

INTERGRAPH®

20  16

90 CADWorx Tips in 90 Minutes

Matt Worland

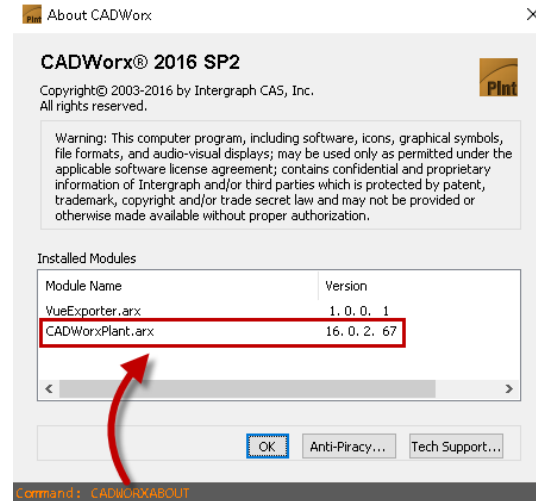
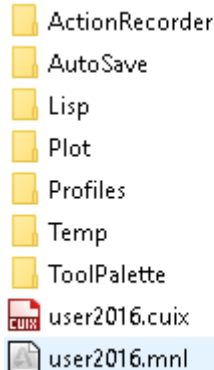
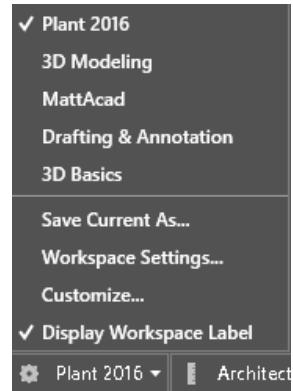
Senior Application Engineer



Objectives:

Share 90 of my favorite tips and techniques that have increased my productivity and efficiencies during my years of design using CADWorx

- 1) Create your own workspace
- 2) Create and use a custom CUIX file
- 3) Export your CADWorx Profile regularly
- 4) Run the latest version when starting a new project



- 5) Setup your piping rules
- 6) Project Standard Config files
- 7) Project Standard Client Approved Specification files
- 8) Create Assemblies
- 9) Project Standard Equipment Data files
- 10) Project Standard Insulation Files
- 11) Create ISOGEN styles for different needs

		<input type="checkbox"/> Include in CFG
Piping Rules		
Apply Size Rule	Automatic	<input checked="" type="checkbox"/>
Apply Specification Rule	Automatic	<input checked="" type="checkbox"/>
Apply End Type Rule	Automatic	<input type="checkbox"/>
Apply Pipe Length Rule	No	<input checked="" type="checkbox"/>
Apply Weld Insertion Rule	Automatic - Buttweld Only	<input type="checkbox"/>
Apply Gasket Insertion Rule	Automatic	<input type="checkbox"/>
Apply Bolt Insertion Rule	Automatic	<input type="checkbox"/>
Apply Trimmed Elbow Rule	No	<input checked="" type="checkbox"/>
Apply Pipe Healing Rule	Automatic	<input checked="" type="checkbox"/>
Apply Branch Table Rule	Automatic	<input type="checkbox"/>
Apply Flange Insertion Rule	Automatic - Use Spec Setting	<input type="checkbox"/>
Apply Bolt Hole Orientation Rule	Automatic - 2 Holes	<input checked="" type="checkbox"/>
Apply Pipe End Prep Rule	Automatic	<input type="checkbox"/>
Apply Auto Coupling Rule	No	<input checked="" type="checkbox"/>
Apply Line Number Rule	Always Inherit	<input checked="" type="checkbox"/>
Apply Change Data Rule	Tag, ...	<input checked="" type="checkbox"/>
Apply O-Let Minimum Spacing Rule	3	<input checked="" type="checkbox"/>
Center Line	On	<input checked="" type="checkbox"/>
Apply Skew Pipe Maximum Angle	15.0000	<input checked="" type="checkbox"/>
Variable Component Length Assign	Show Options	<input checked="" type="checkbox"/>
Incompatible Component Actions	Update Compatible Components	<input type="checkbox"/>

