

CUSTOMER CASE STUDY

The Shanghai Laogang Project used digital innovation made possible by AVEVA to transform the design, construction and delivery of the world's largest waste-to-energy plant

Shanghai Environmental Group
Industry - Power Generation

Goals

- Streamline the supply chain operations
- Swifter, more effective collaboration between engineering and design teams
- Gain regular data updates between EPC and the plant operator

Challenges

- Inaccurate data that couldn't be shared easily or consistently between designers of different elements of the plant
- Data interference and collision issues that resulted in delays and extra costs
- No mechanism for transferring consistent, correct data between the EPC and the operator

AVEVA Solution

- 3D Plant Design
- AVEVA NET™

Results

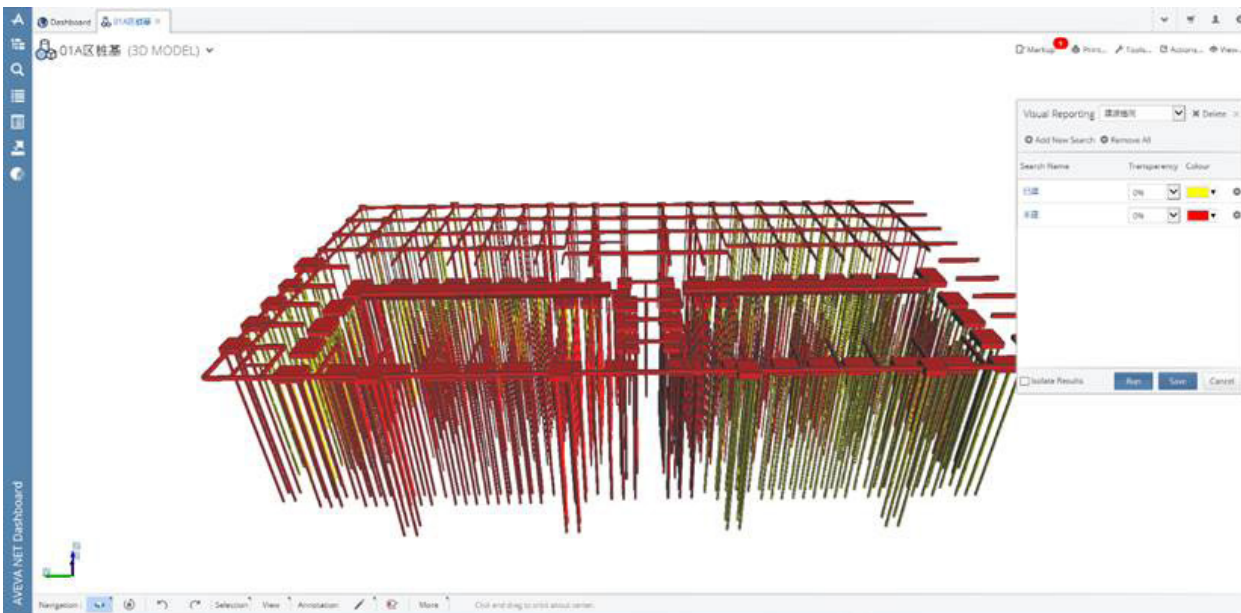
- More than 200 construction clashes detected and avoided
- Reductions in project cost and schedule
- Improved access to reliable information for operations and maintenance
- Faster, more effective digital handover to operations and maintenance

Shanghai, China – Shanghai Laogang Waste Incineration Power Plant Phase II is a comprehensive power generation project by the Shanghai Environmental Group. Phase I has a waste-handling capacity of 3000 tons per day and produces 60 MW of electricity. Phase II, which is scheduled for completion in 2019, will have a treatment capacity of 6,000 tons per day, making it the world's largest waste-to-energy facility. The combined waste incineration capacity of Phases I and II will be around 3 million tons per annum, with annual power generation in the order of 900 million kWh. The plant is viewed as a model for future waste-to-energy plants that can ensure efficient waste treatment alongside maximum electricity generation. Shanghai Environmental Group owns and operates the plant. For the Phase II construction, they selected the engineering, procurement and construction (EPC) company China Wuzhou Engineering Corporation Ltd to work alongside them.

Problems with the 2D, document centric approach

Numerous design companies contributed to Phase I of the project, using diverse platforms based on conventional 2D methodology. The drawings and engineering data were created and stored as 2D documents. This approach caused several problems. Information was in some cases inaccurate or out of date, and could not be shared easily or consistently between the designers of different elements of the plant. This led to interference and collision issues so that e.g. structures and cabling needed to be dismantled and reworked, causing delays and creating extra costs.

There was no mechanism for transferring consistent and correct data between the EPC and the operator, which became a major obstacle to completing the plant efficiently and inhibited the effective start-up because there were significant data queries that delayed the subsequent operation and maintenance phases.



Using AVEVA NET simulation, the construction team leader can see the task, and the 3D model of the current construction area, so that multiple construction teams can quickly understand the tasks they need to complete. (red indicates constructed, yellow indicates to-be-constructed). Source: Shanghai Environmental Laogang Phase II Project Department.

