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WATER
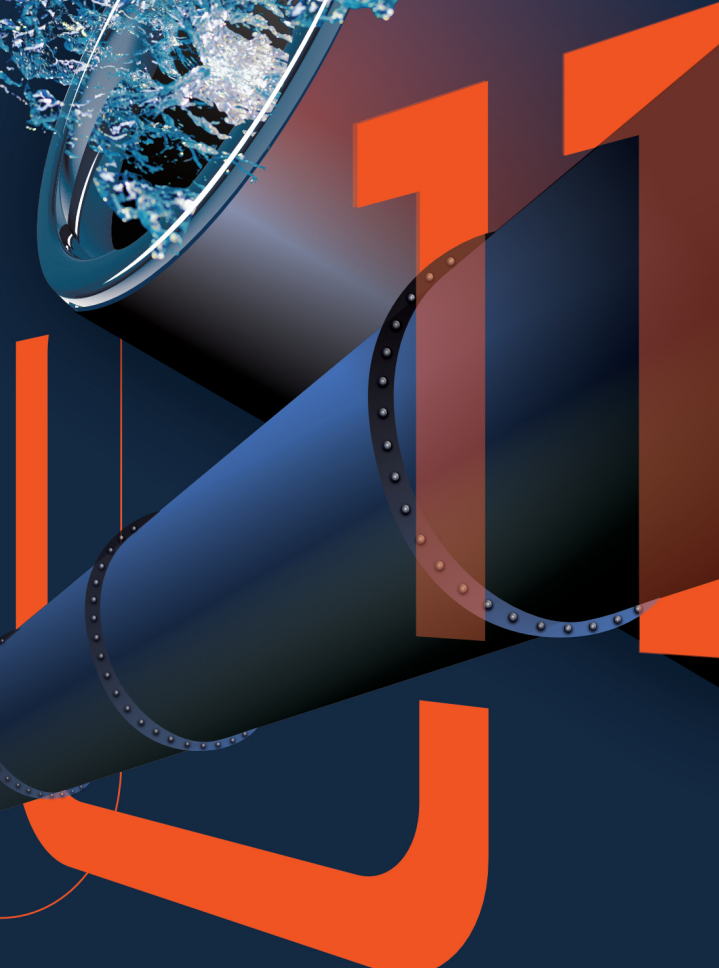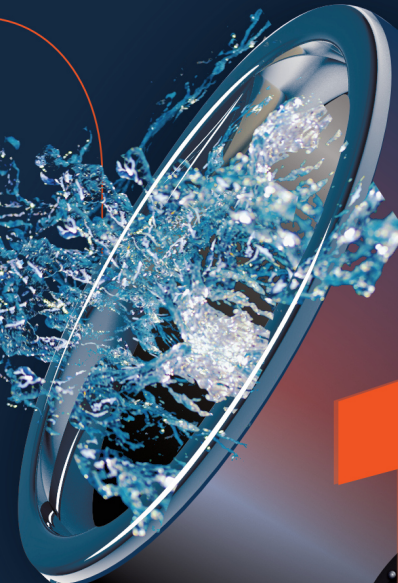# SEWAGE
GAS

INFRASTRUCTURE
DESIGN
SOFTWARE

STUDIOARS

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URBANO 11 THE FOUNDATION OF SUCCESSFUL DESIGN

IMPROVE YOUR WORKFLOW WITH URBANO:

· be more competitive
· be more productive
· increase design quality
· comply with standards
· follow engineering practice
· embrace BIM and modern IT trends

URBANO 11
Pipe infrastructure design software collection

CANALIS
Storm & sanitary sewage design software

HYDRA
Water distribution design software

GASNET
Gas distribution design software

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ADVANTAGES – FLEXIBILITY BY DESIGN

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REMARKABLE USER INTERFACE

· adaptable UI to most workflows and user preferences

· program functions can be started from the side-docking Workspace, custom ribbons or directly from the CAD command line

· most functions open in free-floating windows

· you can operate several floating windows at the same time

· an additional docking window enables you to monitor the program's status messages

· you can inspect and edit node and section data selected from the drawing

CONFIGURATIONS

Most functions are built to enable you to permanently store their settings and data, so they are ready for use in future instances.

Configurations are used to drive the output of most functions:
· long sections & cross sections
· data tables
· labels
· plan styles
· data import/export
· automatic calculation of pipe inverts

You can:
· have many different configurations for the same function
· store them on a local computer or a network server
· exchange them with other Urbano users

CATALOGS

With pipe network design you can use a lot of equipment such as:
· pipes
· manholes
· fittings and appurtenances

