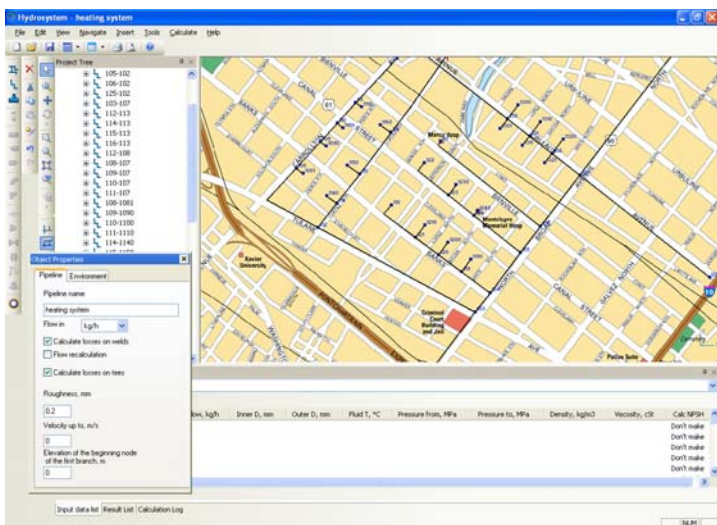




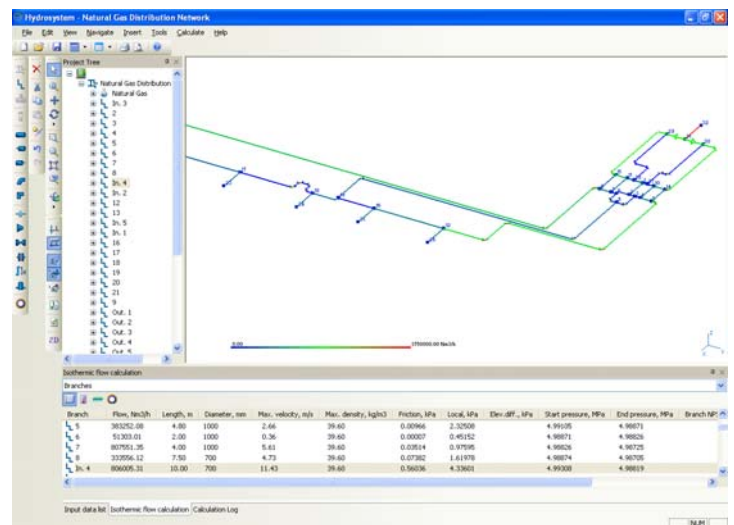
HYDROSYSTEM

Nominal Size Selection, Heat Losses & Hydraulic Calculation of Pipeline Systems

Hydrosystem software performs heat losses & pressure drop calculations as well as nominal size selection for the pipeline networks, transporting compressible or incompressible one phase fluids. It is widely used in power, oil refinery, petrochemical, gas, oil, chemical and other industries. Different parameters of the process pipings, main lines, heating and gas-distributing systems and other pipe networks can be calculated using the program.



Entering Heating System Data



Viewing Calculation Results (pressure losses)

Hydrosystem performs three main types of calculations:

- Isothermal flow pressure drop calculation (assuming that fluid temperature is constant),
- Branch NS selection based on entered node pressures and branch flows ,
- Non-isothermal calculation (considering heat losses and temperature drop factors).

Isothermal flow pressure drop calculation and NS selection.

Software allows performing various tasks depending on calculation type and data entered (node pressures, demands, fluid parameters, pipeline structure):

- Selecting inner branch diameters and isothermal pressure drop calculation on the basis of terminal node pressures and branch flows (NS selection),
- Flow capacity calculation with given terminal node pressures,
- Isothermal pressure drop calculation with given branch flows or/and node pressures,
- Different combination of calculation types mentioned above.



Non-isothermal calculation.

This module performs hydraulic, heat losses and temperature drop calculation. It considers environmental data, wall material, pipeline location (indoors, outdoors, underground, in underground duct, in tunnel), insulation and cover material properties as well as their changes along the pipeline.

Graphic User Interface is simple and user-friendly. By default the graphic window displays the pipeline flowsheet in a way that minimizes intersections between different pipeline branches. The wide set of navigation tools, different levels of detailing help to analyze the pipeline structure. Precise graphic representation and graphic editor allows creating the “copy” of real pipeline. One may also specify the raster background (for example, a city or factory map) before entering flowsheet data and move the nodes directly on the map. The software in this case automatically determines the pipe lengths according to the map scale. This mode is especially useful for utilities network calculations.

The calculated results include fluid velocity, friction and local pressure drops, fluid properties, NPSH and others. The accuracy of calculations is ensured by automatic recount of fluid properties and flows at every pipeline component as well as by detailed component calculations in accordance with correlations by Idelchik, Miller and other sources. The results may be shown on the pipeline graph by introducing different colors for different values of specific parameter. For example, one can easily determine a component with maximum pressure loss value.

The software package also includes the following modules:

- **STARS** library calculating properties of individual fluid components, oil fractions and their mixtures in liquid and gas phases. Program database contains more than 1600 components. STARS can automatically compute phase equilibrium and check validity of fluid phase entered.
- **WaterSteamPro** module more accurately calculates water and steam fluid properties on the basis of IAPWS-IF97 equations.

A built in **Report Generator** allows to preview and print the output documents, as well as to export them to various formats for further use. End users can customize the documents (for example, add a company logo) via the **Designer** tool.

Head profile diagram in MS Excel may be constructed in order to assist in water network calculations. Graphic pipeline representation may be exported to **DXF format**.

The software is being used by hundreds of Russian and foreign companies for more than 25 years, which ensures its accuracy and robustness.

System Requirements: Intel-compatible computers under Windows 2000/XP/Vista.