12) Always start with a CADWorx template - Don't copy old files

13) Design near 0,0,0

CADWorx Error Number 2012

CADWorx coordinate limits are as follows:

In imperial coordinates (English / Inch Mode), the limit is approximately:

-9000000 inches to 99000000 inches

-750000 feet to 8250000 feet

-140 miles to 1500 miles

In metric coordinates (Metric / Metric Mode), the limit is approximately:

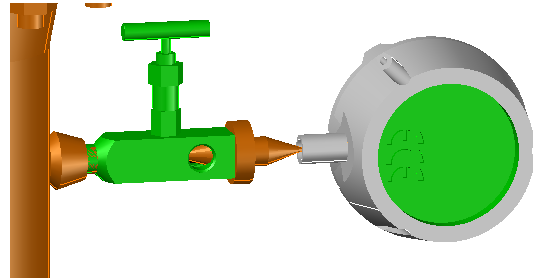
-9000000 millimeters to 99000000 millimeters

-9000 meters to 99000 meters

-9 kilometers to 99 kilometers

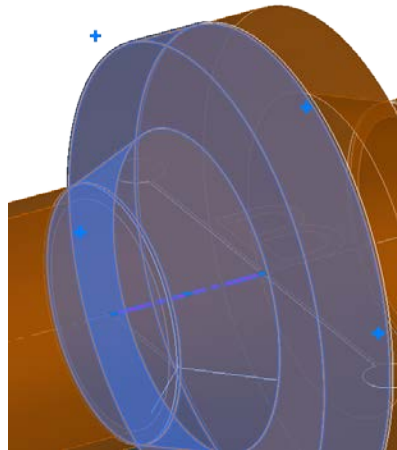
14) Use AutoCAD north as plant/world north

- 15) Don't modify OOTB files - Create copies of modified files (CATS, PRJs, Blocks, Templates...)
- 16) Create missing components with OOTB component types Orifice Plates
- 17) Create usershapes for everything else - Detailed Filters
- 18) Use Topworks
- 19) Use optimized vendor drawings when possible - Topworks, Usershapes and Equipment



20) Use Orifice taps on the flange data tables

OTD	Orifice Tab Diameter	OTD	OTA	OTN
OTA	Orifice Tab Angle	0.5000	45.00	8
OTN	Orifice Tab Number			



21) Use Excel like formulas in the spec editor

=MAINSIZE*1.5

22) Set your defaults in your catalog and PRJ

23) Use custom colors for non engineered items

24) Use long description formats

=DESC_CMP_TBL, MAINSCH_SCH_TBL, SPEC_MAT_TBL GRADE_MAT_TBL, STANDARD_CMP_TBL

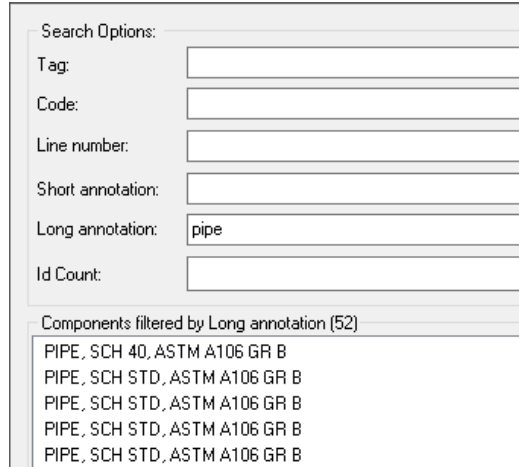
25) Use Schedule Assignment Tables

26) Use Material Assignment Tables

27) Use custom data in your PRJ to track status data in your model

28) Export your specs for checking

29) Use find tab on line view palette to keep an eye on your BOM



Search Options:

Tag:

Code:

Line number:

Short annotation:

Long annotation:

Id Count:

Components filtered by Long annotation (52)

- PIPE, SCH 40, ASTM A106 GR B
- PIPE, SCH STD, ASTM A106 GR B
- PIPE, SCH STD, ASTM A106 GR B
- PIPE, SCH STD, ASTM A106 GR B
- PIPE, SCH STD, ASTM A106 GR B

