# URBANO 10

PIPE INFRASTRUCTURE DESIGN
SOFTWARE COLLECTION

## URBANO ULTIMATE

STORM & SANITARY SEWAGE, WATER & GAS
DISTRIBUTION DESIGN SOFTWARE

## CANALIS PRO

STORM & SANITARY SEWAGE
DESIGN SOFTWARE

## HYDRA PRO

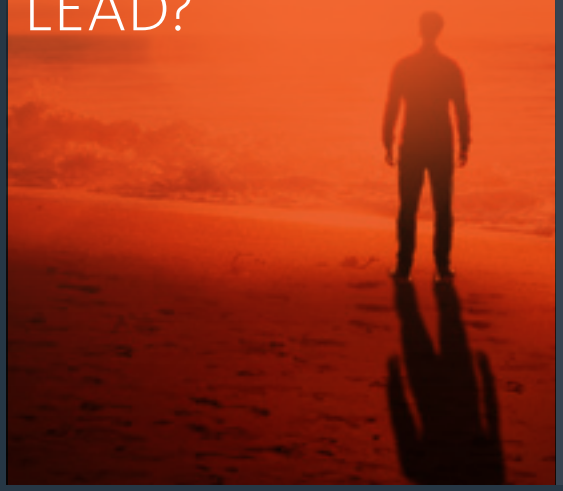
WATER DISTRIBUTION
DESIGN SOFTWARE

## GASNET PRO

GAS DISTRIBUTION
DESIGN SOFTWARE

# WELCOME TO YOUR NEW WORKFLOW!

# HOW TO START, HOW TO BE SUCCESSFULL, WHERE WILL IT LEAD?



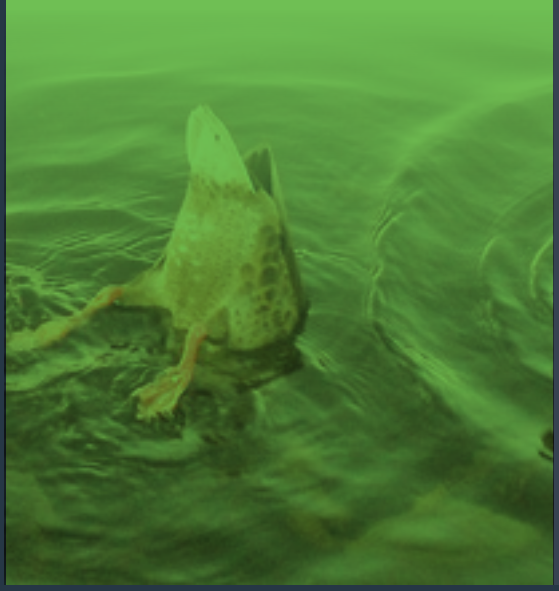
When considering a new software, one of the main things you need to ask yourself is

*“How will this software connect to my current workflow?”*

The assumption is, you want to improve your workflow, but you don’t necessarily want to change the entire workflow. In many cases, you cannot change the entire workflow even if you wanted to. Still, there is the need to be more competitive, more productive, to increase design quality, to comply with standards, follow engineering practice, embrace BIM and modern IT trends.

**Urbano** software allows you to move towards all those goals and you get to decide on the best course of action.

# LET'S DIVE INTO SOME OF THE MOST COMMON QUESTIONS



**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.

**IFC / Navisworks -** *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).

**Data -** *Yes, you can import, edit, visualize and export data.*
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.

**Clash analysis -** *Yes, you can create clash analysis reports between different pipe networks and even with CAD elements.*

Clash detection functionality allows you fast and powerful intersection analysis 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 section. Clash analysis is fully dynamic and any change in design (plan or profile) is automatically reflected in all data tables, labels and reports.

**BIM 360 and similar platforms -** *No problems!*

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 workflows that can incorporate Urbano.

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.

