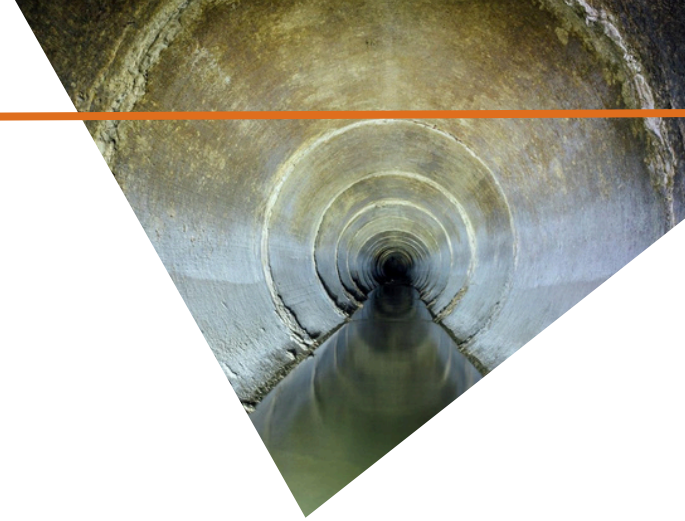
KHN Bentley Channel Partner

Product Data Sheet



OpenFlows Sewer

Pemodelan dan Manajemen Sistem Koleksi Air Limbah

DESAIN DAN ANALISIS SISTEM SEWER TINGKAT ADVANCE

OpenFlows Sewer merupakan perangkat lunak analisis hidraulik yang powerful untuk perencanaan, desain, dan analisis sistem air limbah domestik (sanitary), drainase air hujan (stormwater), maupun sistem sewer gabungan (combined sewer). Dengan mengintegrasikan analisis hidraulik dan hidrologi tingkat lanjut dalam satu lingkungan kerja, OpenFlows Sewer membantu para engineer memahami kinerja sistem, mengevaluasi berbagai alternatif, dan mengambil keputusan berdasarkan data. Engineer dapat secara proaktif mengelola program peningkatan dan pengembangan infrastruktur, melakukan rehabilitasi infrastruktur yang sudah menua, serta memitigasi risiko sanitary sewer overflow (SSO) dan combined sewer overflow (CSO).
Dengan demikian, sistem dapat tetap andal, memenuhi persyaratan dan regulasi yang berlaku, serta mampu beradaptasi terhadap pertumbuhan populasi, perubahan regulasi, dan kebutuhan di masa depan.

PERMODELAN DENGAN MENGGUNAKAN AI

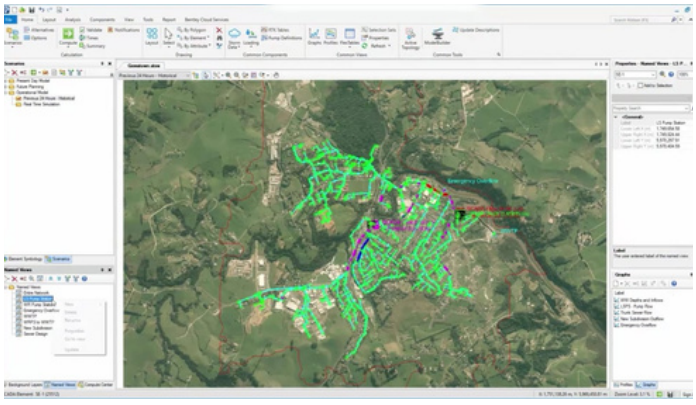
Bentley Copilot, yang terintegrasi di dalam OpenFlows Sewer, menghadirkan teknologi Generative AI (AI Generatif) ke dalam alur kerja pemodelan, sehingga membantu engineer bekerja lebih cepat dan efisien. Dengan menggunakan perintah dalam bahasa alami (natural language prompts), pengguna dapat melakukan pencarian dan analisis terhadap data model, menjalankan perintah pada Ribbon, serta melakukan pengeditan dasar tanpa harus menavigasi menu yang kompleks. Produktivitas semakin meningkat dengan kemampuan untuk mengunggah dan melakukan pencarian pada dokumen eksternal, seperti peraturan kota (city codes) atau standar desain, secara langsung di dalam lingkungan pemodelan. Hal ini membantu tim untuk memvalidasi desain, mengurangi pekerjaan ulang (rework), dan memastikan konsistensi dengan persyaratan serta regulasi yang berlaku.

