AVEVA Instrumentation

- 5th Generation Instrumentation Design Software

Manages and creates Instrumentation & Electrical design documentation
- Easy to learn, fast and accurate

Stores data in a multi-user relational database
- all project team members share current data

AVEVA Instrumentation produces:
Instrument Datasheets, Instrument Index, Loop Drawings, Termination Drawings, Hookup Diagrams, Cable Schedules, Bill of Materials and Cable Block Diagrams (can be used to create Electrical Schematic diagrams)

User quote: “AVEVA Instrumentation is easier to learn, more productive & cost effective than other products”
Software Design

- Utilises Industry Standard Software
  - Windows XP (with .NET 3.5 SP1) with intuitive graphical use interface based on Microsoft Office 2007 style & online Help
  - Microsoft Access 2000 or SQL Server 2005/2008 Database (also SQL Server Express)
  - Autodesk AutoCAD Release 2008, 2009 for CAD Drawings
Features

** Deliverables are stand-alone & do not require AI12 for access/editing **

Fast, accurate, less errors, more productive. Easy to learn, use and manage.

Multi-user relational database – Design data is shared & always up to date

‘Objects’ enable very fast data entry (supports copy, change catalogue definition etc)

Drawings auto-generated (reports only) – huge reduction in CAD man-hours

Change management & Audit logging
Features

- Import/Export data from/to Excel (process data, datasheets, instrument index)
- Check/Import P&ID tags (using optional IntelliLink P&ID application)
  - Future, not yet released
- Supports Unicode (foreign language data entry – e.g. English, Russian, Arabic etc on same drawing/report etc)
  - English only at present other languages to follow
History

Current software based on “Instrument Design Office” (IDO) acquired by AVEVA in April 2009

Been in development since 2000 (first released Australia late 2003)
  • Released Worldwide in 2005. Users in Australia, UK, SE Asia, Asia & Americas

Used on many major projects including:
  – Materials Handling (Baosteel - China)
    • Cut design man-hours by approx 30%
    • Over 1000 automated drawings (loops/schematics/PLC I/O etc)
History

- Used on many major projects including:
  - Petrochemical Plant Upgrades
    - 5000+ instrument dwgs (loops, JB/MR terminations) + cable schedules
    - 1000’s of man-hours saved
    - Basell2 project: Zero errors during construction!
  - Oil Refinery Clean Fuels
    - Clean fuels projects at multiple refineries
    - Imported/converted existing refineries instrument databases into AI database
History

- Used on many major projects including:
  - Offshore Oil & Gas Platforms, FPSOs & Gas Plants
    - Successfully completed several projects (Australia, North Sea & others)
    - Imported/converted two complete Gas Plants to AI database
    - Major EPC reported 50% saving in design man-hours using AVEVA Instrumentation!
AVEVA Instrumentation Modules

- Instrument Engineer (typically used by engineers/designers)
  - Instrument management (Instrument Index/Loop Index)
  - Instrument Datasheets including Process Data import & bulk editing
  - User definable instrument reports, audit reports etc
AVEVA Instrumentation Modules

- Wiring Manager (typically used by designers)
  - Project cable and termination management
  - Definition of plant equipment locations/terminal arrangements/devices etc
  - Definition of project cables/interconnections including auto-cross patch wiring
  - Quick termination reports & interactive cable block diagrams (without CAD)
AVEVA Instrumentation Modules

- Instrument Designer (typically used by designers)
  - Automated loop diagrams/J Box & marshalling cabinet termination diagrams
  - Hook-up/Installation drawings with BOM
  - Document management (Bulk update of Revisions/plotting etc)
AVEVA Instrumentation - Modules

- Typical Workflow
AVEVA Instrumentation – Typical Documents

- Instrument Index, Loop Index, I/O Lists etc
- Instrument Datasheets
- Loop Diagrams (with or without CAD)
- Termination Diagrams (with or without CAD)
- Hookup (Installation) Drawings/BoM/Project BoM
- Cable Block Diagrams (with or without CAD)
- Cable Schedules & Cable BoM
- Cable Gland & Adapter BoM, Device & I/O Module BoM
- Drawing/Document Lists
- Audit Reports (change history)
- User definable reports and Excel/PDF exporting options included

All documents can be created in stand-alone editable formats and do not require AVEVA Instrumentation licenses to be present at customer’s office. Customers are not ‘locked in’ to a ‘proprietary’ file formats.
## AVEVA Instrumentation Examples