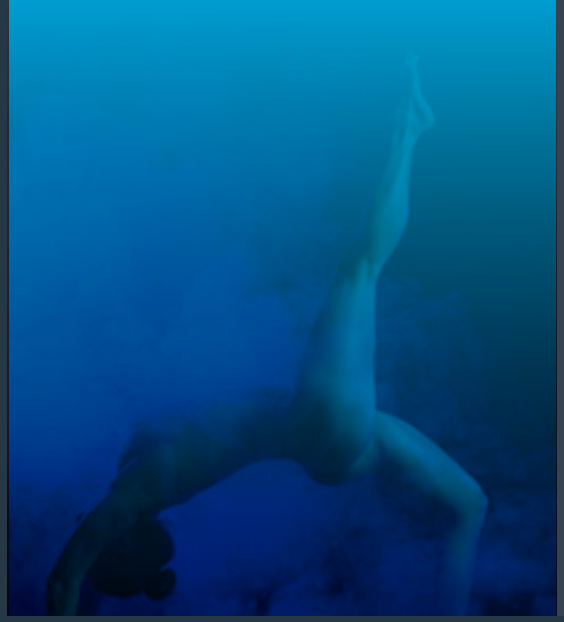
Hydraulic modeling software for water and sewage networks can be connected with Urbano to a streamlined workflow.

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 SWMM file and use it with your standard hydraulic modeling solution.

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, trenches etc.). You can also import/export data with Civil 3D gravitational pipe networks and LandXML.

# FLEXIBILITY BY DESIGN



## UI

The first thing you notice is the remarkable user interface: you can adapt the 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 and you can operate several floating windows at the same time. An additional docking window enables you to monitor the program's status messages or inspect and edit node and section data selected from the drawing.

## Configurations

One of the cornerstones of the program is the configuration system: 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 e.g. long sections, labels, styles, data import/export, pipe clash analysis and the 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 and exchange them with other Urbano users.

## Catalogs

With pipe network design you can use a lot of equipment e.g. pipes, manholes, valves. In Urbano, all these items are stored in catalogs that you can edit, extend and exchange with other program users. Pipes, manholes and prefabricated manhole elements can be edited in spreadsheet mode and you can import their data directly from MS Excel.

## Data selection

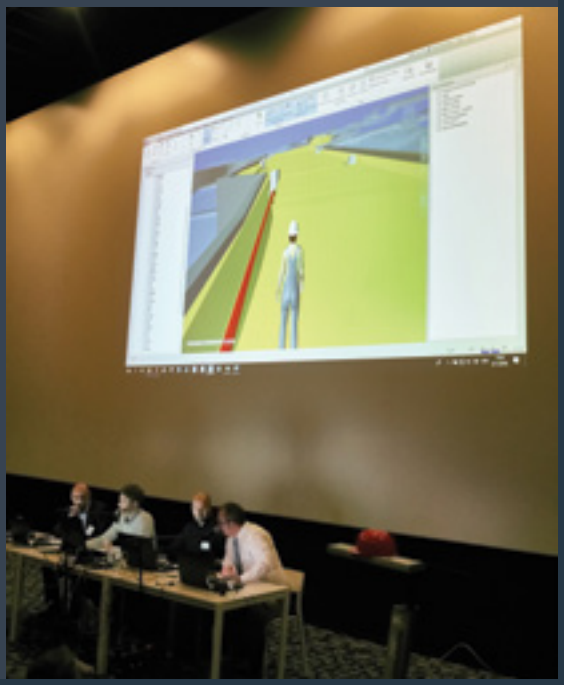
Data selection and data input represent a major distinction between Urbano and other programs. Urbano includes the selection of multiple sections or nodes, from node to node, from station to station, according to a query etc. You can even create custom selection sets based on standard selection types.

## Plan styles

Clear, standards-driven plans are an important part of any project. 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, can display any node/section data, and 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.




