PD6928 How Not To Start Your First Huge BIM Plant Project

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When adopting new design tools such as Revit software, Inventor software, and AutoCAD Plant 3D software, there are some “No Go” rules for starting a project: don’t start with a large project; don’t start with a new client; don’t start without proper training. This class will share an insider’s view of the lessons learned from a $200 million, 192,000-square-foot, process plant facility expansion project that broke the rules and yet is a success today by any definition. We will explain why the client plans to incorporate Building Information Modeling (BIM) on all future projects. Topics of the class include training strategies, database considerations, data sharing between stakeholders, and data sharing between software platforms. Learn how Navisworks project review software saved the day. See how point clouds and reality computing are incorporated before, during, and after construction.

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Learning Objectives

At the end of this class, you will be able to:

- Discover the critical steps for setting up an AutoCAD Plant 3D software project
- Understand effective practices for comprehensive BIM integration on large projects
- Obtain strategies for overcoming initial training deficiencies
- Discover the benefits of Navisworks software on project coordination and visualization

About the Speakers

Todd is a designer with 25 years experience, has worked in the Pulp and Paper, Timber & Wood and now for the last 10 years in the Food industry. He has experience in heavy machine design, structural design and now process/piping design. Always has considered himself a Cad user. His introduction to Plant 3D was a $200 million dollar project and was a trial by fire. Todd is now employed with Power Engineers in Boise, Idaho.

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Shale is a CAD junkie turned tech guru with extensive multi-discipline and multi-platform experience on large projects. His passion is to minimize duplication of digital data, facilitate efficient integration of technologies, and complete projects successfully. His career started out using a K&E Leroy lettering set and has culminated in business ownership at ALL CAD, a consulting firm for 3D technology integration and project staffing.

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Back story

A $200,000,000 Green Field Plant Project with approx. 198,000 sq. ft of floor space. The client had a bad experience with a previous large project using SolidWorks and wanted something better.

The Client wanted the models done by disciplines and areas.

Work was done in in 7 different offices from Minneapolis to Seattle using 30 designers in all disciplines, using Plant 3D, Plant P&ID, Inventor, Revit, Navisworks, MEP and SolidWorks

Discover the critical steps for setting up a Plant 3D project

- **Server selection: SQLite vs. SQL Express/Enterprise**
- **How many users will be logging into the project**
- **How many locations**
- **How many different consultants**
- **Transferring of smart drawings and P&ID's from consultant and client.**
- **Project and set-up management**
- **Client Standards vs. out of the box (PIP ??)**
- **Customization of standard symbols**
- **Having 2 different data bases (client vs. consultant)**
- **File sharing the wrong way vs. correct way**

Understanding best practices for comprehensive BIM integration on large projects

- **Finding a good working relationship between client and consultants prior to engineering.**
- **Detailed kickoff meetings with all groups. (Management, Engineering, Design, Consultant, Contractor)**
    - **Deliverables**
    - **Drawings**
    - **Bill of Materials**
    - **Iso drawings**
    - **Ortho drawings**
    - **Equipment lists and other spread sheets that will be required by the Client**
- **Very important to know what the client wants to do with all the information that the project is generating.**

- **Equipment designation generation**
    - **Each equipment class or type needs to have its own identifier**
    - **Do not identify all of your equipment as EQ-XXXX**
    - **Break out into specific equipment types**
    - **pump types, tanks, valve types, conveyor types, boilers, air filters**
    - **PC-4125**
    - **TS-4125**
    - **SV-4125**

- **Once data base is set and approved by Client, leave it alone.**

- **If you are building a database for a client that wants "their own valve symbols, equipment symbols, custom callouts etc. give yourself at least 2 weeks to do this.**

- **If you are not familiar with this part of the plant set-up process hire someone.**

- **Test it, Test it and Test it.**

- **Get a buy off from the client**

- **Attempt to have the P&ID's at about 85% complete before you start with layout and piping.**

- **Work with the client to get your models from vendors soon as possible.**

- **Shrink wrap all vendor files as you get them.**

- **Manage your models10 to 15 meg max.**

Having strategies for overcoming initial training deficiencies

- **Client, consultants must have subject matter expert/Internal Champion**

- **Set up project team training prior to project startup**

- **Make your training project specific cut out the non-related content**

- **Minimal training to add more resources to project**

- **ALL Stakeholder needs a subject matter expert (SME) for Plant 3D/P&ID who is an internal champion, and owner of this technology and project success**
- **Plant owners are in isolated silos and usually do not have the experience of applying technology across multiple disciplines**
- **Defined mandate from owner gets everyone's attention if they want in on the project**

Seeing the benefits of Navisworks on project coordination and visualization

- **Use Navisworks as part of the modeling work flow**
    - **Work in small areas using Plant 3D**
    - **Have entire coordinated model running in Navisworks and refresh after changes**