

FINMECCANICA'S ATOMIC CLOCK

The Passive Hydrogen Maser (PHM) made by Finmeccanica-Selex ES in Nerviano is the most stable atomic clock ever developed for space applications due to a frequency stability which equates to a deviation of one second every three million years. Based on its extraordinary stability, the hydrogen clock is used for tasks that require high levels of precision, such as location, timing and other onboard applications.

The Maser is installed on each of the satellites of the Galileo constellation, the most sophisticated satellite navigation system for civil use ever made. The Maser is used to "mark time" for all the satellites in the constellation, providing precision that no space clock has ever had before. In fact, the Maser's excellent frequency stability guarantees the accuracy required by the Galileo system for more than eight hours without any ground control synchronization. The technology developed by Finmeccanica-Selex ES allows one to determine the position of a receiver with absolute precision, because an error of a billionth of a second in the measurement of time is equivalent to an error of 30 cm in the evaluation of distance.

In addition to producing the Maser for the Galileo constellation, Finmeccanica-Selex ES is currently engaged in its miniaturization and consumption reduction; the plan is for the Mini Maser to be embarked on board the Galileo Second Generation (G2G) satellite constellation.