

Capability Overview

Specialist Electronics Engineering | 40+ Years of Proven Expertise

Electronics, Software, Production Solved

GEMS develops and produces electronics and software for use in challenging environments such as motorsport, automotive and aviation.

We frequently work as a close B2B technical partner, often adapting our existing technology or developing bespoke solutions to meet unique requirements.

We're a small, experienced, agile and approachable team that can help you avoid the engineering cost of starting from scratch - but still receive a solution that is tailored to your application under your own branding.

Our role isn't simply to supply electronics - it's to solve engineering challenges. Whether that's through a proven product or a bespoke solution, we work with you to deliver the right outcome for your application.

This is what makes GEMS different. Where standard products fall short, we engineer the solution that fits.

Many of our customer relationships span years — in some cases, decades. We are trusted because we solve difficult problems reliably and stand behind our work.

Our electronics are used at all levels of motorsport. Our in-house IP allows for rapid development moving from proof of concept to series production— we welcome all enquiries and will be happy to discuss your requirements in confidence.

Please contact us to discuss your project and how we can help you.

GEMS holds ISO 9001 certification, is a member of ASAM, and is a certified MathWorks partner, reflecting our commitment to quality and engineering rigour.



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General Engine Management Systems Ltd | Registered in England & Wales | Company No. 1920884

Core Capabilities

Design Consultancy	Bespoke electronics, firmware and software design from concept to production. We work with customers to design custom products from scratch or develop existing designs into production-ready solutions.
Production	We orchestrate the full production of your products via multiple sub-contractors, with a highly skilled in-house capability for board modifications, repairs and final assembly. We're flexible and are often asked to produce small batches of units as is often required by the sectors we serve. Licencing options are also available for 3 rd party production.
Quality	We take quality seriously and are audited for ISO 9001 compliance.
Engine Management	Design and production of competition and specialist engine management systems. Engineering in-house since 1985 with deep knowledge of high-performance and non-standard engine applications. Working with OEMs like Mitsubishi, Honda and Mazda with privileged supply of critical technology, connectors to engine tune.
Digital Dash Displays	High-brightness, rugged display systems for motorsport and specialist vehicle environments. Configurable data presentation for drivers, co-drivers, and engineers.
Data Acquisition	Wide range of data logging solutions for race, rally, and development environments. Suitable for highly demanding and remote deployment scenarios and backed by our own powerful data analysis software with support for industry standard formats.
Control Systems	Powerful and versatile control systems for many applications such as differential and transmission control. Engineered for performance, reliability and user-configurability.
Power Management	CAN and switch controlled power management systems providing precise, programmable control and flexibility with current and fault reporting.
Software	GEMS has a range of mature software for configuring our products whilst also supporting industry standards such as XCP, A2L and MDF, allowing interoperability with third party products. White Labelling: Developing high quality configuration software takes years of engineering effort. We have a strong in-house developed base platform that can be built with customized OEM branding where required.
Simulink® Integration	MathWorks partner capability; our Simulink®-enabled products allow customers to deploy their own model-based designs on real world hardware, integrating with our toolchains, calibration tools and data analysis solutions.
Scrutineering Tools	We can supply scrutineering tools, as used in FIA sanctioned eRX3, and SCCA sanctioned F4, F3R, F4 junior. IMSA, the MX-5 Cup.

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Our Heritage

GEMS Performance Electronics (General Engine Management Systems Ltd) is a specialist UK electronics engineering business with over 40 years of continuous operation in motorsport and high-performance engineering sectors.

Founded in the early 1980s to serve the demanding needs of motorsport teams, GEMS has grown into a trusted engineering partner for customers across motorsport, automotive, aviation, marine, and research environments.

We're an engineering company — built around technical depth, bespoke problem-solving, and long-term customer relationships.

Why GEMS

Engineering depth	Over 40 years of specialist electronics engineering experience. Deep in-house knowledge — not dependent on outsourced design.
Bespoke capability	We design and develop from first principles where needed. Customers come to GEMS when standard solutions fail.
Trusted track record	Longstanding relationships with motorsport teams, OEMs, and specialist engineering businesses worldwide.
Flexible collaboration	We work at all scales — from early-stage design consultancy through to production support. We adapt to the customer's engineering process.
Rigorous quality	ISO 9001 certified. Processes and standards appropriate to safety-critical and high-performance applications.
Motorsport-proven	Race winners across global motorsport series rely on GEMS electronics — the most demanding performance test available.

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Sectors

Motorsport	Our heritage is in motorsport — supplying leading factory teams and competitors across multiple series worldwide. This demands performance, reliability, and engineering precision that translates directly into our work across other specialist sectors.
Automotive	Using the latest NXP microprocessors designed for functional safety we are developing platforms for automotive applications.
Aerospace	We have supplied electronics for a wide range of aerospace applications - from helicopter engine management to magnetic survey drone data logging. Our capability for making small production runs can be a good fit for such projects.
Marine	We have supplied the marine sector with engine management for powerboats and on-deck digital dash displays.
Defence	Our rugged electronics meet the demands of harsh operating environments.
R&D	Our data acquisition and control systems support advanced engineering programmes. For example, we developed a custom data logger (DAEV1) for the Future Car Challenge (Brighton to London EV race) and assisted with data analysis at the event.
Other	Our electronics have been used in all kinds of applications - hydrogen fuel cell control, human powered road bikes (DA1), combined heat / power (CHP) systems, industrial control and more.

Working With Us

We welcome enquiries from engineering businesses, motorsport teams, OEMs, and specialist vehicle or equipment manufacturers facing electronics and software engineering challenges. Whether you have a defined specification or an early-stage problem to solve, we are happy to discuss your requirements.

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