communiqué de presse press release

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Saft develops the world's first hybrid lithium battery system for spaceflight applications

- *Experimental hybrid battery equipment developed with Russian partners will provide on-board power for new generation of light-class launch vehicles in Russia and Europe*
- *Hybrid design combines the advantages of Saft's space-proven primary lithium and rechargeable lithium-ion (Li-ion) technologies within an autonomous power supply system*

Paris, June 18, 2009 – Saft, leader in the design, development and manufacture of high-end batteries for industry and defence is working on a collaborative project with its partners in Russia to develop and flight test the world's first hybrid lithium battery system for a new generation of light-class launch vehicles in Russia and Europe. This development is fully supported both by CNES (French space agency) and Roscosmos (the Russian Federal Space Agency).

The project continues Saft's long term cooperation with Russian partners in the space industry, which started in 2005, for the joint development, manufacture and supply of advanced power supply systems (PSS). It is being carried out within the framework of a dialogue between the European Union, ESA (the European Space Agency) and Roscosmos. Saft's partners are FSUE RISDE (the Russian Institute of Space Defence Engineering) and Synertech (a Russian joint venture between FSUE RISDE, EADS Astrium and Tesat Spacecom GmbH).

The prototype hybrid battery will combine primary lithium cells and rechargeable lithium-ion (Li-ion) cells in an integrated, fully autonomous power supply unit from Saft and completed with control systems from FSUE RISDE. This unique approach will offer a number of operational advantages for both the launcher and upper stage, including longer mission-life, increased capacity in a smaller footprint and greater current capability.

"Saft pioneered the application of Li-ion technology in space applications, and this hybrid battery project is a perfect example of our capability to constantly redefine state-of-the-art technology by developing innovative solutions to meet new customer challenges" said Philippe Jehanno, General Manager, Space and Defence Division, Saft. "The project will also prepare the way for Saft to develop new business for launcher batteries in both Russia and Europe."

Hybrid advantages

The prototype hybrid battery is based on a modular concept that combines two of Saft's space-proven cell technologies – primary lithium cells and rechargeable Li-ion cells – to deliver high electrical and thermal performance at temperatures from -20°C to +70°C. This approach effectively offers the best of both worlds: the instant power capability of the Li-ion

cells ensures voltage stability by eliminating the delay effect sometimes experienced with primary lithium cells; the Li-ion cells can deliver high peak pulse currents of up to 50 A for several minutes.

A further advantage of the hybrid battery is that the primary cells provide a fully autonomous charging current for the Li-ion cells. So for example if the battery is discharged during launch vehicle integration tests it can be recharged for the actual launch, with no need to connect an external charging supply. The primary cells will make it possible to maintain the battery capacity for longer mission times, as well as providing extended storage times of three months on the launcher and a minimum of one year on the ground.

The prototype Saft hybrid battery is expected to make its first space flight by the end of 2011. It will be integrated in the Photon spacecraft manufactured by Samara Space Center as experimental equipment.

About Saft
Saft batteries are used in high performance applications, such as industrial infrastructure and processes, transportation, space and defence. Saft is the world's leading manufacturer of nickel-cadmium batteries for industrial applications and of primary lithium batteries for a wide range of end markets. The group is also the European leader for specialised advanced technologies for the defence and space industries. With approximately 4,000 employees worldwide, Saft is present in 18 countries. Its 15 manufacturing sites and extensive sales network enable the group to serve its customers worldwide. Saft is listed in the SBF 120 index on the Paris Stock Market.
For more information, visit Saft at www.saftbatteries.com

SYNERTECH Ltd. *is the first European-Russian Joint Venture aimed for space systems and equipment marketing, technology transfer, development and production for Russian and International markets (**Synertech**: **Syn** – Synergy of **E** – European & **R** – Russian **Tech** - Technologies). Shareholders of SYNERTECH**:** FSUE - RISDE / EADS Astrium SAS / TESAT SpaceCom*

About FSUE "RISDE"
Federal State Unitary Enterprise "Russian Institute of Space Device Engineering" (FSUE "RISDE"), established in 1946, is one of the pioneer enterprises of the Russian Space Industry. The Institute possesses a unique experience in development, production, operation and maintenance of multi-functional space and ground-based systems. Thus FSUE "RISDE" is a prime enterprise on the COSPAS-SARSAT search and rescue space system and as system integrator and payload equipment supplier of the Russian GLONASS space navigation system. The high-skilled staff of the enterprise has preserved through all these years its innovatory corporate spirit and cutting-edge sophistication of developments. The control systems, devices and equipment developed by the Institute are traditionally notable for the highest level of reliability. The combination of creativity and rich long-standing experience assures fruitful mutually beneficial cooperation to the Institute's partners.

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