All these items are stored in catalogs that you can edit, extend and exchange with other program users. Equipment can be edited in spreadsheet mode, and you can import their data directly from MS Excel.
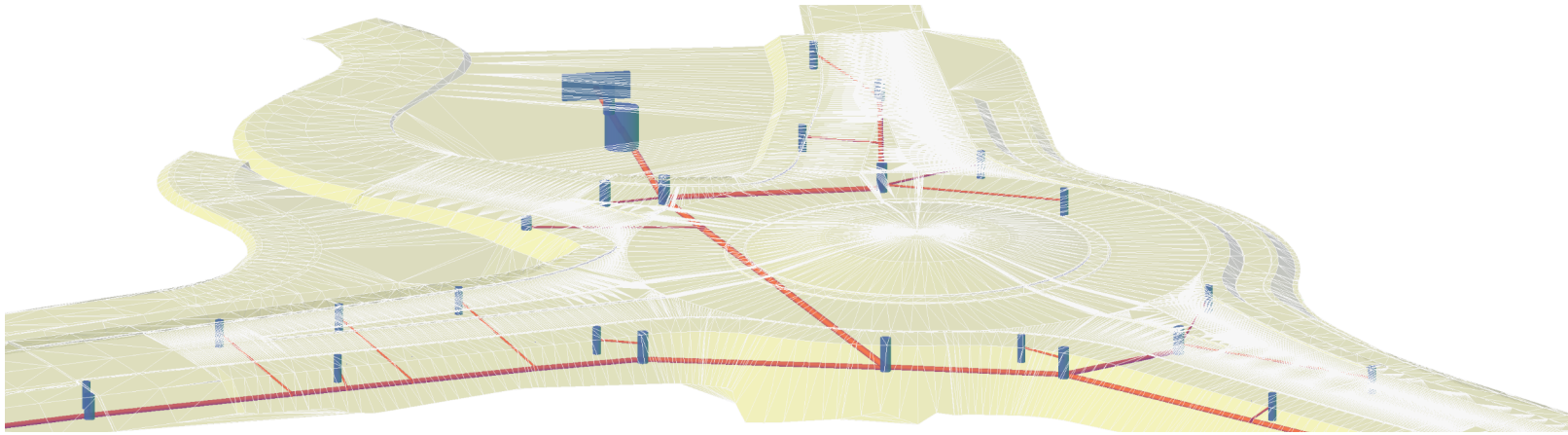
DATA SELECTION

Urbano provides advanced methods for selecting system elements in almost every program function, including selection of:
· nodes
· sections
· arrays and branches
· from node to node
· from station to station
· according to a query
· according to a long section

You can even create custom selection sets based on standard selection types.

PLAN STYLES

You can use different pipe network templates, styles and labels to accurately draft and describe your designs.

You can quickly apply different styles on different network parts in order to improve editing, inspect some elements or prepare the project for plotting.

DATA TABLES

Data tables are the fastest solution for an overview of design data. They are based on configurations and can:
· display any node/section data
· you can use them to inspect, edit and validate data

The contents can be used to create a CAD table or a simple MS Excel report.

URBANO 11 FEATURES

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DIGITAL TERRAIN MODEL (DTM)

You can use the Terraform module to create DTMs from:
· CAD objects
· block attributes
· text and shape files or databases

You can:
· apply different visual styles to the DTM
· store it as a 3D Face objects
· perform some basic editing and analysis

Once you define pipe network and trench, you can use the grading tools to create a new DTM with the trench. As an alternative workflow, you can directly use an Autodesk Civil 3D or 3D Face DTM as the basis of your design.

PLAN DESIGN

You can draw the pipe network directly or convert existing CAD lines/polylines.

Terrain elevations can be read from a DTM or set by several methods including direct input and linear interpolation.

Editing is very comfortable as any change in nodes and sections is automatically reflected in all connected long sections, labels and data tables.

You can apply various configuration-based labels on all design elements. In case of overlapping labels, they can be repositioned interactively or with an automated procedure.

LONG SECTION DESIGN

Long sections are created from fully editable configurations that control content and style (e.g., data, color, alignment, text offset & size).

Streamlined tools follow all steps of the design process including:
· configuration editing
· data selection
· invert design
· long section management
· plot preparation

You can move, copy and delete drawn long sections, as well as change their drawing direction or switch configurations. All design and editing functions are interactive and immediately refresh the drawing and data on all changes.
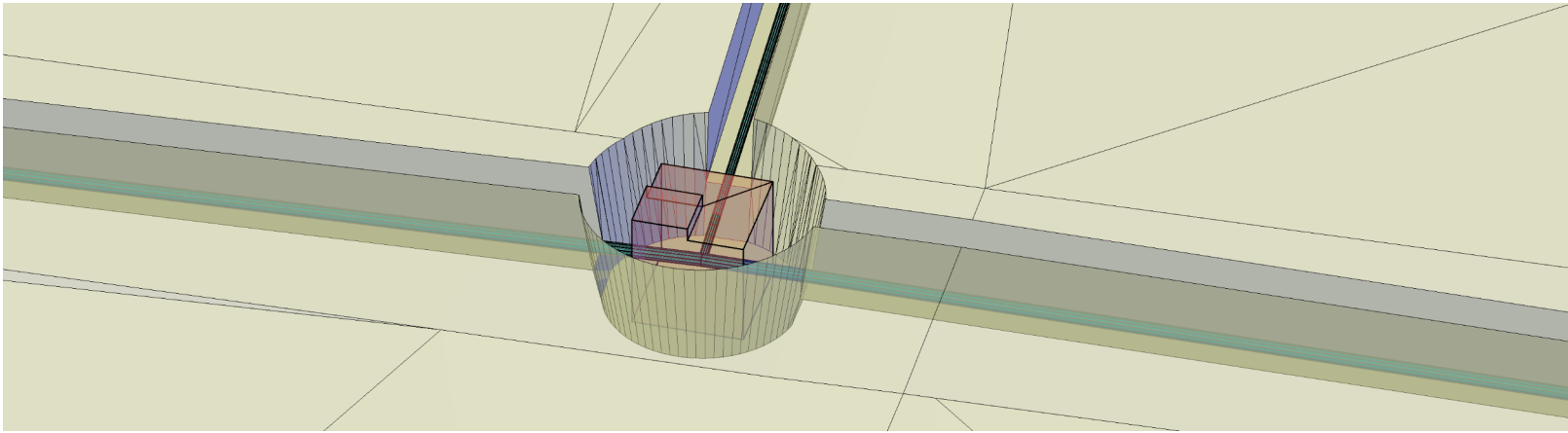
CALCULATIONS