# STORM & SANITARY SEWAGE, WATER & GAS DISTRIBUTION DESIGN SOFTWARE

**Digital terrain model (DTM)**

Most projects nowadays start with a digital terrain model. You can use the Terraform module to create DTMs from CAD objects and block attributes, or import points from text and shape files or databases. You can apply different visual styles to the DTM, store it as a 3D Face object and perform some basic editing and analysis. Once you determine a pipe network 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**

The design, editing and styling functions enable quick design changes while preserving overall project accuracy. 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 manually 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 and 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. And, you are always using the same tools for all pipe networks.

## Calculations

Determining catchments areas, calculating flows and executing hydraulic calculations make an important part of the design process. That is why we provide several options to perform them. 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

You start by selecting an existing or creating a new trench configuration. The configuration determines some general properties like side slopes, layers, bedding and benching, as well as 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. sewage, water, gas, electricity. 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. The whole parametric trench model design is interactive i.e. you can view and analyze your progress with dynamic cross sections and volume calculations.


STORM & SANITARY SEWAGE, WATER & GAS DISTRIBUTION DESIGN SOFTWARE

**Cross sections**

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

**Data import/export**

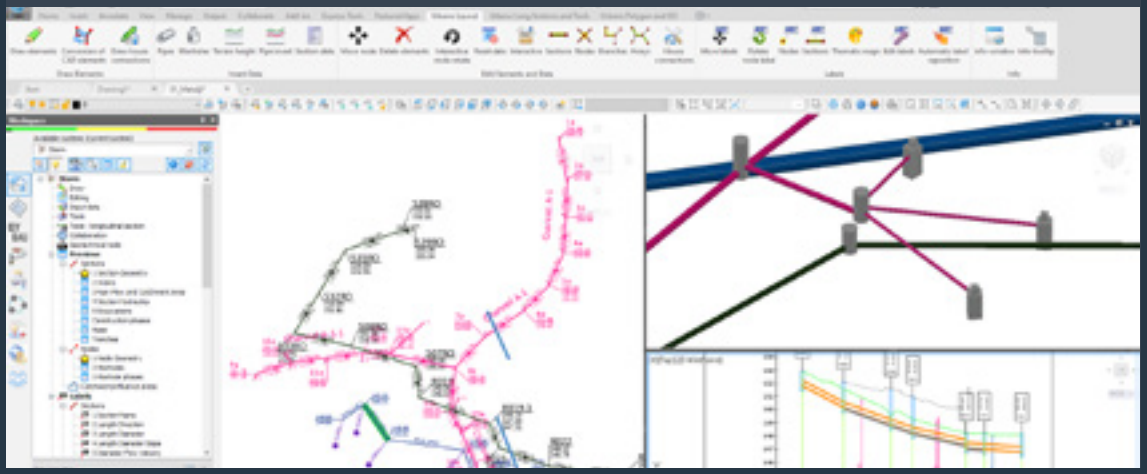
You can create custom import/export configurations for different data source. This makes it easy to test alternative import/export procedures for complex data structures. The imported data for nodes and sections is used to draw a pipe network directly. You can then proceed with standard Urbano editing and analysis tools. Import and export configurations can be stored, exchanged with the .dwg file or 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 e.g. picking maps from the drawing, displaying maps crossed by a line or displaying all maps visible in the current view.




STORM & SANITARY SEWAGE DESIGN SOFTWARE

**Pipe invert design**

You are free to use any of the manual and automatic design tools for pipe invert design. With the interactive manual design and editing tools you can preview the results of all operations before execution. Draw with determined slope steps, set a uniform slope across multiple manholes or insert/move a manhole directly in the long section. Automatic pipe invert editing is based on a set of editable criteria stored in a configuration. The criteria include settings like maximum and minimum depth and slope, the 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 manual editing tools to further improve the design.

