

Fucino, April 2008**SELEX GALILEO's Atomic Clock: A Second that Lasts Forever**

With a frequency stability equivalent to 1 second every 3 million years, the Passive Hydrogen Maser (PHM) is the most stable operational atomic clock for space use ever built. The Maser was developed by SELEX GALILEO of Finmeccanica, one of the biggest players in the European Defence Electronics sector.

Galileo – the most sophisticated satellite navigation system - will have on-board atomic clocks made in Italy. With its exceptional stability, SELEX GALILEO's Maser will guarantee the Galileo System with high levels of precision, without synchronisation from ground control for over 8 hours.

The Maser atomic clocks are fitted on-board all the Galileo Constellation's 30 satellites. The satellite Giove – B, which will be launched from Baikonour space base, will carry the first Maser model for qualification phase testing.

Currently, SELEX GALILEO has various ongoing contracts with the European Space Agency (ESA), as well as financial support from the Agenzia Spaziale Italiana (ASI) for the development and engineering phase and manufacturing of the first Maser models for flight validation. SpectraTime company, from Switzerland, is the principal subcontractor for the Maser.

20 employees from SELEX GALILEO, including highly skilled technicians and personnel for production activities and testing, are currently working on the project. The company is expected to match its investment of resources and employees in the development activities of the programme.

In 2005, the Maser won the "Premio Innovazione di Finmeccanica" (the Innovation award of Finmeccanica) for the extremely compact weight, volume and low energy consumption of this unique product with state of the art performances.

"It's with great satisfaction that we can oversee the final development activities of this Maser/technology/clock that has allowed SELEX GALILEO to reinforce its position as a leader in the development of the latest technologies. This project will have a great impact on all of us over the following years", explained Armando Buccheri, Senior Vice President Space in SELEX GALILEO, who added: "This project is a further demonstration of how research for space activities can contribute to the development of society".

Notes for the editor:

The atomic clock and its use in the Galileo navigation system. The PHM is an atomic clock with outstanding stability averaging times from 1 to 100,000 seconds, to be used in precise positioning, time keeping and other on-board applications for the Galileo satellite system. It is designed to perform in space environment for no less than 10 years. The operating principle exploits the stimulated energy emission occurring during the hyperfine transition of the atomic hydrogen in a miniaturised microwave cavity.

Other use for the Atomic Clock. Thanks to its extraordinary stability, the Maser can also be used in Astronomy (synchronisation of radio scopes) and for the synchronisation of nets such as telecommunication and energy distribution networks and in meteorology for the definition of exact time of reaction.

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