Get Powered Up: How to Implement AutoCAD Electrical

Robert Stein
Senior Product Owner

Tiffany Bachmeier
Manufacturing Consulting Services Manager
About the speaker

Robert Stein

Based in the Novi, Michigan Autodesk Office, Robert Stein is a Senior Product Owner for Fusion Data Management. Robert has spent his career focusing on manufacturing and data management. Robert has managed consulting teams with focus on data management and manufacturing as well. In addition to his consulting experience he has worked for customers and Autodesk Resellers. Robert has worked on a number of large-scale implementations and custom programming projects with Autodesk manufacturing products, including Inventor software, AutoCAD Electrical software, AutoCAD Mechanical software, and the Vault software family.
About the speaker

Tiffany Bachmeier

is the Manager of the Manufacturing Consulting Team for the Americas within Autodesk Global Consulting Delivery. Tiffany leads an amazing team of brilliant consultants focused on manufacturing and advanced manufacturing solutions. Previously, she was an Autodesk Consultant and an Autodesk Certified Instructor for over fourteen years with a primary focus on AutoCAD Electrical, but she also focused on AutoCAD, Inventor, and a variety of other products in the Autodesk family. She started on AutoCAD R10 and has carried a strong passion for Autodesk products ever since.
Implementation vs. Installation
<table>
<thead>
<tr>
<th>Installation</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Download software</td>
<td>Holistic approach for the solution</td>
</tr>
<tr>
<td>Install and follow the default prompts</td>
<td>• Create One Deployment for all Users</td>
</tr>
<tr>
<td>Lather, Rinse, and Repeat</td>
<td>Data Management</td>
</tr>
<tr>
<td>Often considered “Out of the Box” and the “Faster path”</td>
<td>• Settings, Symbols, Catalogs, Standards, Wire Types, Template Configuration, etc…</td>
</tr>
<tr>
<td>• Partial Productivity</td>
<td>• Sharing of all Related Files &amp; Standards</td>
</tr>
<tr>
<td>• Individual “Island” Installs</td>
<td>Training and adoption support is crucial</td>
</tr>
<tr>
<td>• Never the right path</td>
<td></td>
</tr>
</tbody>
</table>
AutoCAD Electrical Implementation Methodology
AutoCAD Electrical Implementation Methodology

Prerequisites
- Up-to-date working knowledge of vanilla AutoCAD
- Have taken an AutoCAD® Electrical Essentials course at an Autodesk Authorized Training Center

Deployment
- Configure Deployment
- Create Deployment
- Install on users’ machines

Templates & Settings
- Create Drawing Template(s)
- Create Project Template(s)
- Decide what ACADE Support Files to utilize and create

Template Project
- Create a complete Standard Project(s) to be used as a template for all future projects
Discover AutoCAD Electrical paths

• **Symbol Block Libraries**
  - C:\Users\Public\Public Documents\Autodesk\AcadE {version}\Libs

• **Insert Component Icon Menus**
  - C:\Users\{username}\AppData\Roaming\Autodesk\AutoCAD Electrical {version}\{release}\{country code}\Support

• **Catalog Database**
  - C:\Users\{username}\My Documents\Acade {version}\AeData \{country code}\Catalogs
Discover AutoCAD Electrical paths

**Support Directories**

- C:\Users\{username}\AppData\Roaming\Autodesk\AutoCAD Electrical \{version}\{release}\{country code}\Support

- C:\Users\Public\Public Documents\Autodesk\AcadE \{version}\Support\{country code}\Support

- C:\Program Files\Autodesk\AutoCAD\{version}\Acade\Support\{country code}\Support

- C:\Program Files\Autodesk\AutoCAD\{version}\Acade\UserDataCache\{country code}\Electrical\UserSupport
AutoCAD Electrical Implementation Methodology

• **Implementation Tips**
  o Try to work as “out of the box” as you can with ACADE. It will make your implementation much smoother. (Even if it means, changing the way some of your symbols look, etc.)
  o Although your project files can access drawings from many different folders, it is a best practice to keep the project file, all of its drawings, and project-specific support files in the same place.
Deployment – SQL vs. Access
SQL Catalog – Why? What I use works well

<table>
<thead>
<tr>
<th>Microsoft Access</th>
<th>SQL</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ease of use</td>
<td>• Other Enterprise App</td>
</tr>
<tr>
<td>• Readily available</td>
<td>• Larger Data Limits</td>
</tr>
<tr>
<td>• Portable</td>
<td>• Centralized Database</td>
</tr>
<tr>
<td></td>
<td>• Maintenance</td>
</tr>
<tr>
<td></td>
<td>• Stored Procedures</td>
</tr>
</tbody>
</table>
SQL Catalog – What’s Required

**AutoCAD Electrical 2017 or later**
- This was when it was first introduced

**Instance of SQL**
- Note: I haven’t found any documented requirements about minimum SQL requirements

**Content Migration Utility**
- Note: Available during installation of AutoCAD Electrical

**Source Microsoft access catalogs (Installed with AutoCAD Electrical)**
AutoCAD Electrical Content Migration Utility

- Located in Extra tools of installation.
- Required for creating / importing
- Only available through initial installation media
**SQL Catalog – Getting Started**

**SQL Instance**

- Could not find documented minimum requirements
- No specific config options required
- Set up a maintenance plan
- Do NOT set up on the same SQL instances as Autodesk Vault
SQL Catalog – Migrating Content

Create & Migrate Database
- This will create the appropriate DB structure
- Allows migration of existing content
- Name the DBs so you and others know what they mean

Migrate Database
- Used primarily when you already have a database created and you want to import additional data.
Configure AutoCAD Electrical to See SQL