30) Use database to fix Long Descriptions



- 31) Use line numbers in static mode
- 32) Use line numbers from your PID database.
- 33) Use line view palette
- 34) Create line view filters
 - Issue Stages
 - Stress Stages
 - Services
 - Specs

35) Use Routing Command

36) Use Connect option in pipe routing

Pick end point or [component **L**ist/**S**lope/**sK**ew/**E**levation/**P**lane/**R**eference/**F**itting mode/el**B**ow type/**U**ndo/**C**onnect/**T**oggle length/**A**lignment]:

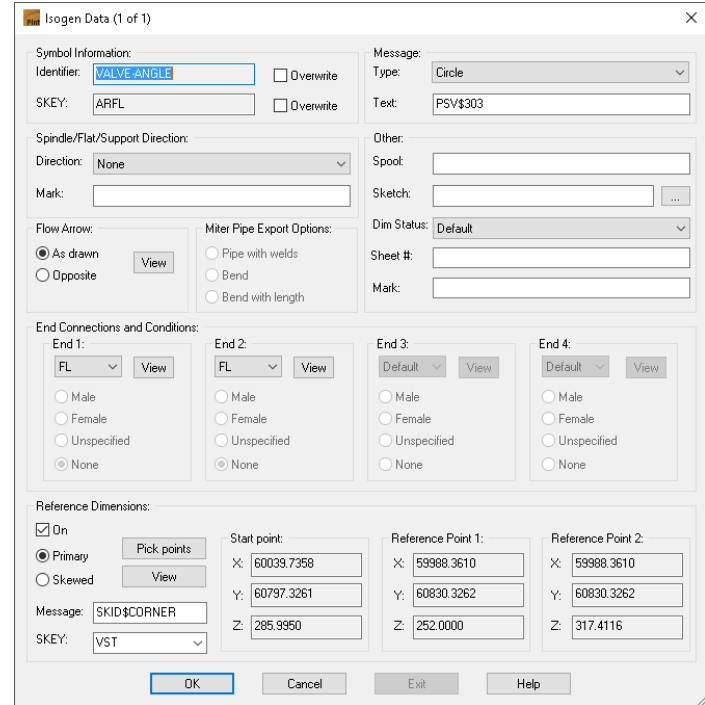
37) Use BOP Alignment option to route pipe on top of pipe supports

Specify start point or [**A**lignment/**R**eference] <last point>:

38) Use the Elevation option when routing pipe to drop an elbow down

39) Swap a support using the Design Grip

- 40) Place all data into model for no touch ISOs
- 41) ISOGEN Data - Use the ICEDIT command
- 42) Isogen Start and Stop signs
- 43) Use Discontinuity Palette



The image shows the 'Isogen Data (1 of 1)' dialog box in a software application. The dialog is organized into several sections:

- Symbol Information:** Includes fields for 'Identifier' (set to 'VALVE-ANGLE'), 'SKEY' (set to 'ARFL'), and checkboxes for 'Overwrite'.
- Message:** Includes a 'Type' dropdown (set to 'Circle') and a 'Text' field (set to 'PSV\$303').
- Spindle/Flat/Support Direction:** Includes a 'Direction' dropdown (set to 'None') and a 'Mark' field.
- Flow Arrow:** Includes radio buttons for 'As drawn' (selected) and 'Opposite', with a 'View' button.
- Miter Pipe Export Options:** Includes radio buttons for 'Pipe with welds', 'Bend', and 'Bend with length'.
- Other:** Includes fields for 'Spool', 'Sketch', 'Dim Status' (set to 'Default'), 'Sheet #', and 'Mark'.
- End Connections and Conditions:** Contains four sub-sections for 'End 1', 'End 2', 'End 3', and 'End 4'. Each has a dropdown (set to 'FL') and radio buttons for 'Male', 'Female', 'Unspecified', and 'None'.
- Reference Dimensions:** Includes a checked 'On' checkbox, radio buttons for 'Primary' (selected) and 'Skewed', and a 'Pick points' button. It also has fields for 'Start point' (X: 60039.7358, Y: 60797.3261, Z: 285.9950) and two 'Reference Point' entries (1 and 2) with their respective X, Y, and Z coordinates.

