

19th April 2010

BAYERN- CHEMIE SUCCESSFULLY CARRIES OUT TWO GEL DEMONSTRATOR TEST FLIGHTS

As secure and easy to handle as solid propulsion, this unique technology from Bayern-Chemie permits modulating thrust to maximize weapon endurance.

Bayern-Chemie, a fully owned (100%) subsidiary of MBDA Deutschland, successfully carried out two gel demonstrator test flights at the German Armed Forces Test Range in Meppen in December 2009. Following several years of intensive R&D, the results of these flights prove that all functions of this gelled propellant propulsion technology have reached the TRL 6 (Technology Readiness Level 6). Essentially, the gel feeding system and the thrust modulation device worked as predicted during the relevant flight phases.

Propulsion systems using gelled propellants combine the advantages of systems using solid propellants (readiness for immediate use, safe and easy handling) with the advantages of systems using liquid propellants (variable thrust). Whilst in the missile fuel tank, the gelled propellant behaves like a solid propellant therefore damage to the missile's mechanical structure will not result in the propellant leaking. In addition, vapour pressure is very low, hence eliminating the "fireball" risk.

On being injected into the combustor, the propellant loses its gelled structure and transforms into a liquid. Propellant feed is carried out using a solid gas generator or pressurized gas.

The benefits of this propulsion technology are the variability of thrust for mission adapted thrust profiles, the very high degree of insensitivity (no reaction at fast and slow cook-off), low smoke and low signature, an environmentally friendly propellant and exhaust gas (green propellant) and easy handling regarding the logistics chain.

Gelled propulsion technology is now ready for use within certain applications. The first candidates will be reusable start boosters as used in drones, cruise missiles and aircraft. The full advantages of gelled propellant propulsion systems will be realised when they are integrated within air-to-ground or surface-to-surface missiles.

The development of this technology was funded by the German BWB (the Federal Office of Defence Technology and Procurement) and carried out by Bayern-Chemie in close cooperation with the BWB's various institutes and departments.

Notes to editors

With industrial facilities in four European countries and within the USA, MBDA has an annual turnover of €2.6 billion and an order book of €12 billion. With more than 90 armed forces customers in the world, MBDA is a world leader in missiles and missile systems. MBDA is the only group capable of designing and producing missiles and missile systems that correspond to the full range of current and future operational needs of the three armed forces (land, sea and air). In total, the group offers a range of 45 missile systems and countermeasures products already in operational service and more than 15 others currently in development.

MBDA is jointly held by BAE SYSTEMS (37.5%), EADS (37.5%) and FINMECCANICA (25%).

Bayern-Chemie GmbH is a fully owned (100%) subsidiary of MBDA Deutschland. The company's business activities cover the design, development and manufacture of a large number of missile propulsion systems.

With more than 15 customers worldwide, Bayern-Chemie has wide-ranging skills in solid rocket propulsion technology and is the world's leading company in the area of air breathing, solid propellant ram rockets.

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