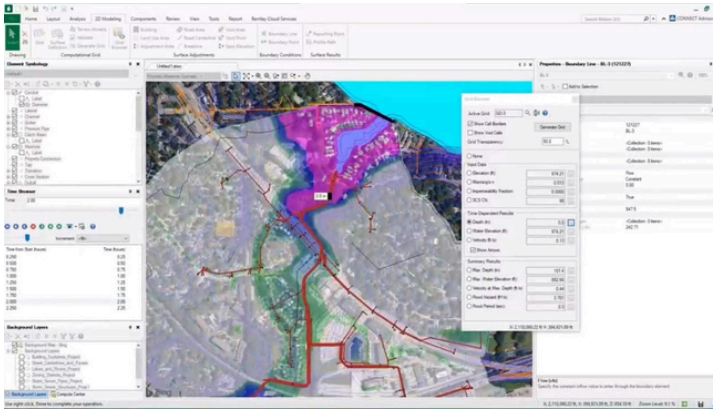
PERMODELAN YANG TERINTEGRASI & KOLABORASI

OpenFlows Sewer menyederhanakan proses pembuatan model dengan menyinkronkan data jaringan dari GIS, CAD, database, dan spreadsheet ke dalam satu lingkungan kerja yang terintegrasi dan saling terhubung. Engineer dapat menggunakan OpenFlows Sewer sebagai aplikasi mandiri (stand-alone) atau langsung di dalam platform yang sudah familiar, seperti MicroStation®, AutoCAD, dan ArcGIS Pro, serta aplikasi desain sipil Bentley seperti OpenRoads™ Designer. Hal ini mengurangi hambatan dalam kolaborasi lintas disiplin dan antar tim proyek. Fitur deteksi sistem koordinat dan reproyeksi secara otomatis yang telah terintegrasi di dalam software juga menyederhanakan proses kerja berbasis data spasial. Proyek dapat dikembangkan lebih lanjut ke dalam workflow digital twin, sehingga model sistem sewer dapat ditampilkan dalam tampilan 3D dan ditinjau secara kolaboratif bersama data infrastruktur lainnya melalui Bentley Infrastructure Cloud™.

ANALISIS TINGKAT LANJUT & MANAJEMEN SKENARIO

Dapatkan wawasan dan pemahaman yang lebih mendalam mengenai perilaku sistem dengan mengevaluasi dan membandingkan jumlah skenario “what-if” yang tidak terbatas. Fitur multiple scenario annotation memungkinkan pengguna melakukan perbandingan hasil secara visual dengan mudah langsung di dalam model. Fitur thematic mapping yang powerful, analisis cakupan genangan 2D yang lebih canggih, serta dynamic graphing membantu tim menyajikan hasil analisis dengan jelas dan mendukung pengambilan keputusan yang tepat berdasarkan data. Proses pembuatan laporan juga menjadi lebih efisien dengan kemampuan mengekspor hasil secara langsung ke Microsoft Office. Selain itu, latar belakang peta Google Maps beresolusi tinggi memberikan konteks kondisi nyata untuk mendukung analisis serta memudahkan komunikasi hasil kepada stakeholder.





PERSYARATAN SISTEM

MINIMUM: Windows 10 (32-bit and 64-bit), 11, Server 2019, or Server 2022; can run stand-alone on MicroStation® 2023, OpenRoads™, OpenSite™, OpenRail™ Designer, AutoCAD 2023 and 2024, or ArcGIS Pro 3.1 (SewerGEMS® only)

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OpenFlows Sewer at a Glance

OpenFlows Sewer includes the capabilities of SewerGEMS® and SewerCAD®. See the Comparison Checklist to decide the tier that best suits your project and analysis needs.