At the bottom, there are buttons for 'OK', 'Cancel', 'Exit', and 'Help'.

44) Use Viewbox to quickly create saved views

View Editing

View set name: P-200_Overall

First corner point:

Specify On-screen

X: 4996

Y: 5048

Z: -1

Second corner point:

Specify On-screen

X: 5029

Y: 5071

Z: 30

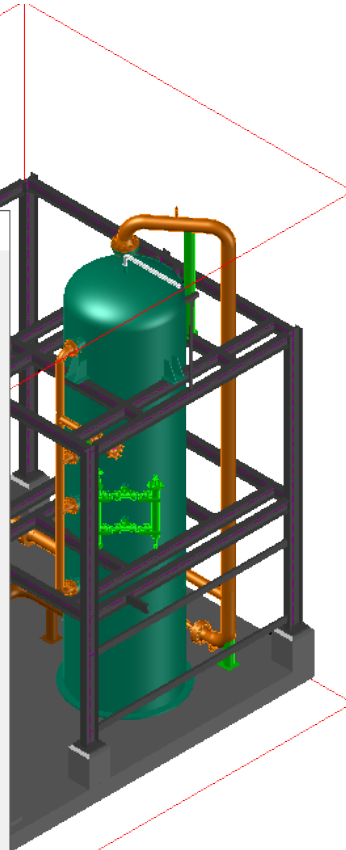
Views:

View Type	Name	Available
Top	P-200_Overall-Top	<input checked="" type="checkbox"/>
Bottom	P-200_Overall-Bottom	<input type="checkbox"/>
Left	P-200_Overall-Left	<input checked="" type="checkbox"/>
Right	P-200_Overall-Right	<input checked="" type="checkbox"/>
Front	P-200_Overall-Front	<input checked="" type="checkbox"/>
Back	P-200_Overall-Back	<input checked="" type="checkbox"/>

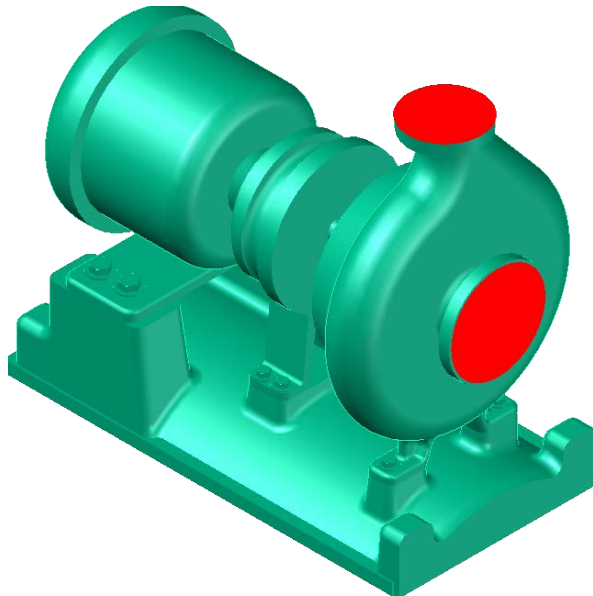
Select All Delete All

Set Current Isolate Box Show All

OK Cancel Help

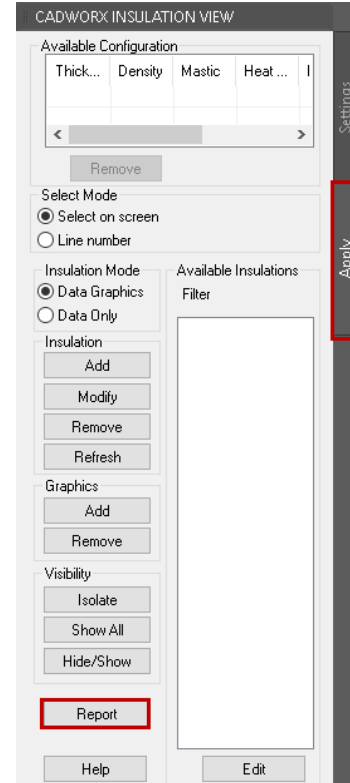
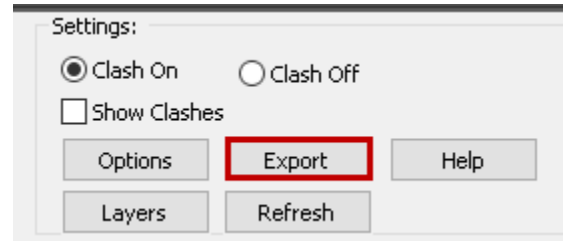
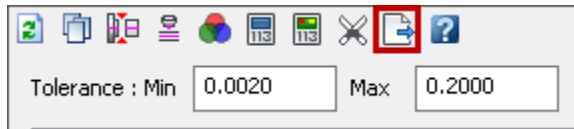


