

Ensuring excellence at Hinkley Point C

How Heidelberg Materials Has Set the Benchmark for the UK's Most Technically Demanding Projects

Hinkley Point C (HPC) is the largest major infrastructure project in the UK, designed to supply low-carbon electricity across the UK. As the first nuclear power station built in Britain in over two decades, it presents strict technical, logistical, and regulatory challenges. Heidelberg Materials is the principal supplier of concrete, aggregates, cement and GGBS to HPC. This requires consistent delivery of nuclear-grade material in significant volumes over an extended period.

The challenge

Nuclear-grade concrete requires materials of the highest quality in precise ratios in order to achieve the high strength and durability required. Achieving this at scale, and doing so consistently, has been a key target. To meet these demands, Heidelberg Materials has developed a system focused on quality, efficiency, and repeatability. While developed for the nuclear sector, this quality assurance approach is equally applicable to any project where the highest standards of consistency, durability, and reliability are required.

The solution

Quality Assurance

To meet the exceptional quality standards at HPC, we have developed a HPC Standalone Quality Management System. This provides a digital framework for monitoring and verifying each stage of material production and delivery. It tracks compliance against project specifications and regulatory standards, supports documentation, and enables real-time quality monitoring. It contributes to compliance by integrating testing data, inspection records, batch histories, and compliance certificates, enabling full traceability and audit readiness at all times. When nonconformities occur, root cause analysis and corrective actions are recorded and reviewed.

The Quality Graded approach classifies products and services by their importance to nuclear safety. It ensures that critical components receive the most rigorous oversight. Inspection and Test Plans (ITPs) are created for each supply unit. These define the testing requirements that are performed on the material, at what frequency, and against which standard. This system supports structured and risk-based quality control across all operations and can be adapted to meet a range of client requirements.

Every material entering the HPC supply chain is subject to extensive testing. Aggregates are tested for cleanliness, grading, and mechanical properties. Concrete mixes are assessed through regular sampling for 28-day strength requirements. Monthly reports document compressive strength, consistency, and temperature. Quality data is reviewed continuously to detect trends, guide adjustments, and assist the client in conformity.

All material is accompanied by documentation confirming origin, test results, and compliance with project specifications. Our testing regime is supported by our national laboratories, equipped with calibrated, UKAS-certified equipment. The standards and learnings established at Hinkley Point C have been cascaded across the wider business. The culture of quality assurance and accountability developed through HPC is now embedded in every site we operate, with all employees aiming to uphold the same level of rigour and attention to detail, regardless of project size or scope.

Logistical Resilience

The logistics network for Hinkley Point C is built for absolute reliability. It uses fixed routines and strict oversight to make sure materials arrive safely, on time, and within specification. All delivery drivers must undergo a 3–6 month vetting process, including legal checks and training. Deliveries must be booked at least 72 hours in advance, with fixed driver registration, route confirmation, and a strict 1-hour delivery window. Missing this window can result in denied site access, requiring escalation to the client's project director.

Every truck, train, tanker, and ship is inspected at each stage, with dedicated technicians carrying out independent checks on the vehicle, product, and storage location. Every delivery vessel is photographed empty and full before it leaves for site. No delivery is made without evidence of compliance and inspection of every vessel. On-site stockpiles hold one month's supply, with reserve off-site storage and daily monitoring in place to guarantee continuous availability, aligned to project forecasts.

On-Site Team and Process Control

The Heidelberg Materials UK team based at HPC manages on-site batching, delivery scheduling, pour coordination, and quality assurance. The team operates as a single point of contact for the client, with shared responsibility across all aspects of delivery. Every team member takes ownership beyond their formal role, creating a culture where no task is seen as 'someone else's job.' This collective approach acts as a safety net, helping to identify and resolve issues early and ensuring that mistakes are avoided.

The team uses real-time digital dashboards to monitor material properties, site readiness, and compliance. All personnel meet Suitably Qualified and Experienced Personnel (SQEP) standards. A competency matrix is used to verify qualifications and training. Project managers each have a minimum of five years of relevant industry experience.



Nuclear Safety Culture

A strong nuclear safety culture is essential to all operations at Hinkley Point C. This includes fostering a questioning and challenging mindset among the workforce. Employees are encouraged to raise concerns, challenge assumptions, and seek clarification whenever there is uncertainty. This approach reduces the risk of error and supports continuous improvement.

A clear, structured process for reporting and resolving concerns ensures that quality and safety are maintained at all levels. Training reinforces this mindset, creating a shared responsibility for maintaining standards and identifying potential issues early. This culture of accountability ensures reliability and supports consistent quality. In addition to the initial HPC Site Induction system, annual Training & Induction refreshers are standard for all staff to ensure standards are upheld. The proactive safety and accountability mindset adopted here has direct benefits for any high-risk or technically demanding environment.

Key achievements

- >10 million tonnes of aggregates, asphalt, cement, GGBS and concrete supplied
- >1.5 million m³ of concrete produced and placed
- 99.6% of concrete within nuclear grade specifications
- 99% of deliveries made within delivery window
- Industry first ISO19443 certification achieved for supplying nuclear-grade concrete



Governance and Traceability

Governance and compliance are embedded in the system, not added on. The HPC Standalone Quality Management System ensures that all quality and safety processes are seamlessly integrated and aligned. Our commitment to upholding rigorous standards has been recognised by our industry's first achievement of the BS EN ISO 19443 quality management standard for those supplying products and services that are critical to nuclear safety. Over 10 years of continuous supply, we have developed and strengthened our checks, controls, records, and reporting to meet the demands of BS EN ISO 19443, a quality management standard far in excess of typical requirements. Standards are maintained through regular internal and independent audits.

Monthly reports document the strength of concrete specimens, aggregate performance across multiple sites, and cement and GGBS combination data. Every batch of aggregate is accompanied by a Full UKAS certification, including material origin, compliance certificates, test reports, and inspection results. The principles of governance, documentation, and traceability embedded in our system are scalable and valuable across a broad range of client applications beyond the nuclear sector.

Setting the Standard for Nuclear Construction

Supplying HPC requires more than high-quality materials. It demands a controlled, repeatable system for delivering them under strict nuclear standards. Heidelberg Materials has met this challenge through a bespoke technical framework operated by a highly qualified team of experts. The result is a supply chain that delivers consistent, nuclear-grade concrete at scale, backed by rigorous documentation, real-time monitoring, and continuous oversight. Although developed to meet HPC's nuclear requirements, these methods and systems set a benchmark for quality, consistency, and control that can be tailored to any client seeking the highest standards of performance and assurance.

