

Proicere Digital Delivers Modern Nuclear Waste Treatment Facility to House World's Largest Civil Stockpile of Plutonium

SYNCHRO™ has already saved GBP 80 million in costs and saved the project 500 days of rework and counting

CLEANING THE U.K.'S NUCLEAR WASTE

The United Kingdom's Nuclear Decommissioning Authority (NDA) is responsible for cleaning up and decommissioning the country's earliest nuclear sites, which includes about 140 tons of civil separated plutonium. Due to the radioactive and fissile nature of the material, plutonium handling and storage requires specialized facilities and effective management arrangements. The organization was tasked with transferring the plutonium into more modern facilities. One of these facilities is the Sellafield Retirement Plant (SRP), located along the Irish Sea coast in England, which will repack and retreat plutonium packages. The facility is designed to safely process the material, with plans for the building to be operational for the next 60 to 100 years.

The client chose Proicere Digital to deliver this project, as the consultancy is a subject matter expert in this field. "Within SRP, Proicere Digital adopted responsibility for enhancing project controls and digital delivery methodologies," said Daniel Ashton, technical director at Proicere Digital. Their mission is to combine modern delivery methods with project controls and make the complex simple. This goal was key, as the organization was subject to complex regulatory requirements and stringent safety standards on this vast project.

OVERCOMING INCREDIBLE ODDS

Proicere Digital realized that they needed a collaborative digital solution that would allow for optimal planning, execution, and monitoring of the project. Additionally, the solution needed a high level of collaboration so that the team could proactively address emerging issues quickly and efficiently. Therefore, they sought out a 4D construction planning solution and digital twin technology.

IMPLEMENTING CONSTRUCTION DIGITAL TWINS FOR IMPROVED EFFICIENCY

After considering their options, Proicere Digital chose SYNCHRO's 4D planning and scheduling technology, empowering the team to digitally visualize, plan, and execute the complex site works. "Due to the project's unique complexities and the need for specialized tools tailored to nuclear decommissioning and waste management processes, we turned to Bentley's SYNCHRO for its unparalleled capabilities in 4D planning, which proved instrumental in overcoming project challenges," said Ashton. The applications allowed the team to digitally rehearse high-risk activities, both on and off site. By using SYNCHRO, the team was able to conduct comprehensive risk analysis to identify and mitigate potential project risks, including adaptive fire escape routes and crane collapse landing radii. They were also able to facilitate better and smoother collaboration and communication among project stakeholders.

The team used SYNCHRO's integrated planning model in the office, which allowed for seven individual users to access the same file and work on it at the same time. The application also stored animation outputs and shared model files, ensuring that a single source of truth was maintained. Meanwhile, SYNCHRO Field was used in the field to model the site and access files, allowing everyone to have access to the information wherever they were. They could also collect site data and share updates with the team back in the office, about 150 miles away, in real time.

SAVING SIGNIFICANT TIME AND COSTS WITH DIGITAL TWINS

By using SYNCHRO to create 4D models, combined with Bentley's iTwin Platform, the team established a digital twin to perform construction simulations,

PROJECT SUMMARY ORGANIZATION

Proicere Digital Ltd.

SOLUTION

Construction

LOCATION

Seascale, Cumbria, United Kingdom

PROJECT OBJECTIVES

- ◆ To provide a digital delivery method that will optimize delivery of the Sellafield Retirement Plant.
- ◆ To enhance project controls using 4D construction modeling.

PROJECT PLAYBOOK

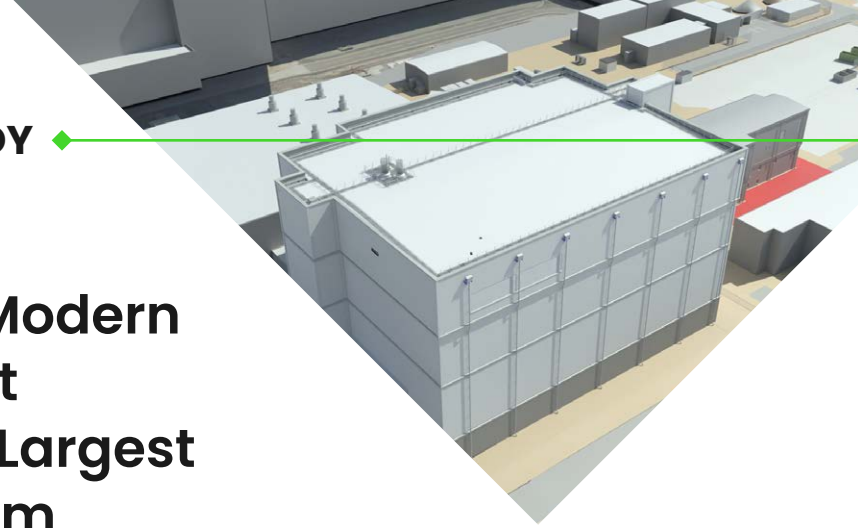
iTwin®, SYNCHRO

FAST FACTS

- ◆ The Sellafield Retirement Plant (SRP) will safely process the world's largest civil stockpile of plutonium for 100 years.
- ◆ The organization used SYNCHRO to digitally visualize, plan, and execute the complex site works.

ROI

- ◆ By using SYNCHRO, combined with the Bentley's iTwin Platform, Proicere Digital established a digital twin to perform construction simulations, identifying and mitigating over 160 potential risks.
- ◆ The digital solution has already saved the project over 500 days of rework.
- ◆ Using SYNCHRO has provided GBP 80 million of schedule-related benefits on a project valued at GBP 1.3 billion.



“Bentley’s SYNCHRO has become a key delivery tool for the SRP project, not only changing the way we functionally plan on the project, but also improving project integration and collaboration and aiding the safe operation of the site.”

– Daniel Ashton, Technical Director, Proicere Digital

streamlining workflows, as well as identifying and mitigating over 160 potential risks. The Bentley applications enhanced overall efficiency by optimizing all project processes. “The construction plan is now more visible and accessible than ever, and this has only improved project and stakeholder communications,” said Ashton. SYNCHRO helped avoid potential clashes, saving future rework on site. The digital solution has already saved GBP 80 million in costs and avoided over 500 days of rework.

In addition to these substantial qualitative savings, the project itself plays a vital role in safeguarding public health, protecting the environment, and advancing scientific knowledge. The plant provides many job opportunities and stimulates economic growth in the area, fostering a positive impact on the community. By maximizing handprint and minimizing footprint, the project sets a benchmark for sustainable infrastructure development in the industry. “Bentley’s SYNCHRO has become a key delivery tool for the SRP project, not only changing the way we functionally plan on the project, but also improving project integration and collaboration and aiding the safe operation of the site,” said Ashton.



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