- 45) Use the equipment palette
- 46) Don't use AutoCAD commands on equipment
- 47) Use generic nozzle attach

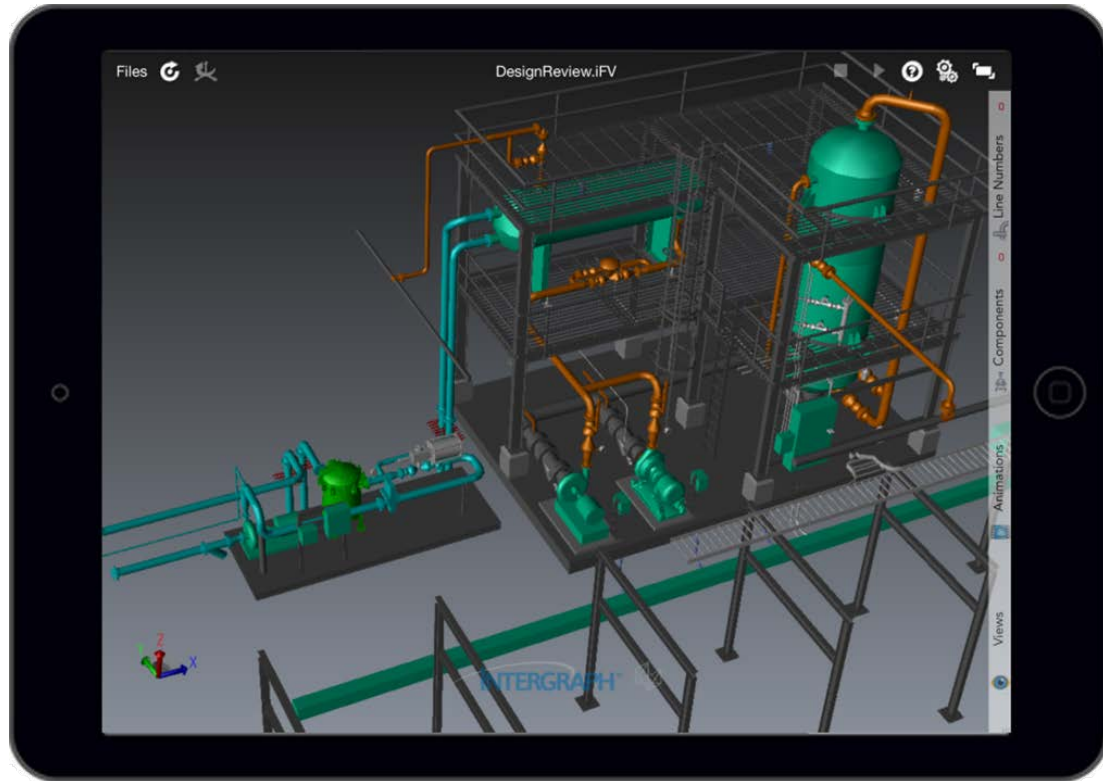


Equipment Name:	
P-101A	
Placement Components	
<input checked="" type="checkbox"/> Impeller	
Description	
Width	6.000000
Diameter	29.000000
Extension diameter	6.000000
Extension length	6.000000
Flip orientation	No
<input checked="" type="checkbox"/> Pump base	
<input checked="" type="checkbox"/> Pump nozzle [SUCTION]	
Description	SUCTION
Distance	0.000000
Nozzle details	6" - 300 - LWN
Layout angle	0.00
Length	3.750000
Suction side	Yes
<input checked="" type="checkbox"/> Pump nozzle [DISCHARGE]	
<input checked="" type="checkbox"/> Shaft	
<input checked="" type="checkbox"/> Coupling	
<input checked="" type="checkbox"/> Motor	

