

CUSTOMER CASE STUDY

AVEVA-powered IMS helps world leader in nuclear power deliver landmark EPR project to Finland, and not long after, the rest of the world.

Generation III+ Nuclear Reactors
Industry - Energy

Goals

- Implement an all-new IMS to assist with a landmark EPR project.
- Facilitate workflow between hundreds of engineers operating across multiple locations.

Challenges

- Prior to AVEVA, AREVA struggled to manage layout and erection/installation drawings generated and issued on construction sites.
- Engineers working in different offices created a fragmented workflow from site to site.
- High volume projects suffered from insufficient quality and consistency checks.

AVEVA Solution

- PDMS
- Plant Suite
- VPE P&ID
- VPE Workbench

Results

- 800 fully intelligent P&IDs were created for the EPR.
- 450 simultaneous PDMS users were deployed across the project.
- Consistently up to date design information at each location resulted in an on-time delivery of the project.
- AREVA won various new EPR projects in Finland, France, China, Japan, and the United States.

AVEVA-Powered IMS Helps Deliver Generation III+ Nuclear Reactors to the World

Paris, France – AREVA is a world leader in the design and construction of nuclear power plants, and is one of the companies at the forefront of the nuclear renaissance worldwide.

The company in its current shape was created in 2001 by uniting the vast nuclear expertise and experience of the Framatome company with the former nuclear division of Siemens.

Since then, rapid growth and further acquisitions have created a company with the experience of building more than 100 nuclear plants worldwide, representing 30 percent of the world's installed nuclear capacity.

In 2003, the company began a major implementation of almost all the AVEVA Plant products. We visited Michel Gonin, Manager of the IMS Methods and Tools Department for AREVA NP at the company's headquarters in Paris, France to learn how their use of AVEVA Plant software has progressed, and what role it plays in the company today.

Olkiluoto 3 (OL3) – A Landmark Project

In December 2003, AREVA won an order for the design and construction of a 1,600 MWe European Pressurised Water Reactor (EPR) to be built for the client, TVO, at Olkiluoto in Finland, the 'OL3 project'.

This was a landmark project for AREVA. It was the first-ever Generation III+ reactor to be built in the world, and the first EPR. It was also the first new-build reactor project to be started in the European Union for more than a decade.

AREVA decided to implement a totally new IMS for this key project. After a long series of benchmarks and evaluations, the company selected the AVEVA Plant suite (then called Vantage), together with Documentum, Primavera Enterprise and SAP as the key foundation blocks for the IMS.

At the start of the OL3 project, some AREVA entities already had experience of using AVEVA PDMS, but all the other AVEVA tools were new to the organisation, and had to be implemented and configured, then deployed immediately onto the new, live project.

“Of course, we had our establishing engineering processes, but it wasn't as simple as applying the new tools to the existing processes. The new tools also opened up new methods of working for us. We didn't just adapt the tools to our methods; we also adapted our methods to the tools.”

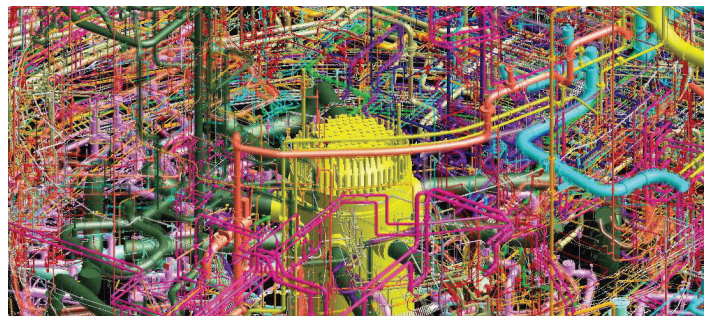
- Michel Gonin,

Manager of IMS Methods and Tools Department, AREVA

Using the IMS on the First EPR Project

Over 800 fully intelligent P&IDs have been created for the EPR using AVEVA VPE P&ID. These P&IDs are all interconnected to create a complete logical network. As new or updated P&IDs become available, they are synchronised with AVEVA VPE Workbench, which constitutes the functional reference of the plant and is used by the many engineering disciplines to develop and revise the definitions of the relevant systems and components.

As design progressed, newly available and updated engineering data was issued to the layout and detailed engineering teams, who could access and work with the issued data from within the 3D PDMS software.



“The 3D PDMS model of the EPR is very detailed. We include almost all objects in the model – even the small-bore pipes, the instrument lines and the details of every support and anchor plate. Even though our 3D model is very large, it can still fit on an average laptop.”

-
Michel Gronin,
Manager of IMS Methods and Tools Department, AREVA

The production, from the 3D model, of piping isometrics and support drawings, both with full Material Take-Offs (MTOs), is fully automated and is controlled using status information for each object. The MTO information updates VPRM, AREVA's materials management software, so that AREVA can get accurate and up-to-date materials information at all times.

The Material Management process, including procurement itself, is supported by VPRM, from the material requisitioning to all aspects of site management at Olkiluoto.

Many Achievements

The many control and data-management features of the software are used extensively to enforce rigorous working practices, and to ensure that data is only made available to other disciplines once it has been through the appropriate level of quality and consistency checks.

Integrating data and work processes in ways that have not been possible before not only brought greater control, but also achieved higher quality and consistency.

“Concurrent engineering is all about how to work with and manage incompatibilities. We have proved that we can execute and manage concurrent engineering even across work-shares that are sometimes very complex. In the 3D world, we now have over 450 simultaneous PDMS users across our projects, but we can be sure that, every morning, we will have fully up-to-date design information at every location.”

-
Michel Gronin,
Manager of IMS Methods and Tools Department, AREVA

AREVA Tools at the Construction Site

The new tools have also allowed new methods at the construction site. In the past, large numbers of layout and erection/installation drawings were generated and issued to site, all of which had to be separately managed.

Today, AREVA doesn't need to do this anymore. Support drawings and piping isometrics for prefabrication are issued. Any additional erection information is simply generated by the team on site, as and when required. The 3D model is also used by the on-site team even in order to carry out certain types of design modification.

Multiple Simultaneous EPR Projects

AREVA Plant is now being used for the design and construction of four EPRs, in Finland, France and China, and for Design Certification and multiple Combined Construction and Operating Licence Applications (COLAs) for the EPR in the United States.

All these projects are based on the same generic EPR design but there are, nonetheless, very many differences between the projects. For example, there are different coding systems, (ECS or KKS), different regulations, different component suppliers and different geographical conditions.

Not Only the EPR

The EPR is not the only reactor design where AREVA is using AVEVA Plant. It is also being used in both France and Japan for ATMEA1, a new 1,100 MW reactor design being jointly developed by AREVA and Mitsubishi Heavy Industries.

The project uses the full AVEVA toolset, working across a specific infrastructure. The AVEVA Plant suite has also begun to be introduced into another AREVA entity, which specialises in all aspects of the nuclear fuels lifecycle.

“Our current toolset is working well, and we are using it on all our projects, in France, Germany, Finland, China, the USA, and elsewhere but we are, of course, always looking to the future and to new technologies. One big part of that future is the new AVEVA NET technology. We see this as the right path for configuration management needs and data exchange – both of which are vitally important aspects of the Product Life Cycle Management.”

-

Michel Gronin,
Manager of IMS Methods and Tools Department, AREVA



AVEVA

aveva.com

© 2020 AVEVA Group plc and its subsidiaries. All rights reserved.
AVEVA and the AVEVA logo are a trademark or registered trademark of AVEVA Group plc in the U.S. and other countries.
All product names mentioned are the trademarks of their respective holders.