**Prefabricated manholes**

You can determine 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

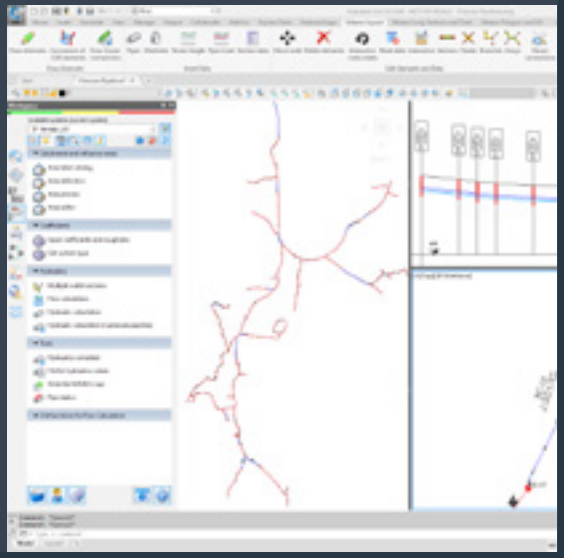
You can design and edit house connections with a set of special tools. The design functions include setting starting depth and slope, creating house connections with multiple pipe segments and aligning reference points for the connecting and main pipe (e.g. axis on axis). The connecting point on the main pipe can be preserved even if the main pipe is moved.

### Flow calculations

The new, completely redesigned flow calculation manager handles multiple calculation methods for rain flows, waste flows, transit flows 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 dimensioning

The hydraulic calculations are based on the Darcy-Weisbach and Colebrook-White equations. You can use existing flows and pipe slope to calculate pipe diameters or you can use existing flows and pipe diameters to calculate pipe slopes. In both cases 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.




## WATER DISTRIBUTION DESIGN SOFTWARE

**Connected workflows: EPANET**

Full bi-directional data exchange between Urbano and EPANET! You can use Urbano to design the pipe network in plan and long sections, input water demands, pipes, valves and other equipment needed for the hydraulic calculation. You can make 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 software. There, you can do some advanced hydraulic modeling and import results back to Urbano to show results in CAD environment (e.g. labels, thematic maps in plan, piezometric lines in long sections…).

**Pipe invert design**

When you draw new network sections you can immediately set a default depth below terrain for the pipe invert. Also, you can use any of the manual and automatic design tools for pipe invert design directly in long sections. The automatic design function includes an optimization of air release and sludge release valves, reducing their overall amount. You can run different configurations on the same pipe network part or use the manual editing tools to further improve the design.

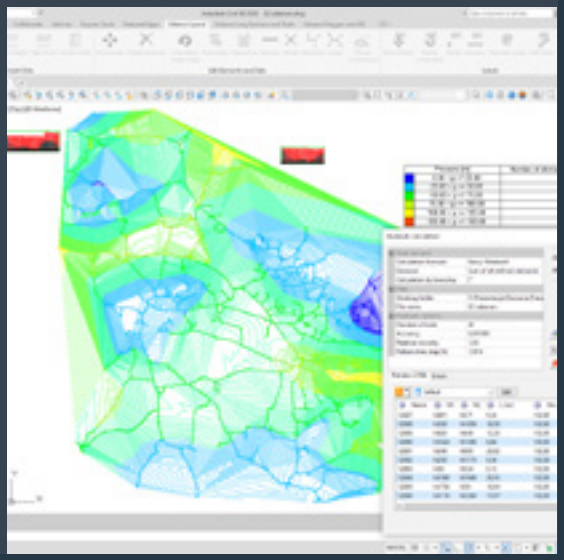
## Automatic pipe diameter optimization

For water distribution networks, calculating and determining optimal pipe diameters is no straightforward task. Depending on network size and topology type, it can become increasingly complex and time consuming. The intricate dependencies of flow, velocity, pressure, flow direction and pipe diameter are especially demanding 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 maximum 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 schematics

Urbano includes automatic and manual tools to create node schematics. The new automatic tool allows you to select nodes, place valves and create node schematics. The schematics are labeled and a part list is created automatically.