Urbano provides several options for:
· determining catchments areas
· calculating flows
· executing hydraulic calculations

You can do all the calculations for storm and sanitary sewage and water networks with the integrated calculation engines. Or you can do the calculations with external software for advanced hydraulic modeling.

Both workflows are supported, and the results can be used throughout the program including long sections, labels and reports.

SINGLE TRENCHES

Trench configuration determines some general properties like:
· side slopes
· layers
· bedding and benching
· design features like color, hatch and text properties

You can apply different trench configurations on different pipe network parts with standard Urbano selections e.g., by branch, by long section, from node to node.

You can display trench borders in the plan view and perform trench grading on a DTM.

The detailed excavation report shows volumes in total and by layer.

PARAMETRIC TRENCHES

You can create complex parametric trench models for multiple pipe networks e.g., storm and sanitary sewage, water, gas.

The parametric model includes features like multiple diverging/ converging trenches, layers with changing height, multiple benching and multiple independent side slopes.

You can create cross sections and excavation calculations based on the trench model.

URBANO 11
FEATURES

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CROSS SECTIONS

Like long sections, you create cross sections from fully editable configurations that control content and style:
· color, alignment, text offset & size
· terrain features
· characteristic points (e.g., road edges)
· pipe networks
· labels
· data table

You can perform volume calculations for cut and fill surfaces and hatch them in the section. The calculation of surfaces and volumes is based on the specified terrain lines.

IMPORT FROM GOOGLE MAPS

You can import maps and terrain elevation data directly into CAD, and then use Urbano functions to create a digital terrain model.

There are multiple ways to do it, e.g., choose an area in a browser window, or define a coordinate system and select an area in CAD.

The number of maps that will be imported depends on the zoom factor you set. A higher zoom factor will import more maps and create a higher resolution picture. To have an unlimited import area and unlimited number of import requests, you can connect your own Google Cloud Platform ID.

DATA IMPORT/EXPORT

You can create custom import/export configurations for different data sources. This makes it easy to test alternative import/export procedures for complex data structures.
The imported data for nodes and sections is used to draw a pipe network directly. You can then proceed with standard Urbano editing and analysis tools.

Import and export configurations can be:
· stored
· exchanged with the .dwg file
· reused as a starting point for new projects

Supported data exchange formats include .shp, LandXML, databases and Civil 3D. Supported BIM export formats include .ifc and .nwc.
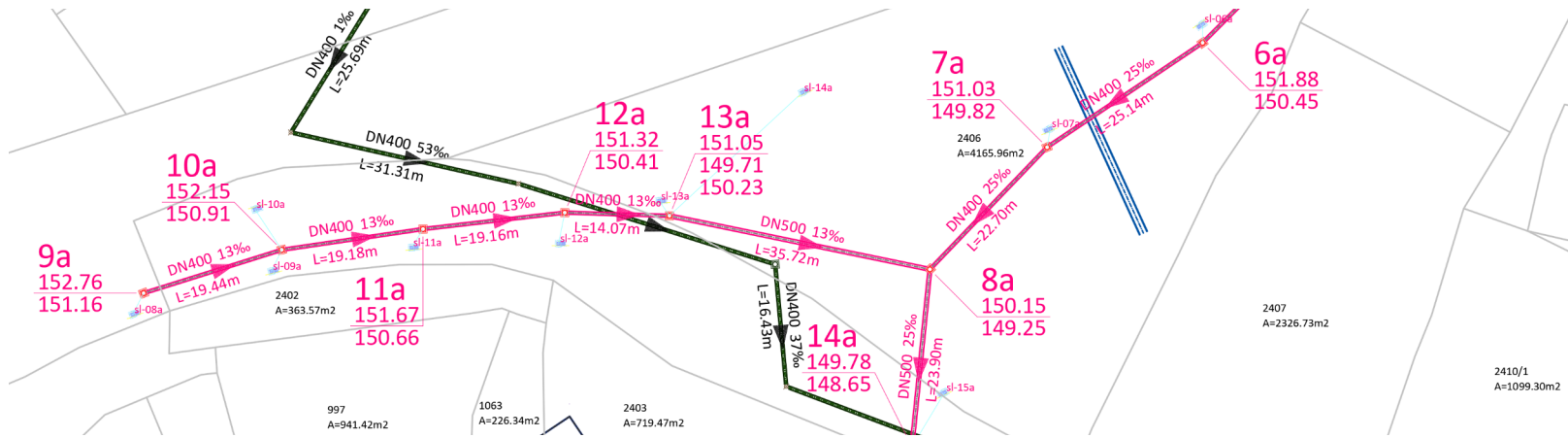
PARCELS

You can create parcels in an automated procedure by converting lines and polylines and then fix problems with cleanup and editing tools.

