



SIKA AT WORK

HINKLEY POINT C, SOMERSET

THE STORY SO FAR - JO MILESTONE

CONCRETE: Sika® Viscoflow®

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HINKLEY POINT C SOMERSET



THE JOURNEY TO HIGH PERFORMANCE NUCLEAR QUALITY CONCRETE

The high performance concrete mixes required for the construction of the Hinkley Point C nuclear power station require precise and robust concrete mix designs and consistent, quality raw materials. These are efficiently being produced on an industrial scale to provide the one million cubic metres of nuclear quality concrete required over the course of the build. Sika Limited working in partnership with BYLOR - a joint venture between Bouygues TP and Laing O'Rourke; and concrete supplier Hanson, have developed a range of concrete mixes required to meet strict quality requirements specified by EDF Energy and the Office for Nuclear Regulation.

The initial development work on the concrete mixes began more than seven years ago. Initial trial work began to evaluate the cementitious materials and aggregates to meet the plastic and hardened properties of the concrete. After rigorous laboratory trials the raw materials were chosen and the work to produce bespoke Sika Viscoflow admixtures began, ensuring that every detail of the concretes open life, rheology and long-term performance were met. Once BYLOR and Hanson were satisfied with the material selection - including the bespoke admixtures, the intensive suitability and repeatability process commenced.

Once the laboratory development and suitability testing has been completed, the work is then repeated using the concrete batching plants at the Hinkley Point C site. This process not only allows the scaling up and verification of the laboratory work, it also provides the opportunity to optimise the batching process of the new high specification concrete plants. The batching systems on the plants

are capable of industry leading quality control and production efficiency and can control the moisture content of the sand and aggregates to a tolerance of $\pm 0.2\%$. This control is vital to the production of consistently high quality concrete for the duration of the project. Over a period of a few weeks each concrete batching plant produces and repeats batching of the suite of concrete mixes for the HPC project, completing the suitability and repeatability testing to achieve the Office for Nuclear Regulations "Nuclear Approved Concrete".

The production of concrete for the galleries that will carry the power and services at Hinkley Point C began in 2017. The gallery sections are constructed with a high-performance concrete that is densely reinforced to provide a robust and durable concrete structure for the projects 60 year operational life. The production of "Nuclear grade" concrete for the safety critical element of the reactor unit 1's foundations began in 2018 and was recently completed with a record breaking concrete pour of 9,000m³.

Sika Limited - Business Unit Manager Concrete Tom Forsyth says: "I'm proud that Sika are contributing to the delivery of nuclear concrete and are committed to stepping up to the challenge of Nuclear projects now and in the future."

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Concrete Project Lead - Chief Materials Engineer BYLOR - JV - Peter Abel says, "The 400,000m³ of Nuclear concrete produced so far at Hinkley Point C has been underpinned by the excellent consistency of all constituents in conjunction with the massive efforts to build our nuclear quality safety culture. The admixtures chosen for Hinkley Point are instrumental in concrete durability, rheology, and open life. They are also in conjunction with the lowest produced concrete standard deviation through the site batching plants. This supports and ensures placement plans, compaction, and curing strategies are as consistent as possible thereby standardising the placement without the need for any operational or workforce adjustments."

The quality of the placed concrete on HPC meeting all of the requirements of design, transport, pumping and placement is a credit to all members of Team Concrete.

For further information call 0800 292 2572.



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