CUSTOMER CASE STUDY

Vivix transforms engineering in the cloud

VIVIX - vivix.com.br
Industry - Mining Metals Minerals, Manufacturing

Challenges

- Didn't own engineering data
- Updating data was costly, laborious and error-prone
- Struggled to store and share engineering data

Solution

- Vivix uses AVEVA™ E3D Design, AVEVA™ Point Cloud Manager, AVEVA™ Asset Information Management and AVEVA™ Unified Engineering to construct and augment a 3D model of its plant with information on instrumentation, maintenance, material and other subjects. It owns all this data so it can access and share it with its engineering partners in the cloud via CONNECT.

Results

- Reduced engineering project costs by 15%
- Cut travel expenses by 50% and use of IT team by 80%
- Reduced engineering CAPEX by making local servers unnecessary

AVEVA

Vivix is one of the world's most modern float glass plants, and the only one that's 100% Brazilian. It opened its first factory in 2014. This first plant had a cutting-edge design, high levels of automation and top-notch technology, such as a low-energy melter.

But the engineering aspects of the plant did not match the high standards of its operations technology. Vivix never had an as-built design of the plant, none of the documentation was 3D and it depended on an outside engineering company to keep track of its engineering data, including records of post-construction improvements.

To bring its engineering capabilities up to par with its operations, Vivix used AVEVA products to digitize a 3D model of the entire plant. It connected that model to its document and maintenance systems, took ownership of all this data and made it available online in the cloud. When it came time to start designing a second float glass plant in 2021, Vivix had 3D catalogs and specifications in hand that made engineering more efficient, affordable and sustainable.

"Today we are in a completely different scenario, planning and executing our expansion project with collaborative, cloud-based tools that allow greater technical and budgetary efficiency."

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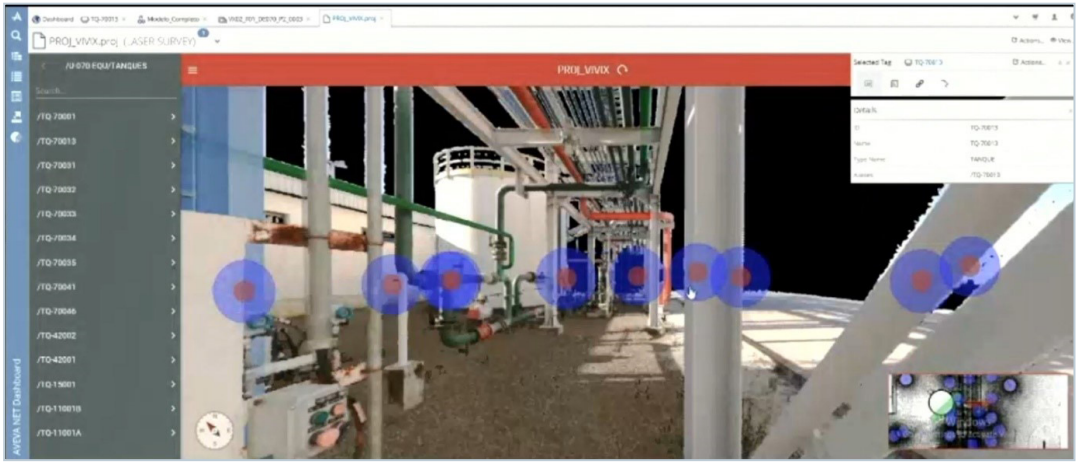
Claudia Lima
Engineering manager, Vivix

Building a 3D model

Vivix's first plant came on line in 2014 without an as-built design, 3D databases, or a good catalog to manage and control its material. It only had 2D documentation, such as drawings, isometrics and diagrams. Vivix also didn't control its own databases in which to register the improvements it made to the plant over the five years after construction.

So, in 2019, its engineering team started a digital twin project. It hired an engineering company to laser scan the entire plant and used AVEVA™ E3D Design to build a 3D model over that scan. It shared both the laser scan and 3D model over web browsers with AVEVA™ Point Cloud Manager so stakeholders could check the progress of the project online.

The engineering team used AVEVA™ Asset Information Management to connect elements of the 3D model to Vivix's document and maintenance systems. Building the 3D model and connecting it to Vivix's other systems only took about 12-18 months. What's more, this project also gave Vivix 3D catalogs and specifications that it used to start designing its next plant, starting in 2021.



Vivix's AVEVA Point Cloud Manager interface

Sharing data in the cloud

Vivix finally had all the engineering data it could want on its plant: 4.4TB that updated every month. But, managing all this data posed new problems.

At first, it used external hard drives and courier services to transfer data across the country between its plant and its engineering partner. Besides being time-consuming, this method posed obvious security concerns. It also required Vivix workers to travel across country to meet with the engineering company to verify the quality of its deliverables.