Additional information like parcel number, type and owner can be imported from a database or converted from CAD texts.

You can use standard Urbano tools to edit, label, search, query and analyze the parcels.
->

Additional analyses include buffer, union, intersection and overlay. The special parcel/pipe analysis allows you to detect intersection points between pipe networks and parcels. The results can be stored in custom data variables and added to long sections. This polygon/pipe connection is dynamic and any change in the pipe network or the parcel will be refreshed automatically in all data views.

MAP MANAGEMENT TOOLS

Urbano includes tools for working with large amounts of maps e.g. .tiff, .jpeg, .dwg, .pdf.

You can import images one by one, by reading a folder structure or from a database, and then create groups according to any criteria e.g., by scale.

Maps are displayed only with a polygon boundary and the map name. This enables the program to display thousands of map boundaries with great speed.

There are several methods for displaying the full maps:
· picking maps from the drawing
· displaying maps crossed by a line
· displaying all maps visible in the current view

CANALIS – STORM & SANITARY SE\VAGE DESIGN SOFTWARE

PIPE INVERT DESIGN

You are free to use any of the interactive and automatic design tools for pipe invert design. With the interactive design and editing tools you can preview the results of all operations before execution.

You can:
· draw with determined slope steps
· set a uniform slope across multiple nodes
· insert/move a node directly in the long section

Automatic pipe invert calculation is based on a set of editable criteria stored in a configuration. The criteria include settings like:
· maximum and minimum depth and slope
· preference to use drop manholes
· existing lateral inlets and previously drawn pipe inverts
->

You can select any part of the pipe network (e.g., a branch or an existing long section), calculate and apply the proposed solution. You can run different configurations on the same pipe network part or use the interactive editing tools to further improve the design.

PREFABRICATED MANHOLES

You can define manholes using various prefabricated concrete elements. The included prefabricated elements catalog was created according to EN 1917-2005 and DIN V 4034-1 standards and can be extended with user created elements. The composition of elements is based on pipe inverts and manhole depth with dynamic control and adjustment of total manhole height. The manhole with all its components can be drawn in the long section and be rendered in 3D in plan view.

HOUSE CONNECTIONS

You can design and edit house connections with a set of special tools.

The design functions include:
· setting starting depth and slope
· creating house connections with multiple pipe segments
· aligning reference points for the connecting and main pipe (e.g., axis on axis)

The connecting point on the main pipe can be preserved even if the main pipe is moved.

FLOW CALCULATION

Flow calculation manager handles multiple calculation methods for storm and sanitary, transit and total flows. It allows you to create, calculate and compare multiple scenarios describing different pipe network conditions.
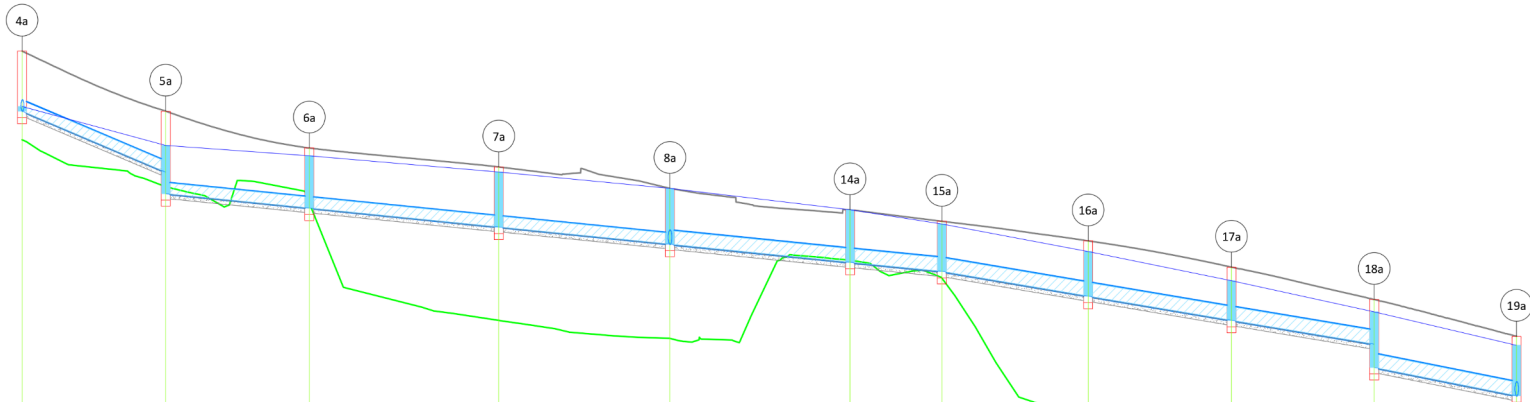
Flow calculation scenarios help you analyze the network in more detail, helping you to adopt the best solution quicker.

HYDRAULIC CALCULATION

Hydraulic calculation is based on the Darcy-Weisbach and Colebrook-White equations.