### Typical Instrument Index

<table>
<thead>
<tr>
<th>Loop No.</th>
<th>Service:</th>
<th>P&amp;ID</th>
<th>Plant Connection</th>
<th>Manufacturer</th>
<th>Model No</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>08F2126</td>
<td>LC GO TANK TK 212</td>
<td>81-100980-AP</td>
<td>9-H136-B1-40</td>
<td>Yokogawa</td>
<td>DY015-N81844-4M/SCT/T02/81/SS1</td>
<td>FLD</td>
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<tr>
<td>08F2136</td>
<td>LC GO TANK TK 213</td>
<td>81-100980-AP</td>
<td>9-H135-B1-40</td>
<td>Yokogawa</td>
<td>DY015-N81844-4M/SCT/T02/81/SS1</td>
<td>FLD</td>
</tr>
<tr>
<td>09F038</td>
<td>ADO RUNDOWN FROM PLANT 2</td>
<td>81-100980-AP</td>
<td>9-P70-B4-150</td>
<td>WAGMA</td>
<td>VTA</td>
<td>DCS</td>
</tr>
<tr>
<td>09F039</td>
<td>DIESEL RECYCLE TO ADR RUNDOWN</td>
<td>81-100980-AP</td>
<td>9-P70-B4-150</td>
<td>Yokogawa</td>
<td>EJA110A</td>
<td>DCS</td>
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<tr>
<td>51F045</td>
<td>INDICATION</td>
<td>81-100980-AP</td>
<td>9-P70-B4-150</td>
<td>Yokogawa</td>
<td>EJA110A</td>
<td>DCS</td>
</tr>
<tr>
<td>52F311</td>
<td>STABILISER 45C-304 BTMS RUNDOWN</td>
<td>81-100980-AP</td>
<td>9-P70-B4-150</td>
<td>Fisher</td>
<td>3&quot; ET</td>
<td>FLD</td>
</tr>
</tbody>
</table>
### Typical Datasheet (fully user defined with change highlighting)

#### Instrument Datasheet

<table>
<thead>
<tr>
<th>Instrument Datasheet</th>
<th>CONTROL VALVE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tag No.</strong></td>
<td>52PV344A</td>
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<tr>
<td><strong>Service</strong></td>
<td>HCE HYDROGEN TO BENSAT</td>
</tr>
<tr>
<td><strong>P&amp;ID No.</strong></td>
<td>B1-100336-AP</td>
</tr>
<tr>
<td><strong>Line Number</strong></td>
<td>D-P1685-C3-159</td>
</tr>
</tbody>
</table>

##### PROCESS CONDITIONS

<table>
<thead>
<tr>
<th>Operating Conditions</th>
<th>Min Flow</th>
<th>Norm Flow</th>
<th>Max Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liquid Flow Rate</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Vapour Flow Rate</strong></td>
<td>6380 Sm3/hr</td>
<td>15406 Sm3/hr</td>
<td>Vapour S.G @ 15 °C</td>
</tr>
<tr>
<td><strong>Inlet Pressure</strong></td>
<td>2600 kPa-g</td>
<td>2680 kPa-g</td>
<td>Flashing/Cavitation/Choked</td>
</tr>
<tr>
<td><strong>Pressure Drop</strong></td>
<td>320 kPa</td>
<td>250 kPa</td>
<td>Delta P @ Shut Off</td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>40 °C</td>
<td>40 °C</td>
<td>Zone 1 Gr IIC, T3</td>
</tr>
<tr>
<td><strong>Liquid Vapour Pressure</strong></td>
<td>-</td>
<td>-</td>
<td>Allowable Noise SPL</td>
</tr>
<tr>
<td><strong>Liquid Density</strong></td>
<td>-</td>
<td>-</td>
<td>Ingress Protection Rating</td>
</tr>
<tr>
<td><strong>Liquid Viscosity</strong></td>
<td>-</td>
<td>-</td>
<td>Test &amp; Certificaion</td>
</tr>
<tr>
<td><strong>Vapour Molecular Weight</strong></td>
<td>4.47</td>
<td>4.47</td>
<td>Sizing Considerations</td>
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<tr>
<td><strong>Vapour Compress. Factor, Z</strong></td>
<td>1.01</td>
<td>1.01</td>
<td>Material Considerations</td>
</tr>
<tr>
<td><strong>Vapour Ratio of Specific Heats</strong></td>
<td>1.37</td>
<td>1.37</td>
<td>AVEVA Certification</td>
</tr>
<tr>
<td><strong>CV Calculated</strong></td>
<td>10.994</td>
<td>30.443</td>
<td>Serial Number</td>
</tr>
<tr>
<td><strong>Valve Opening</strong></td>
<td>27 %</td>
<td>70 %</td>
<td></td>
</tr>
<tr>
<td><strong>Noise Calculated SPL</strong></td>
<td>65 dBA</td>
<td>72.4 dBA</td>
<td></td>
</tr>
</tbody>
</table>

##### VALVE BODY
AVEVA Instrumentation Examples

- Typical Loop Diagram (instant non-CAD PDF report shown)
AVEVA Instrumentation Examples

- Typical Termination Diagram (instant non-CAD PDF report shown)
AVEVA Instrumentation Examples

- User defined DIN rails/Devices (instant non-CAD PDF report shown)
Interactive Cable Block Diagrams (non-CAD example)

Edit Terminations, cable types, create new cables & equipment directly from the diagram

www.aveva.com
AVEVA Instrumentation Examples

- Interactive Component Layout (drag & drop interface)
AVEVA Instrumentation

Benefits:

- More efficient
  - Reduction in design man-hours by:
    - Automated document production
    - Relational Database for “change once – change everywhere”
    - In many cases the data is automatically created from “rules”
    - Exchange data with vendors (import/export)
    - Eliminates many conventional manual checking tasks
AVEVA Instrumentation

Benefits:

- More accurate
  - Less changes required during construction:
  - Rule based data entry reduces human errors
  - No “manual” transfer of information
  - Data based on catalogue definitions
  - Single source for all instrumentation and control systems design data

Reduce Design, Construction and Plant Start-up costs!