Collaborative Workflows Between AutoCAD Plant 3D, Revit and AVEVA PDMS

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At the end of this class, you will know how to:

- Share multidisciplinary data between Autodesk Plant software and PDMS
- Import existing PDMS models in AutoCAD and Revit
- Convert PDMS specification database into AutoCAD Plant 3D
- Convert Plant 3D and Revit models into intelligent PDMS models
Agenda

- Background
- Plant 3D and PDMS
- Revit and PDMS
- Project samples
Background
Why AVEVA PDMS?

- PDMS dominates the Norwegian oil/gas market (and other markets)
- Operators and contractors standardized
- Plant 3D start in 2012
- Customer requests for Revit and Inventor support
  - Inventor: Skids / equipment
  - Revit: Onshore plants and offshore living quarters
- Owner/Operators are positive

- Now ISY Plant family
AVEVA PDMS basics

- Multi-disciplinary, originally Piping, Equipment and Structural
- Proprietary database, no graphics files
- Cat. / spec. database (parametric components)
- Equipment as primitives (box, cyli, extrusion etc)
- Project is incomplete without cat. / spec.
- Fixed Design hierarchy (Site, Zone etc)
- Also Everything3D (E3D)
- Review format (RVM)
  - Geometry and hierarchy
  - Pair with attribute export
Plant 3D and PDMS...
Workflow to address:

- Existing PDMS plant
- Modification project using Plant 3D
- Convert Plant 3D back into PDMS

In more detail:

- Export existing PDMS data
- Import into AutoCAD
- Analyze spec to be used
- Convert spec from PDMS to Plant 3D
- Create new piping/equip. in Plant 3D
- Convert modified / new design from Plant 3D to PDMS
Import PDMS model into AutoCAD
View video on YouTube
Export and convert PDMS spec.
Export the AS200_VA PDMS piping spec.
XML file produced...
Create Plant 3D spec.

Additional settings / mappings
Create new design in Plant 3D and export..
XMpLant file based on ISO 15926 contains:

- **Piping**
  - Piping logic
  - Spec. references
  - Connect points
  - Properties

- **Equipment**
  - Geometry (primitives)
  - Nozzles (linked to pipe)
  - Properties
Import and edit model in PDMS...
View video on YouTube
Revit and PDMS...
PDMS models into Revit

- Source: rvm + attribute files
- Pipe, Equi, Stru → Revit Generic Model Families
Revit models into PDMS

- Revit plugin creates PDMS macro file
- Element mapping
- Geometry to primitives
- Beam section mapping
- Revit Category to PDMS Zone / Stru
- Properties to PDMS attributes
- Properties as PDMS names
- Project- or local coordinate system
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Converted model in AVEVA PDMS
Project samples...
Lab - building (Statoil LNG plant)

- Contractor: Multiconsult
- Tools
  - Revit (arch., structural)
  - Magicad (HVAC, piping, ele)
- One Revit model per discipline
- Delivery December 2015 (building and PDMS model)
- PDMS conversion by Norconsult
- Requirements:
  - Structural section mapping
  - Tag information
Architectural Revit model
Architectural PDMS model
Structural Revit model
Structural PDMS model
HVAC, Piping Revit
HVAC, Piping PDMS
Electrical, PDMS
All disciplines PDMS
Biomass Power Plants (UK)

- B&W Vølund to design, manufacture, build, operate and maintain 3 biomass facilities in the UK (40 MW each)
- Concurrent engineering, several contractors
- PDMS, Revit, Inventor
- Norconsult conversion scope:
  - Convert Civil contractor Revit models into PDMS
  - Convert process plant PDMS models into Revit
  - Various Inventor models
  - Every 2 weeks
PDMS process plant into revit
PDMS process plant into revit
Revit arch. source model (contractor)
PDMS arch. model
Revit structural model
PDMS structural model
Revit assembled model
PDMS assembled model
Summary
Class summary

- ISY Plant conversion software enables plant data sharing between Autodesk Plant software and AVEVA PDMS

- PDMS models, graphics and properties, may be brought into AutoCAD and Revit environment and used as a basis for new design or for drawing production

- PDMS specs. may be converted into Plant 3D. If converted specs are used in Plant 3D project, no mapping is required when converting Plant 3D models back into PDMS

- Plant 3D piping / equip may be converted into native PDMS model using XMPlant as a transfer format

- Revit models may be converted into PDMS as a combination of spec driven /non-spec driven elements into a customizable PDMS model structure

- The conversion software developed by Norconsult is currently being used in real projects.

- More information on [www.isy.no](http://www.isy.no)
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