You can:
· use calculated flows and set slopes for pipe sizing
· run hydraulic calculation based on existing diameters

For pipe sizing you can refine the final result by adding additional requirements, like setting a maximum pipe fill percentage. All network geometry and catchment areas can be exported to an EPA SWMM file for further hydrodynamic calculations.

CONNECTED WORKFLOWS: EPA SWMM

You can use Urbano to:
· design the pipe network in plan and long sections
· determine catchment areas and set rain gages
· calculate storm and sanitary flows
· set pipes, pumps, flow regulators and other equipment
· set all input parameters, curves and patterns required for hydraulic calculation

You can run single period hydraulic calculation or complete time simulation based on the EPA SWMM engine directly in Urbano or you can create .inp file and import it in EPA SWMM or any other hydraulic modelling software.

You can show the calculation results in special data tables, graphs, long sections, labels, thematic maps, etc.

OPEN CHANNELS

In Urbano you can create and set open channels of different cross-sectional shape (rectangular, trapezoidal, triangular, parabolic).

You can show open channels in different plan styles, long sections and cross sections, run excavation volume calculation and hydraulic calculation using integrated EPA SWMM calculation engine.

You can also show open channels in 3D view and export them to BIM file formats such as .ifc and Navisworks .nwc.

HYDRΛ – WATER DISTRIBUTION DESIGN SOFTWARE

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HYDRΛ

CONNECTED WORKFLOWS: EPANET

You can use Urbano to:
· design the pipe network in plan and long sections
· input water demands
· set pipes, pumps, valves and other equipment
· set all input parameters, curves and patterns required for hydraulic calculation

You can run a snapshot hydraulic calculation or complete time simulation based on the EPANET engine directly in Urbano or you can create .inp file and import it in EPANET or any other hydraulic modelling software.

You can show the calculation results in special data tables, graphs, long sections, labels, thematic maps, etc.

PIPE INVERT DESIGN

When you draw new network parts you can immediately set pipe invert on a constant depth below terrain. Also, you can use any of the interactive and automatic design tools for pipe invert design directly in long sections.

The automatic design function includes an optimization of air release and washout valves, reducing their overall amount. You can run different configurations on the same pipe network part or use the interactive editing tools to further improve the design.

AUTOMATIC PIPE DIAMETER OPTIMIZATION

Calculating and determining optimal pipe diameters is no straightforward task especially in ring networks. You can solve these problems with the use of advanced optimization methods provided in Urbano software.

You can divide the network into smaller parts and set some initial parameters like target velocity and allowed pipe diameters before running the calculation. The algorithm will determine the best solution which can be applied or rejected. You can adjust the input parameters, re-run the optimization and improve the results.

This optimization process can give you some quick pipe diameter estimates no matter the complexity of the network and without the need for dedicated hydrodynamic modeling.
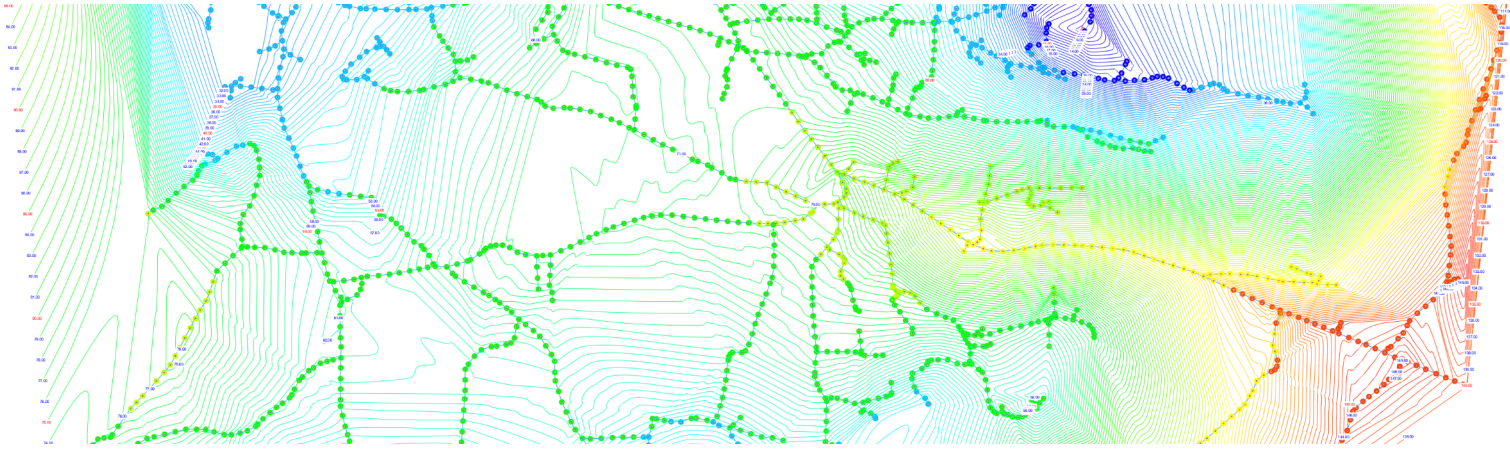
DESIGN OF NODE ASSEMBLY SCHEMES

Urbano includes automatic and interactive tools to create node assembly schemes. Automatic tool allows you to quickly draw schematic representation of fittings, valves and fire hydrants for all selected nodes. You can label the elements in schemes while a list of elements is created automatically.