Configure Catalog Database

• Project Tab in AutoCAD Electrical
• Allows you to configure between SQL and Access
• Points to SQL Server / Database name
• You can toggle between options
AutoCAD Electrical Settings
AutoCAD Electrical Settings

Environment Settings

Project Settings - Stored in project file (.wdp)

Drawing Settings - Stored in WD_M or WD_PNLM

Instance Settings - Instance based, on demand override
wd.env Location

Default Location: Windows Vista/7/8/10: C:\Users\{username}\Documents\Acade {version}\AeData

Defining a New Location:
- path is defined in the wd_load.lsp file
- C:\Program Files\Autodesk\AutoCAD {version}\Acade

If you want to change where the WD.env is stored, make sure to update the wd_load.lsp file. (i.e. network location)

Alternative: add the new path to the ENV as the top path in the Support File Search Path in the Options DB
How to define a Project-specific wd.env file

- Copy the wd.env file to the same folder as the project file
- Rename it to `<projectname>.env`
- Open the new file in Notepad
- Make the desired project-specific changes
- Save it
Template Configuration
**Project Settings**

- Library & Icon Menu paths
- Catalog Lookup Preferences
- Real Time Error Checking Options
- Component Tag Format, Tag Options, Component Options
- Wire Number Format, Wire Number Options, Wire Number Placement and Wire Type
- Cross Reference Format, Cross Reference Options, Cross Reference Display
- Arrow Style, PLC Style, Wiring Style, Fan-in/Out Marker Style
- Ladder Defaults, Format Referencing, Scale, Tag/Wire Number/ Wire Sequence Order, and Layers
Template Project Settings

Utilize Copy Settings from Project File
• Configure and Templatize
• Consistency across projects
• Flexible for Updates
Think about the following when setting up your libraries:

- Do I have multiple customers with different symbol requirements
- Do I go offsite (or off the network)

The reason for these two important questions is that it helps define how you configure your library.

- Multiple customers means different symbol libraries and different paths
- Offsite work means network and local copies
Project Settings – Network / Local

Network Location – Central Access for everyone

Local – Out of sync symbols

Solution:
You have several options

Example:
Batch file that uses robocopy to copy from the network to the local.

Make sure your library paths have network first in the list, then local secondarily.
Automatically running the script

Use Windows Tasks Scheduler
Run off of many events like:

- Computer startup
- Windows login
- Daily, weekly, monthly etc...
- Specific event
Drawing Settings

Drawing settings define how AutoCAD Electrical will behave for that specific drawing. Here are the high level items:

• Drawing Description Lines, For Reference Only, IEC-Style Designators, Sheet Values such as Sheet Number, Drawing Number, section and sub section
• Component Tag Format
• Wire Number Format, Wire Number Placement
• Cross Reference Format, Cross Reference Display
• Arrow Style, PLC Style, Wiring Style, Fan-in/Out Marker Style
• Ladder Defaults, Format Referencing, Scale, Tag/Wire Number/ Wire Sequence Order, and Layers
Drawing Settings

Drawing Settings tab is invaluable for some key information:

- **Drawing Description Lines** – mappable to title block
- **Sheet Values**
  - Sheet Number
  - Drawing
  - Section
  - Sub-Section
Components Tab
This allows us to configure how our component tags are calculated using replicable parameters.
Drawing Settings – Wire Numbers

Wire Numbers Tab
This allows us to configure how our Wire Numbers are calculated using replicable parameters.
Discover the WD_M Block

- Whenever a command is started, AutoCAD Electrical checks for the existence of this block in the drawing and reads the configuration settings for the command from the attributes.

- If the block file does not exist in the drawing, AutoCAD Electrical prompts you to automatically insert it before the command is executed.
Discover the WD_M Block

- Most of the drawing properties settings are saved in this invisible block
- Located at the Origin (0,0,0) of every ACADE drawing
- WD_PNLM Block
  - Stores the drawing configuration settings specifically for the panel drawing properties
- Both WD_M & WD_PNLM can exist in the same drawing
- Make sure these are present in your Template drawings
Customizing AutoCAD Electrical Support Files

• Multiple versions of these files can exist

• Search Sequence:
  o <project name>.<file extension> located in the same folder as the active .wdp file
  o DEFAULT. <file extension> located in the same folder as the active .wdp file
  o DEFAULT. <file extension> located in the Support Directories
Component References Files

- Description File: wd_desc.wdd
- Installation Codes: default.inst
- Location Codes: default.loc
Project Description Line Labels

- Customized WDL file (text file)
- Unlimited number of lines can be stored in this file
- Format for the file is LINEx=label
- Used to add additional “information” to a project that can be displayed in reports as well as mapped to title block attributes
Updating Title Block Attributes

- Ribbon: Projects Tab > Other Tools Panel > Title Block Setup
- Choose Type of Mapping
- Choose Titleblock for Mapping
- Map Project Values (Description Lines)
- Map Drawing Values (Drawing Properties)
- Map User Defined Values
Discover AutoCAD Electrical intelligent blocks

- Vanilla AutoCAD block with specifically named attributes
- Use the Symbol Builder to turn existing vanilla ACAD blocks into ACADE intelligent blocks
- A specific naming convention is used to enable certain automation features
Template Best Practices

.DWT
Create AutoCAD Template file (.DWT) with Drawing Settings defined

.WDP
Create a Project Template (.WDP) with Project Settings defined

Full Project
Create a full AutoCAD Electrical Template Project (your ideal project fully completed)
Migration to New Releases
AutoCAD Electrical Migration Utility

- Don’t uninstall the previous version until you run the utility in the new version
- Copy/Merge Options are KEY to success
- Don’t just hit OK 😊