- 48) Pipe BOM, Pipe Supports BOM, Steel BOM, HVAC BOM
- 49) Insulation Reports
- 50) Center of Gravity Reports
- 51) Weld Total Reports
- 52) Clash Detection Report
- 53) Discontinuity Report



54) Use Design Review to create iCDR files to view in the field



55) Never rename an Xrefs

56) Never modify CADWorx models using REFEDIT, Use XOPEN

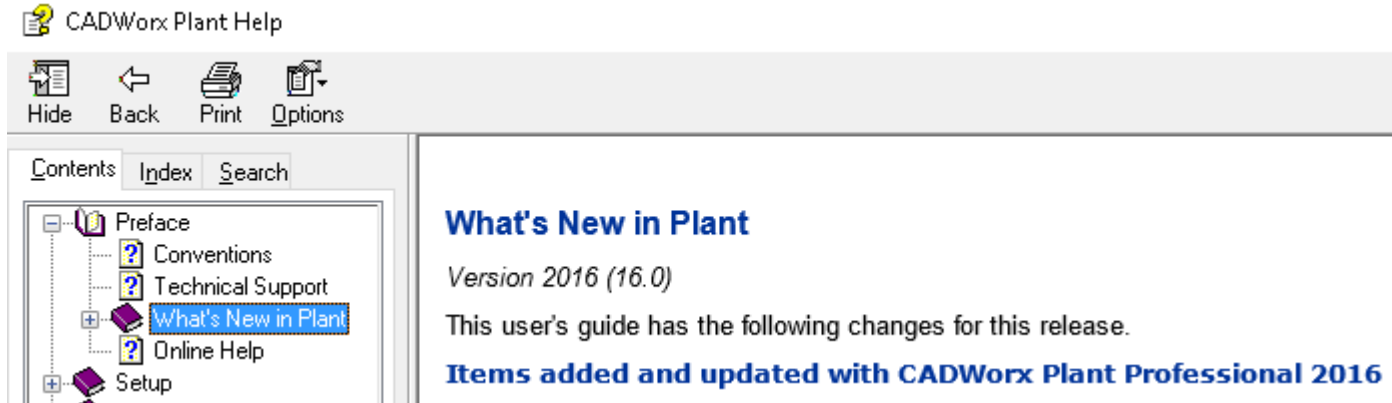
57) Xref Working Models as Overlays

58) Xref Overall Models as Attachments

59) Use Xrefs to lock your issued lines

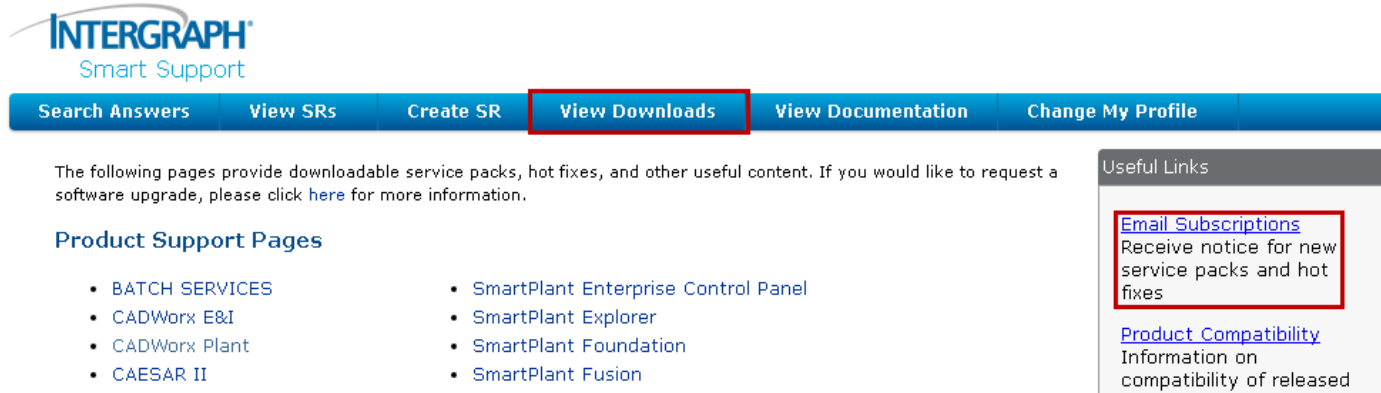


- 60) MANUAL - Learn what you already have
- 61) Learn the new features each release
- 62) LSP command - Learn hidden commands and variables
- 63) Join the Beta team



64) Receive notification from SmartSupport when software updates are available

– <https://smartsupport1.intergraph.com>



The screenshot shows the Intergraph Smart Support website. At the top is the Intergraph logo and the text "Smart Support". Below this is a navigation bar with several buttons: "Search Answers", "View SRs", "Create SR", "View Downloads" (which is highlighted with a red box), "View Documentation", and "Change My Profile". Below the navigation bar, there is a paragraph of text: "The following pages provide downloadable service packs, hot fixes, and other useful content. If you would like to request a software upgrade, please click [here](#) for more information." Below this text is a section titled "Product Support Pages" which contains two columns of links. The first column includes "BATCH