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MBDA TO MAKE MORE EXTENSIVE USE OF COMPOSITE MATERIALS IN MISSILES

MBDA has launched the CRISTAL^{*} project which aims to further extend the maturity level of the composite material moulding technology from the Carbone Forgé company, as required in order to be able to use it in aeronautical and defence applications. The patented technology should allow automated production of complex shapes to be achieved, using long-fibre and high-performance materials. The objective is to reduce the cost of these parts by 40%, compared to the conventional composite technologies of the layup + autoclave type, and to cover applications in which most of the parts are still made of metal.

The CRISTAL project was launched in September 2009 and has been labelled by the ASTech competitiveness cluster of the Ile-de-France region and co-labelled by the Plastipolis (Rhône-Alpes region) and Pégase (Provence-Alpes-Côte d'Azur region) clusters. During the three years of the project, the work will consist in developing material databases, and demonstrators, performing modelling operations to allow designers to predict the characteristics of the parts made according to this process, and developing non-destructive testing resources and methods specifically tailored to the exact morphology and cost of the parts.

Carbone Forgé is a SME from the Lyon area. Several years ago, this company registered patents for a number of innovations that allow long-fibre reinforced composite parts with complex shapes to be manufactured under advantageous conditions, in a single pressing operation. This process opens the way to the production of aerostructural parts (with less than 1 m in dimensions exposed to loads). In addition to the gains on costs, as permitted by the automation of the process, substantial gains should also be achieved on weight, compared to machined parts. As applied to a missile, this should also deliver gains in terms of the range or the agility, and more generally speaking would also allow gains to be made on consumption and payload, for aircraft.

MBDA is the leading partner of the CRISTAL project. The other partners are Armines (Mines de Paris), Atmosstat, CARMA, Daher, EADS Innovation Works, Eurocopter, INSA (Lyon), Schappe Techniques, SNECMA, Carbone Forgé, Université Aix Méditerranée. Apart from the labelling by the ASTech Astech, Plastipolis and Pegase competitiveness clusters, the CRISTAL project also benefits from financial support by the French cross-ministerial fund (which includes DGA - Direction Générale de l'Armement – and the Direction Générale de la Compétitivité, de l'Industrie et des Services), the general Council of the Ain region, the Rhône Alpes region, the general council of the Alpes Maritimes region and the European Regional Development Fund.

For MBDA, the CRISTAL project is part of a more global approach that involves cooperation with innovative SMEs in order to leverage the skills available in the

^{*} Carbone FoRgé Improved ProcesS for Technological Advanced Level

industry, which the Company needs in high-tech, military and dual applications.

Notes to editors

With industrial operations in four European countries and in the United-States, MBDA has an annual turnover of € 2.7 billion and a forward order book of € 11.9 billion. MBDA's customers include more than 90 armed forces worldwide. The company is one of the world's leading missile and missile system manufacturers. MBDA is the only group capable of designing and producing missiles and missile systems to meet the whole range of existing and future operational requirements of the three services (army, navy and air force). Overall, the Group currently has 45 missile system and countermeasure programmes in operational service and more than 15 others in development.

MBDA is jointly held by BAE SYSTEMS (37,5%), EADS (37,5%) and FINMECCANICA (25%).

Carbone Forgé was created in 2003. This young company has been developing very fast over its six years of existence. It became a subsidiary of French industrial group ALCEN in 2007. The company mostly works in the aeronautical, defence, medical, transport and sports and leisure areas.

Carbone Forgé is based in Lyon and designs, develops and processes composite parts made of long fibres, with thermosetting resins and thermoplastic dies.

With its exclusive and patented technologies, Carbone Forgé is capable of producing specific parts for mechanical applications, whose degrees of complexity allow special mechanical functions to be incorporated during the moulding phase (hole piercing, over moulding of primary inserts, automated cutting of the internal or external contours of the part, production of monolithic hollow structures, etc.).

Press contacts:

Jean Dupont
Group Head of Media Relations
Tel: + 33 (0) 1 71 54 11 73
jean.dupont@mbda-systems.com
Mobile: + 33 (0) 6 33 37 64 66

France
Marie-Astrid Steff
Tel: + 33 (0) 1 71 54 27 27
marie-astrid.steff@mbda-systems.com
Mobile: +33 (0) 6 72 99 92 10