You can edit the scheme by:
· selecting an alternative solution
· changing the order of elements
· replacing some element
–>

The interactive assembly scheme design tool allows you to create detailed assembly schemes based on network nodes and a catalog of assembly elements (fittings and appurtenances). You can create custom parametric elements or elements from AutoCAD® blocks. A table with part name and quantity is generated automatically.

GASNET – GAS DISTRIBUTION DESIGN SOFTWARE

GASNET

PIPELINE ARCS

A distinctive feature of gas pipelines is the ability to design and represent horizontal and vertical arcs.

With Urbano, you can set arc calculation rules such as:
· preferred arc radius
· depending on the deflection angle between pipes
· depending on pipe diameter and arc type e.g., inductive, cold bended, elastic

When you start the calculation, the program will filter the appropriate nodes and propose an arc radius according to determined interval, pipe diameter and arc type.
->

Once you determine the pipeline route and calculate the arcs, you can draw the horizontal arcs in the plan view and the vertical arcs in the long sections.

By changing the pipe invert, you will automatically recalculate the vertical arcs and refresh the long sections.

You can adjust the long section configuration to show horizontal arcs, vertical arcs and all data in the table. Arc labels carry important information for the construction phase and that is why you can set them at the start, middle and end of the arc as well as in the vertex point.
->

You can put in the labels all the information you need e.g., deflection angle, arc radius, station.

All arc data can be found in a special group in the standard data selection interface. This means you can use this data with the same program functions as any other data, e.g.:
· data tables
· reports
· labels
· long sections
· queries
· thematic maps
· data import/export functions
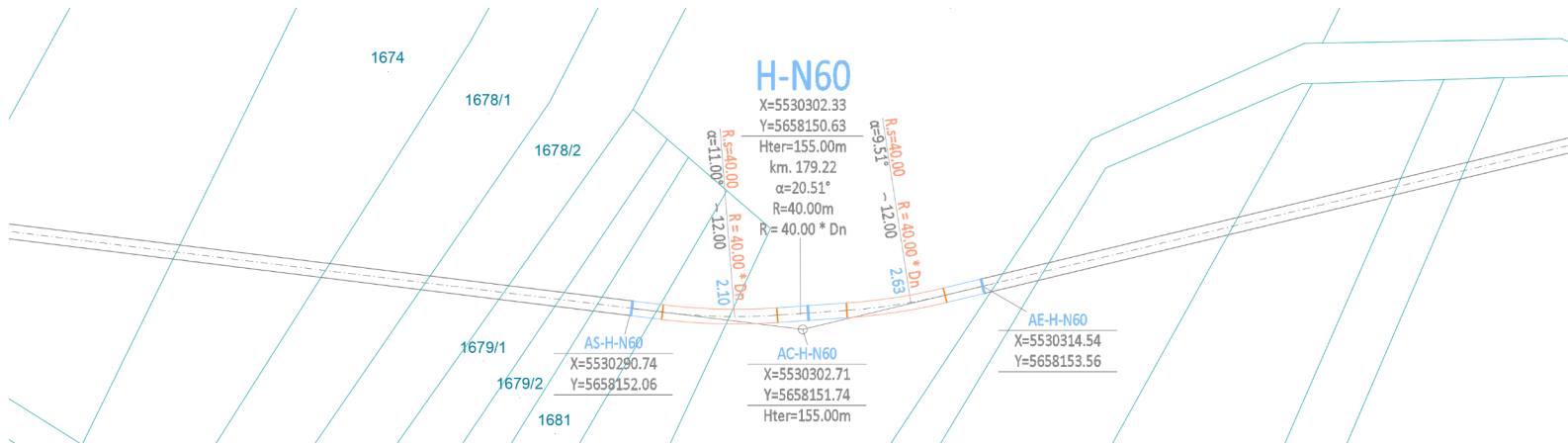
PIPELINE AND PARCELS

A general requirement when designing a new pipeline is to create a list of crossed parcels. With the Urbano tools for both pipeline and parcel data import, design and editing you can create such list quite easily by using the dynamic data tables.

You can include data such as parcel number, area and type, review any part of the pipeline, sort by crossing order and highlight the parcels in the drawing.

On top of that, you can customize a long section configuration to include pipeline and parcel data, and display both in the profile table.

MOST FREQUENTLY ASKED QUESTIONS

Can I visualize and export the entire network in 3D?
Yes, you can visualize and export your entire network in 3D, but you can continue to do most of your design work in 2D plan and long sections, just like you're used to. In fact, 2D or 3D is as simple as applying a different Urbano style to your pipe network. You can also create 3D Solids for the pipes and manholes and get the trench in 3D.

Can I create a pipe network model as an .ifc and .nwc file?
Yes, you can create a data-rich pipe network model as an .ifc and .nwc file, that you can use for project coordination or send to external stakeholders. Actually, with Urbano you can export the pipe network and the trench with all layers, add all the data you need and even create Navisworks selection sets based on any criteria (designed, calculated, custom).