To make transferring data more secure and efficient—and give Vivix owndership over its own data—the company adopted a hybrid solution in which it stored much of its information in the cloud on AVEVA's industrial intelligence platform, CONNECT, while still keeping some on premises with AVEVA Asset Information Management.

Vivix's engineering partner already had its own cloud infrastructure, so Vivix used AVEVA Global to transfer data between its CONNECT databases and its engineering partner's cloud system. AVEVA Global allows Vivix to determine which of its databases the engineering company can access, and whether it has read access, write access or both.

"The technological support from the Industrial Transformation department was essential, as well as the integrated and collaborative work with external partners such as AVEVA."

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Claudia Lima
Engineering manager, Vivix

Designing a second plant

When Vivix expanded and started planning a second plant in 2021, the work it had put in digitizing its first plant and making that data available in the cloud paid dividends. With its data infrastructure in place, it could build its second plant more efficiently and sustainably and with a more robust engineering infrastructure.

Its engineering partner used AVEVA™ Unified Engineering to create a 3D design in a collaborative environment. Vivix's cloud connection with its engineering partner let it verify and approve daily design updates in real time. It used a single catalog for both the existing plant and design of the second plant so that the two projects maintained the same standards. While Vivix's engineering partner is responsible for catalog updates, Vivix has owned all the databases for the project from the start.

AVEVA Unified Engineering adds more information to the 3D model, including instrumentation, engineering, electrical, planning, scheduling, material management and construction management. Vivix also used AVEVA Asset Information Management to integrate the 3D model with document-management systems, and maintenance systems to create a systems, applications and products (SAP) system.

The result is a building-information-modelling (BIM) level-2 model with 4D capabilities that Vivix can use to run studies for engineering, scheduling, planning and maintenance.

"The migration to the cloud with [CONNECT] combined with the use of AVEVA Global, allowed the initial phase of the project to be developed in a unified environment, with a unified catalog and shared database between the factory engineering and designer's engineering."

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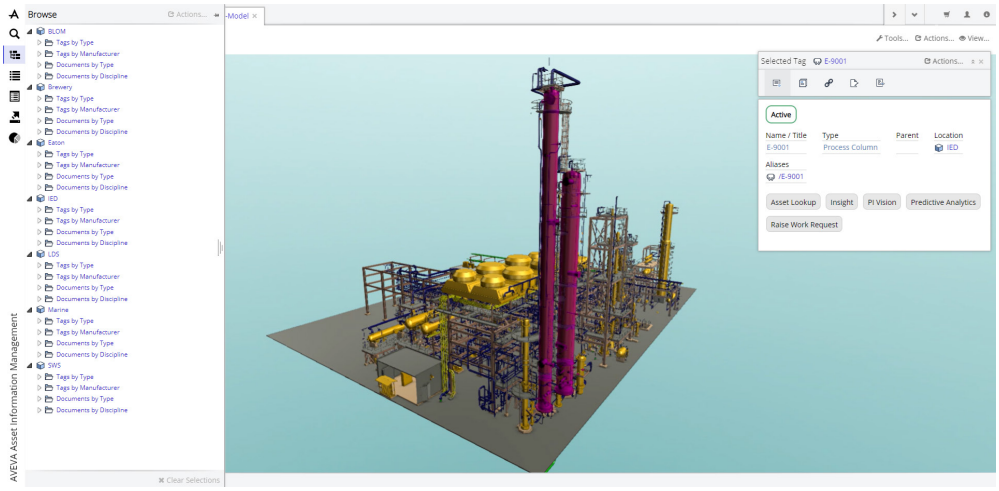
Claudia Lima
Engineering manager, Vivix



A 3D visualization in AVEVA Asset Information Management

Greater engineering efficiency and lower CAPEX

Vivix's engineering transformation has made its operations more efficient and sustainable. Because all its engineering databases are in the cloud on CONNECT, it no longer depends on local servers, which reduces its CAPEX. It has also reduced its dependence on its IT team by 80% and enjoys flexible OPEX based on how much it uses its software.

Now that it shares engineering data in the cloud, it no longer has to fly representatives back and forth to its engineering partner. As a result, its travel expenses are down 50%, which also cuts its carbon emissions.

Vivix's use of the 3D catalog and automatic data sharing in the cloud cut 15% from its engineering project costs. On top of the cost reduction, it also gets real-time access to its information, so it catches and reduces inconsistencies.

Vivix's engineering transformation gives it a cloud-based foundation that continues to give it operational agility as it plans to expand its manufacturing capacity to 1,900 tons/day and become the second largest Brazilian company in its sector.

References:

Lima, Claudia & Oliveira, Thiago. "Digital engineering: Cloud-based organizational transformation." resources.osisoft.com/presentations/vivix-glass

Watch the full presentation

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