Case Study: Refinery Pipeline Project, NCC Consortium, Brazil
Contractor: Consórcio Camargo Corrêa CNEC, Ipojuca, Brazil

Project Description:

Formed by the companies Construction and Trade Camargo Corrêa SA and CNEC Worley Parsons Engineering SA, the NCC was established in October 8, 2008 for the implementation of two Delayed Coking Units and two Caustic Regeneration Treatment units of Abreu e Lima refinery in Ipojuca -PE. The NCC Consortium stands out for being champion twice in a row on Camargo Corrêa Standard Award and the only company with five performance awards in the construction of the refinery.

Why Synchro:

Synchro Pro was used to integrate information from PDMS (mockup) and for project design and Controltub (execution management, contractually required by our client). The integrated model was created, allowing the project to be viewed through the computer, the Synchro model included detail for all stages of fabrication and assembly of piping, covering all status 'spool'.

For example, Synchro Pro was used for the following:

• 'Spools' cuts are made in the piping design. The purpose of these cuts is to enable the pre-fabrication, facilitating assembly by stretches. 'Spools' have a unique ID in Synchro, allowing control and traceability. Without Synchro’s 4D capability, the cuts were made by pipe lines and without information or insights on the status or traceability. This led to delay and error. This problem was solved using Synchro.
The execution of the pipeline project, due to its volume and complexity of implementation, is on the critical path of the project. Because of this, it was necessary to integrate the model and the schedule in order to avoid more delays and difficulties. Synchro increased control and reduced the chances of unknown impacts on the schedule. Using Synchro Pro’s 4D visualization, the project was able to meet and even exceed the targets.

**The Outcome:**

Synchro Pro’s 4D visualization was a way to reduce the use of different software which had with poor visibility into the project (PDMS and Controltub described earlier in the text). Today the entire weekly schedule is performed based on the Status of 3D pipe in Synchro. In project meetings between the trades, Synchro files can be used to display progress information through the use of the free viewer, further facilitating improvements and efficiencies in the schedule. With the detailing and identifying the status pipe, it was possible to minimize the impacts, improving in a meaningful way throughout the process. Below is listed some of the results achieved using Synchro Pro:

Manufacturing - identification of status through the colors allows us to identify and drive - Pipe Shop and quickly disseminate lists of priorities for manufacturing, streamlining the workflow and all costs involved.

Programming - increased from 70% to 95% in assertiveness programming, because when the spool's are divided on the model, we can see both the interference of various disciplines and give a sequence of reliable assembly. With that we could meet all goals and avoid detours.

Montage - Synchro is able to identify possible interference, resource requirements, and new possibilities for mounting, this information was previously only possible on site visit. Today, we manage more quickly and comprehensively utilizing the program. With possession of the programming in 3D images, the visualization decreases the time of the unfolding strategy for implementation of programming, because the visual effect clarifies instantly. As a result the work was a finalist for the Camargo Corrêa Standard Award as “Single Attitude.”

(This case study was written and provided by CNCC)