Can I import, edit, visualize and export data?
Yes, you can. Urbano includes straightforward handling of all data. Once it becomes "part of Urbano", you can use the data seamlessly in any function e.g., labels, tables, long sections, thematic maps, queries. You can even create mathematic expressions to calculate custom values.

Can I perform clash analysis?
Yes, you can perform clash analysis between different pipe networks and also between Urbano and CAD elements such as lines, polylines, 3D Solid or Mesh. Clash analysis functionality allows you fast and powerful clash detection and report creation.

You can check for hard clashes only or determine minimum required clearances around pipes, view relative position of pipes (i.e., above/below) and label clashes in plan and long sections. Clash analysis is fully dynamic and any change in design (plan or long section) is automatically reflected in all data tables, labels and reports.
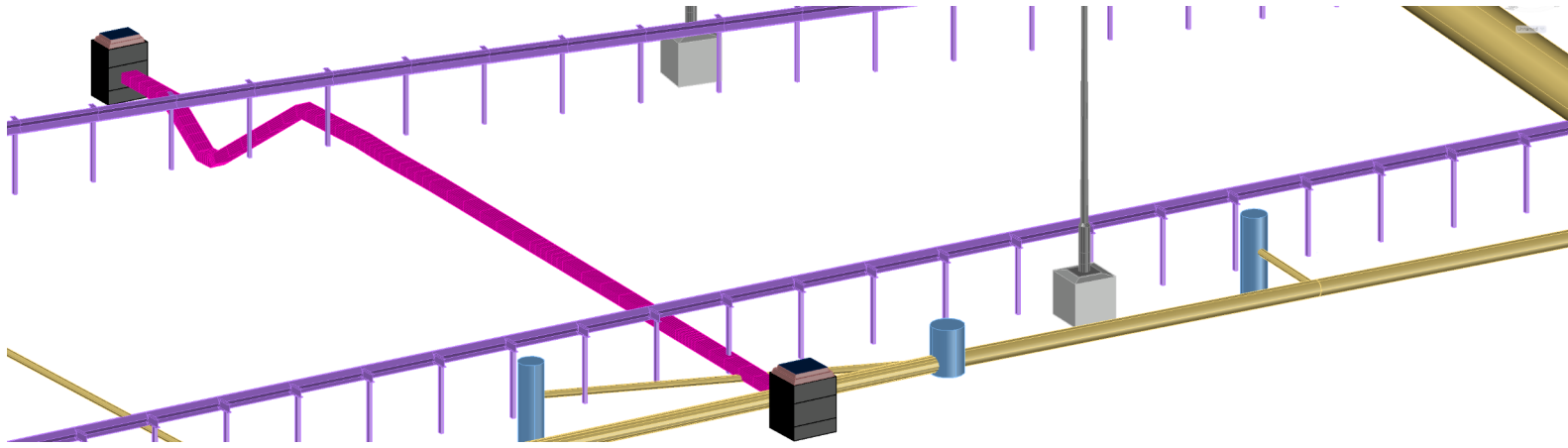
Can I use BIM 360 and similar platforms?

All Urbano designs and data are stored in the .dwg file, which you can manage with BIM 360. It is a standard drawing, meaning you can view and annotate it just like any other CAD design. Besides BIM, there is a number of other workflows that can incorporate Urbano.

How is Urbano connected with Geographical Information Systems?

Geographical Information Systems are widely used and often represent one of the starting points for a pipe network project in the sense that existing pipe network information comes from GIS. Urbano can import and export data with ESRI .shp, MapInfo .tab and PostgreSQL, Access or any other database with OLE DB driver.

How is Urbano connected with hydraulic modeling software for water and sewage networks?

Hydraulic modeling software for water and sewage networks can be connected with Urbano to a streamlined workflow. You can start your project in EPANET and export the network with all defined parameters to Urbano for detailed design. Or you can design the water network in Urbano and export it to EPANET .inp file for advanced hydraulic modeling and other analysis.

Regarding sewage networks, you can create an EPA SWMM file and use it with your standard hydraulic modeling solution.

How is Urbano connected with road design and site design software?

Road design and site design software is often used as the starting point for storm sewage design. With Urbano, you can convert lines/polylines created with such software to pipe networks – and then proceed with detailed design (i.e., long sections, cross sections, etc.). You can also import/export data with Civil 3D gravitational pipe networks and LandXML.