SERVICES", "CADWorx E&I", "CADWorx Plant", and "CAESAR II". The second column includes "SmartPlant Enterprise Control Panel", "SmartPlant Explorer", "SmartPlant Foundation", and "SmartPlant Fusion". On the right side of the page, there is a "Useful Links" section. It contains two links: "Email Subscriptions" (which is highlighted with a red box) and "Product Compatibility". The "Email Subscriptions" link has a description: "Receive notice for new service packs and hot fixes". The "Product Compatibility" link has a description: "Information on compatibility of released".

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Smart Support

Search Answers View SRs Create SR **View Downloads** View Documentation Change My Profile

The following pages provide downloadable service packs, hot fixes, and other useful content. If you would like to request a software upgrade, please click [here](#) for more information.

Product Support Pages

- BATCH SERVICES
- CADWorx E&I
- CADWorx Plant
- CAESAR II
- SmartPlant Enterprise Control Panel
- SmartPlant Explorer
- SmartPlant Foundation
- SmartPlant Fusion

Useful Links

- [Email Subscriptions](#)
Receive notice for new service packs and hot fixes
- [Product Compatibility](#)
Information on compatibility of released

65) Follow Blogs for latest information

66) Participate on the forums

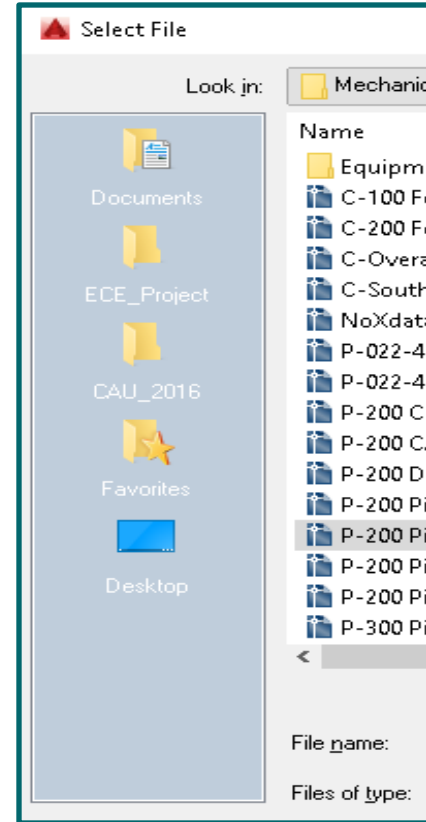
67) Participate on LinkedIn

- CADWorx User Group
- Intergraph CADWorx and Analysis Group
- Intergraph CADWorx
- CADWorx and Analysis University