Adopting a digital approach

Mr. Yue, Vice President of Shanghai Environmental Group, decided that the only way to solve these problems was to switch to the latest AVEVA software. He recommended that China Wuzhou Engineering should adopt AVEVA's 3D plant design tools and the AVEVA NET information management system, as the digital integration and delivery platform for the Laogang Phase II project.

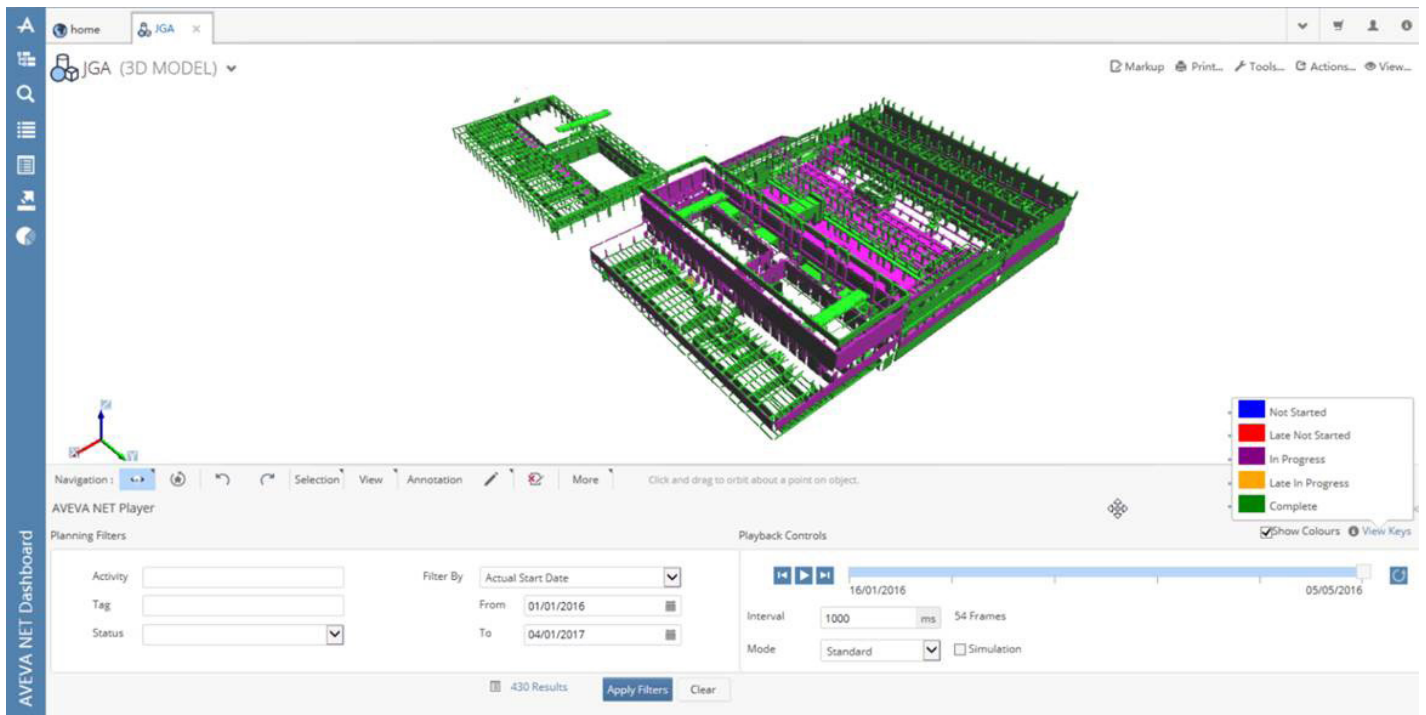
Implementing the solution

“Most importantly, AVEVA provided us with an engineering information sharing platform, which is vital for the success of any multi-party collaboration venture and enables us to achieve fast efficient digital handover and information sharing.”

Mr. Yue,
Vice President, Shanghai Environmental Group



Image courtesy of Shanghai Laogang Project



Daily progress updates in AVEVA NET help the team to understand the construction progress of the previous shift team's work and enables seamless handover. Source: Shanghai Environmental Laogang Phase II Project Department.

AVEVA's specialist team worked closely with Wuzhou Engineering and the Laogang Project Department to introduce AVEVA's 3D plant design tools and AVEVA NET effectively throughout the project. Wuzhou Engineering is also using both these systems extensively for formal engineering design and to optimise design and build. AVEVA NET is also enabling the continuous handover of the project through regular updates of all the engineering information (data & documents) between the EPC and the plant operator.

On-going 3D simulation of the various phases of the plant construction is delivered through AVEVA NET. This integrated overview of progress on the plant construction is helping Laogang's management team to check that the project is on track against plan and to spot any errors immediately.

Having access to accurate, timely data helps them to make better, quicker decisions during the construction phase, improving overall efficiency. By creating a single source of truth for all aspects of the design and build process, the team is also ensuring that they have the project information already in place for final handover.



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