# Dasa advances hypersonic programme

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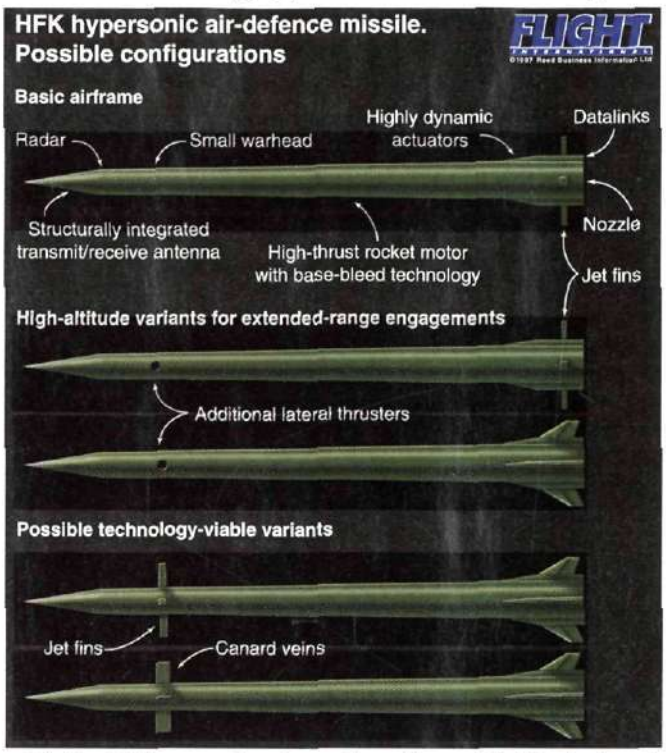
DAIMLER-BENZ Aerospace's (Dasa's) hypersonic missile (HFK) research programme is beginning to progress "out of a research background" towards an application in a future short-range air defence (SHORAD) system.

According to Peter Gleich, head of aeromechanics at the company's missiles subsidiary LFK, the technology will be sufficiently developed by 2001 for application in a real SHORAD system. Germany is participating in the current international SHORAD study, with France, Italy, Spain, Turkey and the UK, and is hoping to develop a replacement for its Gephard and Roland air-defence systems.

LFK has now carried out four launches of a 100kg HFK test vehicle flying at Mach 5.5, with accelerations varying from 350*g* at launch to a maximum 450*g* provided by a rocket motor generating 20t of thrust. The high-thrust phase lasts for 0.8s.

Gleich says that an operational missile would not accelerate quite so fast, but would still reach Mach 5.5 in about 1.5s. He adds that the preferred operational solution would have an active or semi-active radar seeker with a conformal antenna, and would destroy the target primarily by direct impact.




Gleich adds, however, that simulations show that hit to kill may not always be possible with a highly agile target, so the missile will carry a small explosive warhead with a proximity fuse.

The next HFK launch is due on 11 November, when the company hopes to test a steering mechanism consisting of 36 individual microrockets to provide lateral thrust. According to Gleich, the launch will test guidance and steering as well as a sapphire infra-red (IR) seeker window. A dual-mode radar/IR seeker is a potential guidance solution.

An earlier seeker window was lost in a previous test, after 900 milliseconds, having registered a temperature of 700 C. Surface heating because of friction is one of the major challenges the designers face with an infra-red seeker – the temperature of the window could obscure the target heat source – while attempts to steer such a high-speed missile aerodynamically are hampered by intense heating of the leading edges of control surfaces, which reach some 1,800 C at Mach 6, says Gleich.

Dasa is nevertheless looking at aerodynamic control in the SHORAD application. Various possible configurations of a hypersonic surface-to-air missile are being studied, involving a combination of lateral thrusters, conventional fins and "jet fins", a variant of the "grid fins" now seen on some Russian missiles.

Gleich says that jet fins provide an advantage over conventional fins in that they experience much lower moments for twice the steering response. Simulations suggest that these fins – especially if mounted forward on the missile body, for higher agility – could make side thrusters unnecessary unless the missile operates at higher altitudes.

The only problem is finding the right material to withstand the high temperatures experienced in flight. To date, the HFK's stub fins have been made of steel, but Gleich says that Dasa is now looking at ceramic fins. Jet fins are to be tested on an HFK missile in 1999. ❑

# US Army picks Northrop minefield detector for Bosnian operation

THE NORTHROP Grumman Airborne Standoff Minefield Detection System (ASTAMIDS) is to be sent to Bosnia for three months, says John Martin, a new-business-development manager for the US firm.

The ASTAMIDS, which consists of an infra-red (IR) sensor, processor and display station, is designed to survey minefields accurately from manned aircraft and unmanned air vehicles, such as the General Atomics Predator and Alliant Techsystems Outrider.

Funding for the Bosnia deployment is still pending, but Northrop Grumman expects a $450,000 contract to support operations between August and October. The system will be operated from a Sikorsky UH-60 Black Hawk helicopter by US Army field engineers.

Northrop Grumman's passive infra-red system compares heat and shape profiles of a buried mine.

The IR sensor was developed from the company's defunct Falcon Knight programme which aimed to give the Lockheed Martin F-16 a close-air-support capability.

The ASTAMIDS was preferred to Raytheon's rival minehunter system for the operation. ❑

# Clinton faces Latin America discord

A DECISION BY the Clinton Administration to ease a two-decades-old ban on the sale of advanced US weaponry to Latin America has been attacked by opponents within US Congress, who vow to redouble their efforts to stop such sales.

The White House announced on 1 August that the sale of modern US weapons, such as advanced fighters, to Latin American nations will be considered on a "case-by-case" basis. Former US President Carter in 1978 imposed an outright ban on such sales, citing human-rights concerns.

The White House now says that "...it is in America's national security interest" to support modernisation neighbouring defence establishments.

The move to liberalise advanced arms sales to Latin America drew fire from from US legislators who are seeking to restore the sales restrictions. Legislation would bar such weapons transfers in the same way that the Pressler Amendment blocked delivery of Lockheed Martin F-16s to Pakistan.

Chile may purchase up to 48 new fighters, and candidates include the F-16, the McDonnell Douglas (MDC) F-18, the Dassault Mirage 2000 and the Saab JAS39 Gripen. "We think Latin America will be a good market," says Boeing president, former MDC chief executive Harry Stonecipher. ❑