dornier

Fox-TS3 CAC

SETA-3S1 Dornier

DO-SK6 Dornier

DO-SK10 Dornier

High Subsonic Segment

IRIS Jet 3 Sigma

Supersonic Segment

Eclipse T1 CAC

Eclipse T2 CAC

Alkyon 3 Sigma

Perseas 1 Dornier

Perseas 2 CAC

Operating costs

Speed
New Jet-Powered Drone Target Family

Klaus Frei
EADS Systems & Defence Electronics
Airborne Systems
New Jet-Powered Drone Target Family

The to be Simulated Threat . . .
New Jet-Powered Drone Target Family

... the Low Cost Target Approach ...
New Jet-Powered Drone Target Family

... and the Low Cost/High Performance Solution
New Jet-Powered Drone Target Family

Aerial Target Feasibility Study and Design Goals

- Highest degree of threat replications with optimised value for money solution (> 80% of full sale target fidelity for < 10% of the costs)
- High performance airborne platform for a wide range of AD-Systems:
  - passive Infrared (VSHORAD)
  - CLOS / ACLOS (SHORAD)
  - passive Radar (MRAD)
  - active Radar (LRAD)

with highest degree of fidelity in terms of
- target detection
- target acquisition / target evaluation
- target tracking
- target intercept
Aerial Target Feasibility Study and Design Goals (continued)

- Direct kill target
  - Low cost with COTS products

- High speed and high evasive target
  - Optimised airframe solution with jet propulsion

- Threat replication and “after action reporting” with sophisticated and common payload solutions
  - MDI, IRSS, RSS, IRCM, ECM, IFF

- System and operation commonality
  - Generic ground equipment
  - Modular mission planning modules
New Jet-Powered Drone Target Family

Dornier Target Drone Family

- **DO-DT25 Basic Air Defence Training**
  - Long range target detection and acquisition (optimised visibility, improved IR-Signature, high RCS)
  - Long Endurance for multiple target acquisition and tracking training
  - High Payload Capacity
  - Wide speed range
  - Easy to use and to maintain

- **DO-DT35 Advanced Air Defence Training**
  - High Speed and altitude range
  - Low Cost (Direct kill target)
  - Complex target scenario (formation flight)
  - Easy to use and to operate (no RATO)
New Jet-Powered Drone Target Family

DO-DT25 on Launcher at WTD 91 Meppen
with IR-Enhancement Kit
New Jet-Powered Drone Target Family

DO-DT25/35 - Basic Product Description

Jet Engine(s)
Fuel System
Antennas
Telemetry (Basis SK6)
Autopilot
Miss Distance Indicator Seta 3
Parachute System
Ground Control Station
Radar Transponder

Aerial Target Systems
New Jet-Powered Drone Target Family

DO-DT25 - Key Performance Data

**Dimensions**
- Length: 2.95 m
- Wing span: 2.55 m

**Weights**
- Empty weight: 30 kg
- Payload: 15 kg
- Fuel: 40 ltr.
- Max. take-off weight: 85 kg

**Engine**
- Max. thrust: 320 N

**Flight Guidance System**
- Flight modes: PIC, RPV & UAV
- Navigation: GPS
- Range telemetry: 100 km

**Recovery System**
- Parachute
- Descent speed min. / max.: 3.5 / 5.0 m/s

**Launching System**
- Pneumatic Catapult

**Performance**
- Max. speed @ SL, ISA: 450 km/h
- Vne: 500 km/h
- Max. climb rate: 31 m/s
- Typical mission endurance: 100 min
- Max. operating altitude: 7000 m

**Payloads**
- MDI, IRSS, RSS, IRCM, ECM, IFF, SMOKE
New Jet-Powered Drone Target Family

**DO-DT35 - Key Performance Data**

**Dimensions**
- Length: 1.64 m
- Wing span: 1.30 m

**Weights**
- Empty weight: 15 kg
- Payload max.: 10 kg
- Fuel: 15 / 21 kg/l
- Max. take-off weight: 40 kg

**Engine**
- Max. thrust: 220 N

**Flight Guidance System**
- Flight modes: PIC, RPV & UAV
- Navigation: GPS
- Range telemetry: 100 km

**Recovery System**
- 2 stage parachute system
- Landing speed min. / max.: 3.5 / 5.0 m/s

**Launching System**
- Pneumatic Catapult

**Performance**
- Max. speed @ SL, ISA: 650 km/h
- Vne: 700 km/h
- Max. climb rate: 31 m/s
- Max. endurance @ max. thrust: 30 min
- Typical mission endurance: 90 min
- Max. operating altitude: 7000 m

**Payloads**
- Radar Repeater, IR Augmenter, Smoke, MDI
New Jet-Powered Drone Target Family

DO-DT35 on Launcher at WTD 91 Meppen
with IR-Enhancement Kit
New Jet-Powered Drone Target Family

SETA - Radar Miss Distance Indicator

SETA-3 2DT (Drone Target)  SETA-3 2ST (Sleeve Target)  SETA-3 24 HT (Hard Target)

Introduction to market:  1987
Qty. Produced:    > 8000
New Jet-Powered Drone Target Family

TRANSPONDER - IFF LRTP2

- Light Weight Low Cost Transponder
- Responds to interrogations Mode 1, 2, 3/A (STANAG4193, part 1)
- Built in provisions for upgrade to Mode 4 (external cryptographic unit to be provided)
- Mode C (external altitude encoder to be provided)

Characteristics

- Interrogation Mode: Mode 1, 2, 3/A, 4
- Peak power: 24 dBW (min.); 26 dBW (max.)
- Reply Rate: 1200 replies per second (max.)
- Dimensions: L x B x H = (260 x 107 x 85.5) mm
- Mass: 1.8 kg
New Jet-Powered Drone Target Family

RSS-SIMULATOR

- Core of RSS-Simulator is Low-Cost DRFM
- Low Cost approach using COTS hardware (e.g. Free Programmable Gate Array - FPGA)
- Simulation of Range Doppler Profiles
- Scintillating realistic targets (not only “clean” echos)
- Specific jet-engine modulation (platform specific engine doppler profiles)
- Simulation of formation flights (drones behind each other)
- Optional airborne nose radar signature simulation

DRFM
(Digital Radio Frequency Modulation)
New Jet-Powered Drone Target Family

IR Enhancement Kit
New Jet-Powered Drone Target Family

Demonstration Flight (Video)