



MAS Elettronica Uses Everspin Magnetic RAM to Revolutionise Storage Speed

“For decades, embedded systems have been constrained by the limitations of flash memory, forcing engineers to make tough trade-offs in data handling and performance. MAS Elettronica’s innovative embedded board featuring Everspin’s cutting-edge MRAM storage changes everything. MRAM blends the blazing speed of DDR4 RAM with the persistence of flash memory, setting a new benchmark for performance and flexibility in embedded solutions.”

Since its inception in 2008, MAS Elettronica has been at the forefront of the embedded solutions market, continually innovating to provide the most advanced and reliable products to its clients. Over the past decade, the company has seen rapid growth, establishing itself as a trusted partner for bespoke embedded systems.

“We’ve always excelled at delivering custom solutions by carefully selecting and integrating the ideal components to meet each client’s specific needs” said Sandro Mascetti of MAS Elettronica. “Our partnerships with industry giants including Texas Instruments, Lattice Semiconductor, Arrow Electronics and NVIDIA enable us to bring innovative technologies to market faster than ever.”

MAS Elettronica’s latest release, the MAS Educational Board, is based around a Lattice CertusPro™-NX processor, LPDDR4 memory and an Everspin MRAM storage device. This board showcases the advantages of MRAM, combining high performance with persistent storage. The MRAM storage delivers read/write operations at speeds of up to 400 MBytes/s while ensuring that data is never lost – even during power outages. The ability to achieve write speeds orders of magnitude faster than conventional flash memory makes the MAS Educational Board ideal for applications that demand both high-speed data recording and dependable data integrity, such as automotive diagnostics and industrial data collection.

Moreover, since writing doesn’t cause wear, the MRAM device can continually overwrite data without any degradation in performance, offering a longer lifespan compared to flash memory. This makes it the ideal storage to provide a rolling buffer, always showing the most recent, overwriting the oldest data when it fills up.

The benefits of MRAM also extend to the manufacturing and programming process. Traditionally, programming flash via JTAG gives data rates of about 266 kbits/s, requiring approximately 8 minutes to program a 128 Mbits image to flash. This would be unacceptable on most production lines and so is only practical for programming small

amounts of data. XJTAG has solved this speed problem with XJFlash, an FPGA based programming tool, which can cut this down by an order of magnitude, programming the same flash chip in less than a minute, however now the write speed of the flash memory is the limiting factor.

With the integration of MRAM storage in MAS Elettronica’s new board, the programming process has been dramatically accelerated. The transfer speed is now limited only by the JTAG interface’s data rate, reaching real-world speeds of up to 32 Mbits/s. This means that same 128 Mbits of data can be written to the device in a mere 4 seconds, representing an additional order of magnitude improvement, and since MRAM does not require an erase cycle before programming, this speed is maintained even if a device is reprogrammed.

“The flash programming process can be a major constraint for high

volume production,” explained Sandro Mascetti. “With MRAM and XJFlash, we’ve cut down programming times to a fraction of what they were, allowing our clients to integrate programming into their testing processes and reduce bottlenecks.”

In summary, MAS Elettronica’s use of Everspin’s MRAM storage technology represents a significant leap forward in the embedded market, offering unparalleled speed, reliability, and durability. By addressing the inherent limitations of flash memory, this solution paves the way for faster, more efficient data collection and programming processes, while ensuring data integrity even in power-failure situations. As Sandro Mascetti concluded, “With MRAM, we are not just improving the performance of our boards; we are revolutionising how data storage and programming are approached in embedded systems, and we’re excited to continue pushing the boundaries of what’s possible.”

opinion

Sandro Mascetti
MAS Elettronica

“With MRAM, we are revolutionising how data storage and programming are approached in embedded systems.”

“The flash programming process can be a major constraint for high-volume production. With MRAM and XJFlash, we’ve cut down programming times to a fraction of what they were.”

**Data
Bank**

MAS
ELETTRONICA

Company	MAS Elettronica, Italy
Business	Custom electronics consultancy
Main products	Bespoke embedded systems
Customers	Electronics companies worldwide
Founded	2008
Location	Rubano, Padua, Italy
Web site	maselettronica.com