You can edit the schema by selecting an alternative solution, changing the order of elements or replacing some element. The manual node schema design tools allows you to create detailed node schematics based on network nodes and a catalog of assembly elements e.g. fittings and valves. You can create custom parametric elements or elements from AutoCAD® blocks. A table with part name and quantity is generated automatically.




GAS DISTRIBUTION
DESIGN SOFTWARE

**Geology data**

For gas pipeline design, geology data is very important as boreholes are drilled in the general vicinity of the future pipeline. You can import borehole data from a MS Excel file following a specific data structure with information such as groundwater level, soil type depths, soil acidity and so on. You can adjust the import file according to your usual data representation in long sections. Once imported, the borehole data can be included in long sections. You can adjust the long section configuration distance between the boreholes and the pipeline to determine which boreholes will have to be projected to the long section. This improves the insight gained and helps you to avoid hazardous areas.

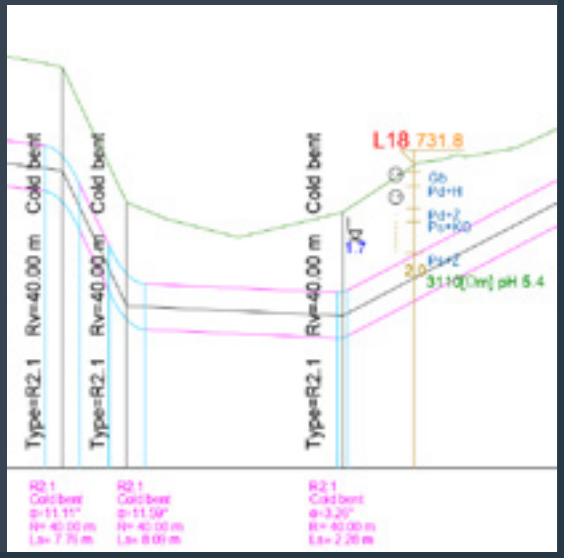
**Pipeline arcs**

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 as preferred arc radius, depending on the deflection angle between pipes or depending on pipe diameter and pipe type e.g. inductive, cold bended, elastic. When you start the calculation, the program will filter out 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 arc and refresh the long section. You can adjust the long section configuration to show horizontal arcs, vertical arcs (both in real and distorted scale) 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. Give labels all the information you need e.g. deflection angle, arc radius, chainage. 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 a 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 data table.



| Feature group | Feature | URBANO Ultimate | CANALIS Pro | CANALIS | HYDRA Pro | HYDRA | GASNET Pro |
|---|---|---|---|---|---|---|---|
| General | Customizable UI (Ribbons, Workspace) | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Customizable configurations and templates | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Customizable catalog with import from MS Excel | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Manholes from prefabricated elements | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Custom user data and calculated data | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Element selections and data input | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Digital terrain model | Create DTM from CAD elements, text, blocks, .txt file | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Breaklines, surface styles, multiple surfaces | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Direct use of Civil 3D DTM and 3D Face objects | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Plan tools | Network drawing and editing | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Conversion of lines/polylines | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Data capture from texts and block attributes | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | House connection drawing and editing | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Labels (nodes, sections, branches, stations, special) | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Manual and automatic label rearrangement | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Styles (2D, 3D) | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Long section tools | Long section editor and manager | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Manual pipe invert design and editing | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Automatic pipe invert calculation | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Multiple pipe networks in one long section | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Long sections with parcel data | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Long sections preparation for plotting | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Analysis tools | Data tables (inspection, validation, editing, export) | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Thematic maps | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Queries | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Advanced pipe clash analysis | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Schemas and reports | Reports: manhole, angles, cost estimate, custom | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| | Manhole schema editor | ✔ | ✔ | ✔ | | | |
| | Node schema automatic creation | ✔ | | | ✔ | ✔ | |
| | Node schema detailed design | ✔ | | | ✔ | ✔ | ✔ |
| Flow and hydraulic calculations | Catchment and influence area design | ✔ | ✔ | ✔ | | | |
| | Rain (simple, IDF curves) and waste flow | ✔ | ✔ | ✔ | | | |
| | Flow scenarios | ✔ | ✔ | ✔ | | | |
| | Hydraulic calculation sewage & export to SWMM | ✔ | ✔ | ✔ | | | |
| | Network equipment input (valves, pumps, tanks) | ✔ | | | ✔ | ✔ | |