Feature group	Feature	URB Ult	CAN Pro	CAN	HYD Pro	HYD	GAS Pro	GAS
General	Customizable UI (Ribbons, Workspace)	x	x	x	x	x	x	x
	Customizable configurations and templates	x	x	x	x	x	x	x
	Customizable catalogs with import from MS Excel	x	x	x	x	x	x	x
	Manholes from prefabricated elements	x	x	x	x	x	x	x
	Custom user data and calculated data	x	x	x	x	x	x	x
	Element selections and data input	x	x	x	x	x	x	x
Digital terrain model (DTM)	DTM creation from CAD elements, text, blocks, .txt file	x	x	x	x	x	x	x
	Breaklines, surface styles, multiple surfaces	x	x	x	x	x	x	x
	Direct use of Civil 3D DTM and 3D Face objects	x	x	x	x	x	x	x
Plan tools	Network drawing and editing	x	x	x	x	x	x	x
	Conversion of lines/polylines	x	x	x	x	x	x	x
	Data capture from texts and block attributes	x	x	x	x	x	x	x
	House connections drawing and editing	x	x	x	x	x	x	x
	Storm drains drawing and editing	x	x	x				
	Labels (nodes, sections, branches, stations, angles…)	x	x	x	x	x	x	x
	Interactive and automatic label reposition	x	x	x	x	x	x	x
	Plan styles (2D, 3D)	x	x	x	x	x	x	x
Long section tools	Long section editor and manager	x	x	x	x	x	x	x
	Interactive pipe invert design and editing	x	x	x	x	x	x	x
	Automatic pipe invert calculation	x	x	x	x	x	x	x
	Multiple pipe networks in one long section	x	x	x	x	x	x	x
	Long sections with parcel data	x					x	x
	Long sections preparation and plotting	x	x	x	x	x	x	x
Analysis tools	Data tables (inspection, validation, editing, export to MS Excel)	x	x	x	x	x	x	x
	Thematic maps	x	x	x	x	x	x	x
	Queries	x	x	x	x	x	x	x
	Automatic clash analysis (pipes, manholes, CAD elements)	x	x	x	x	x	x	x
Schemes and reports	Reports: pipes, manholes, angles, custom	x	x	x	x	x	x	x
	Manhole schemes design	x	x	x	x	x	x	x
	Node schemes automatic creation	x			x	x		
	Node assembly schemes detailed design	x			x	x		
Flow and hydraulic calculations	Catchment and influence areas design	x	x	x				
	Storm and sanitary flow calculation & scenario analysis	x	x	x				
	Open channels and pressure pipelines	x	x	x				
	Network equipment input (EPA SWMM)	x	x	x				
	Hydraulic calculation (sewage) according to EPA SWMM	x	x	x				
	Hydraulic pipe sizing (sewage)	x	x	x				
	Water demand input and scenario analysis	x			x	x		
	Network equipment input (EPANET)	x			x	x		
	Hydraulic calculation (water) according to EPANET	x			x	x		
	Pipe diameter optimization (water)	x			x	x		
	Import/export EPANET .inp	x			x	x		

Feature group	Feature	URB Ult	CAN Pro	CAN	HYD Pro	HYD	GAS Pro	GAS
Cross sections and trenches	Basic cross sections with editor and manager	x	x	x	x	x	x	x
	Standard trenches including benching and formwork	x	x	x	x	x	x	x
	Excavation calculation report	x	x	x	x	x	x	x
	Trench borders and 3D trench grading	x	x	x	x	x	x	x
	Advanced cross sections with terrain	x	x		x		x	
	Parametric trenches for multiple pipe networks	x	x		x		x	
	Calculation of volume difference between two terrains	x	x		x		x	
Data import/export	Import from Google Maps (Raster & Elevation points for DTM)	x	x		x		x	
	Import/export GIS (.shp, .tab, databases)	x	x		x		x	
	Import/export LandXML, .txt, Isybau	x	x		x		x	
	Import/export Civil 3D gravitational pipe networks	x	x		x		x	
	Post-processing tools (pipes, manholes)	x	x	x	x	x	x	x
	External data links and document links	x	x		x		x	
	Export to BIM (.ifc, .nwc)	x	x		x		x	
Parcel tools	Parcel design and editing	x					x	x
	Parcel creation from lines/polylines	x					x	x
	Data capture from texts, block attributes and databases	x					x	x
	Buffer and overlay analysis	x					x	x
	Parcel/pipeline intersection analysis	x					x	x
	Parcel export to lines/blocks	x					x	x
Raster/Vector map tools	Supported file types .tfw, .jgw, jpeg2000, .ecw and GeoTIFF	x						
	Supported file types .dwg, .dgn, .dwf and .pdf	x						
	Group, draw boundaries, insert	x						
	Attach and filter	x						
Gas pipeline design tools	Arc calculation rules	x					x	x
	Horizontal and vertical arcs drawing and editing	x					x	x
	Arc labels, reports	x					x	x
	Long sections with arc data	x					x	x
Vacuum-system design tools	System elements: Aqseptence (Rœdiger)	x	x	x				
	Special node types for chambers, inspections, valves, lifts	x	x	x				
	Long section customization features (e.g., insert lift)	x	x	x				

LANGUAGE VERSIONS English, German, Spanish, Italian, Polish, Czech, Slovenian, Croatian, Serbian, Bulgarian and Turkish.

SYSTEM REQUIREMENTS AutoCAD® / Civil 3D®, from version 2019 to the latest release, 64bit

URBANO 11

LICENSE TYPES	Permanent	Rental 365 days	Rental 90 days
Single user	x	x	x
Network user	x	x	x
Software updates	optional	included	included
Try&Buy purchase	rent risk-free for 1 year, with an optional surcharge for the permanent license		

Urbano is a full-featured design, calculation and analysis software for storm and sanitary sewage (gravity, pressure and vacuum), water and gas distribution and other pipe infrastructure networks. With the support of our users and partners, we develop and implement the Urbano software collection in more than **10 language versions** worldwide. For more than **30 years** we've been developing solutions for successful design.

All you need for extraordinary design.

Developed by

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