68) Get involved internally, Lunch and Learns

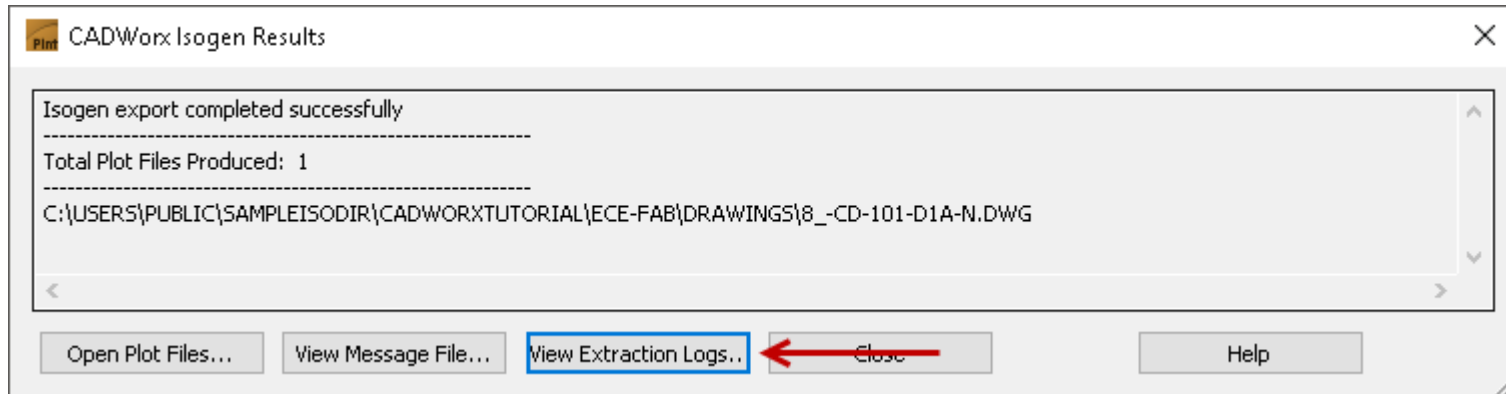
69) Network with as many experts that are here as you can

- 70) Customize open file dialog shortcut folders
- 71) Type your commands
- 72) Learn the Command Line options
- 73) Change command line settings to search layers and sysvars
- 74) Use the command lines learning capabilities
- 75) Create you own quick key commands

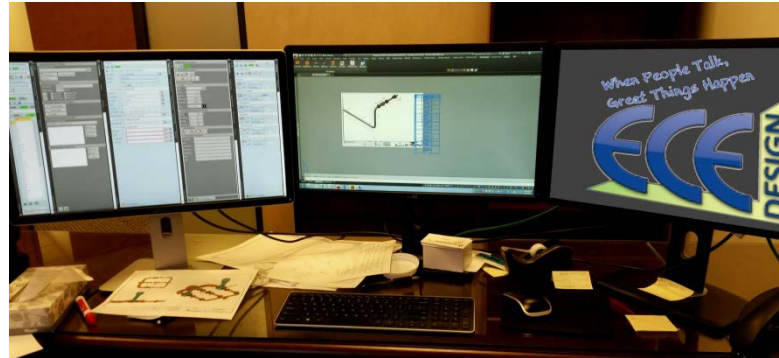


- 76) Use heads up display dynmode = 3
- 77) Use copy array - Pipe Racks
- 78) Rotate with Copy option
- 79) Use different view styles at different times - Don't always stay in Rendered mode
- 80) Shift Middle Mouse Orbit (ORBITAUTOTARGET)
- 81) Use in canvas tools to switch between saved views
- 82) View Cube use WCS - Turn off View Cube

- 83) Use vanilla AutoCAD to recover the files.
- 84) Recover models using the database
- 85) Vars2scr to compare variables to another drawing
- 86) Use Isogen Export Files from IGO command for troubleshooting



- 87) SSD Hard drives
- 88) Max your RAM to your budget/computer
- 89) Dual MONITORS or more
- 90) Verify your Graphics Card is Autodesk Certified
 - www.autodesk.com/graphics-hardware
- 91) Ensure you are running the computer manufactures latest driver for your Graphics Card



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Thank you!