| Feature group | Feature | URBANO Ultimate | CANALIS Pro | CANALIS | HYDRA Pro | HYDRA | GASNET Pro |
|---|---|---|---|---|---|---|---|
| | Water demands scenarios | ✔ | | | ✔ | ✔ | |
| | Hydraulic calculation water acc. to EPANET | ✔ | | | ✔ | ✔ | |
| | import/export EPANET .inp | ✔ | | | ✔ | ✔ | |
| Cross sections and trenches | Basic cross sections with editor and manager | ✔ | ✔ | ✔ | ✔ | ✔ | |
| | Standard trenches including benching and formwork | ✔ | ✔ | ✔ | ✔ | ✔ | |
| | Excavation calculation report | ✔ | ✔ | ✔ | ✔ | ✔ | |
| | Trench borders and 3D trench grading | ✔ | ✔ | ✔ | ✔ | ✔ | |
| | Advanced cross sections with terrain | ✔ | ✔ | | ✔ | | |
| | Parametric trenches for multiple pipe networks | ✔ | ✔ | | ✔ | | |
| | Calculation of volume difference between two terrains | ✔ | ✔ | | ✔ | | |
| Data import/export | Post processing tools (pipes, manholes) | ✔ | ✔ | ✔ | ✔ | ✔ | |
| | External data links and document links | ✔ | ✔ | | ✔ | | |
| | Import/export GIS (.shp, .tab, databases) | ✔ | ✔ | | ✔ | | |
| | Import/export LandXML, .txt, Isybau | ✔ | ✔ | | ✔ | | |
| | Import/export Civil 3D gravitational pipe networks | ✔ | ✔ | | ✔ | | |
| | Export to BIM (.ifc, .nwc) | ✔ | ✔ | | ✔ | | |
| Parcel tools | Parcel design and editing | ✔ | | | | | |
| | Parcel creation from lines/polylines | ✔ | | | | | |
| | Data capture from texts, block attributes and databases | ✔ | | | | | |
| | Buffer and overlay analysis | ✔ | | | | | |
| | Parcel/pipe intersection analysis | ✔ | | | | | |
| | Parcel export to lines/blocks | ✔ | | | | | |
| Raster/Vector map tools | Supported file types .tfw, .jgw, jpeg2000, .ecw and GeoTIFF | ✔ | | | | | |
| | Supported file types .dwg, .dgn, .dwf and .pdf | ✔ | | | | | |
| | Group, draw boundaries, insert | ✔ | | | | | |
| | Attach and filter | ✔ | | | | | |
| Gas pipeline design tools | Boreholes data import | ✔ | | | | | ✔ |
| | Arc calculation rules | ✔ | | | | | ✔ |
| | Horizontal and vertical arcs drawing and editing | ✔ | | | | | ✔ |
| | Arc labels, reports | ✔ | | | | | ✔ |
| | Long sections with borehole and arc data | ✔ | | | | | ✔ |

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

**LANGUAGE VERSIONS**

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

**SYSTEM REQUIREMENTS**

AutoCAD® / Civil 3D®, from version 2015 to the latest release, 64bit

**Developed by STUDIOARS**

***Urbano*** is a full-featured design, calculation and analysis software for storm and sanitary sewage, water distribution, gas 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.

Our solutions help engineers and technicians develop the infrastructure of tomorrow.

*Flow into the future*

STUDIOARS