INTEROPERABILITY

- Operates as a stand-alone application or integrated within MicroStation, AutoCAD, ArcGIS Pro, and Bentley's Civil design applications (e.g., OpenRoads Designer)
- Manages project data and files with ProjectWise® integration
- Connects sewer models to Bentley Infrastructure Cloud for 3D visualization and collaboration

MODEL BUILDING & DATA CONNECTION

- Builds and synchronizes models from GIS sources (shapefiles, geodatabases, Geometric Networks), CAD drawings, spreadsheets, and databases (including Oracle Spatial and ODBC)
- Imports and exports common industry formats, including LandXML, SWMM, MicroDrainage, MX Drainage model files, and InRoads® storm and sanitary data
- Automatic coordinate system detection and reprojection for external data sources
- Automated catchment delineation from terrain models, with runoff calculation using NRCS Curve Number and Rational “c” methods based on land use
- Improved catchment delineation for headwalls and cross-sections
- Allocate dry and wet weather loads from geospatial data, flow monitors, or property connections
- Connect to SCADA for live and historical data to define model inputs and calibrate results
- Support for text string output from user data extensions for custom reporting

SCENARIO AND MODEL MANAGEMENT

- Active topology to activate or deactivate network elements
- Comprehensive, unlimited scenarios and alternatives
- Customizable engineering libraries
- Dynamic and static selection sets
- Orphan node and dead-end pipe queries
- Sub-model management
- Surface flow path tracing from terrain
- Multiple scenario annotation for side-by side visual comparison of different scenarios

HYDRAULICS & OPERATIONS

- D/2D hydraulic analysis for surface flood modeling with enhanced 2D results reporting and visualization
- Two available solvers for the full set of 1D St. Venant equations: implicit dynamic and explicit dynamic (EPA-SWMM)
- Gradually varied flow solvers for sewer (with convex routing and EPANET-based pressure network solution) and stormwater (with rational method flow calculation)
- Extreme flow factors for use with steady state simulation
- Long-term continuous simulation
- Critical storm analysis
- Automatic constraint-based design of gravity systems
- V-shaped and parabolic gutters
- Culvert headwalls with SWMM and HDS-5 culvert support
- Inline control structures and diversions{ (weirs, orifices, and depth-flow curves)
- Air valves for high points in force mains
- SCADA signal integration for operational controls
- Low-impact development controls
- Modeling of individual property connections, taps, and laterals
- Evaporation definition
- Aquifer simulation
- Pollution analysis with optional definition of land use categories and surface characteristics
- Operational logic using rule-based controls (if-then-else)
- Tractive stress calculation
- HEC-22 inlet capacity and node headloss calculations
- Variable-speed pumps
- Totalizing flow meters
- Flow meter tool for measuring flow in specific gravity and pressure pipe

AI ASSISTANCE – BENTLEY COPILOT

- Integrated “how do I” help and documentation search
- Perform natural language model interrogation with the Bentley Copilot AI assistant
- Launch ribbon commands and perform basic model edits via text prompts
- Query uploaded external documents (e.g., city codes) against the model

INTERFACE AND GRAPHICAL EDITING

- Dynamic ground elevation assignment and updates from terrain model
- Modern ribbon interface with unlimited undo and redo
- Element editing tools, including morph, split, and reconnect
- Merge nodes in close proximity feature
- Automatic property-based element labeling and annotation
- Element prototypes for standardized model building
- Multiple background file layer support
- Background display of Google Maps, image files, CAD drawings, and GIS data
- Optimized graphical display for smooth navigation of large-scale models

RESULTS PREPARATION

- Multiple scenario annotation for side-by side visual comparison of different scenarios
- Thematic mapping with property-based color coding, symbology, and annotation
- Advanced tabular reporting with FlexTables
- Dynamic profiling and engineering profile annotation tables
- Direct export of reports and tables to Microsoft Office formats
- Custom reports generation
- ArcGIS Pro visualization (with Esri license)
- Gutter cross section viewer
- Grid browser and graphing tools for visualizing 2D results (depth, WSE, velocity over time)
- Create reporting transects for detailed 2D flow analysis over time
- Animation video (AVI) creation of results over time