

Sellafield Research Centre

Watertight concrete system used in nuclear construction



Our reference in Cumbria (United Kingdom): Sellafield Research Centre

The background

This £3 million research and development facility was built at Risehow in Cumbria where client Forth Engineering is developing robotic technology to be used in nuclear decommissioning at Sellafield.

The research centre provides Forth Engineering, local engineering companies and Sellafield Ltd with the ability to carry out trials for underwater recovery/retrieval operations for redundant equipment.

The challenge

The facility was designed to include a pond where methods likely to be suitable for real-life situations at Sellafield Ltd could be tested, including possible scenarios involved in decommissioning the world's largest open-air nuclear fuel storage pond (NFSP).

The pond was designed to hold 6.5 million litres of water which needed to be fully watertight to prevent leaks.

Project:

Sellafield Research Centre

Location:

Cumbria

Client:

Forth Engineering

Main contractor:

Chambers & Harrison

Concrete producer:

D A Harrison

Market sector:

Watertight Concrete

Products used:

MasterLife WP 799

MasterLife WP 910 & 912

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Our solution

The Master Builders Solutions Watertight System offered an alternative to membranes and built-up treatments: a quicker, more cost-effective and more reliable solution than traditional construction methods.

The concrete mix for the pond at the research centre contained MasterLife WP 799, which is all-in-one hydrophilic pore blocker with superplastizing admixtures for concrete. The result is inherently water repellent, non-absorptive concrete with a reduced water/cement ratio, which is also protected against soluble salts.

Following the concrete's correct placing, compaction and curing, this single-bag system provides a waterproof structure with minimum effect on the original appearance and texture.

MasterLife WP 910 & 912 system was used to eliminate the risk of water ingress through unavoidable construction joints. Using the MasterLife WP 912 as the adhering sealant for MasterLife WP hydroswellable waterbar, this was a simple solution which was 'fit for purpose'.

The customers benefit

- MasterLife WP 799 high performance integral waterproofing system was used in the concrete mix for the concrete slab and partial 'canal side' retaining wall.
- All products were supplied by Master Builders Solutions providing a single source system approach with single point liability.
- BBA approved system.

Project facts at a glance

- Fully watertight solution.
- Single-bag system.
- Minimum effect on structure's original appearance