PIPENET®

LEADING THE WAY IN FLUID FLOW ANALYSIS

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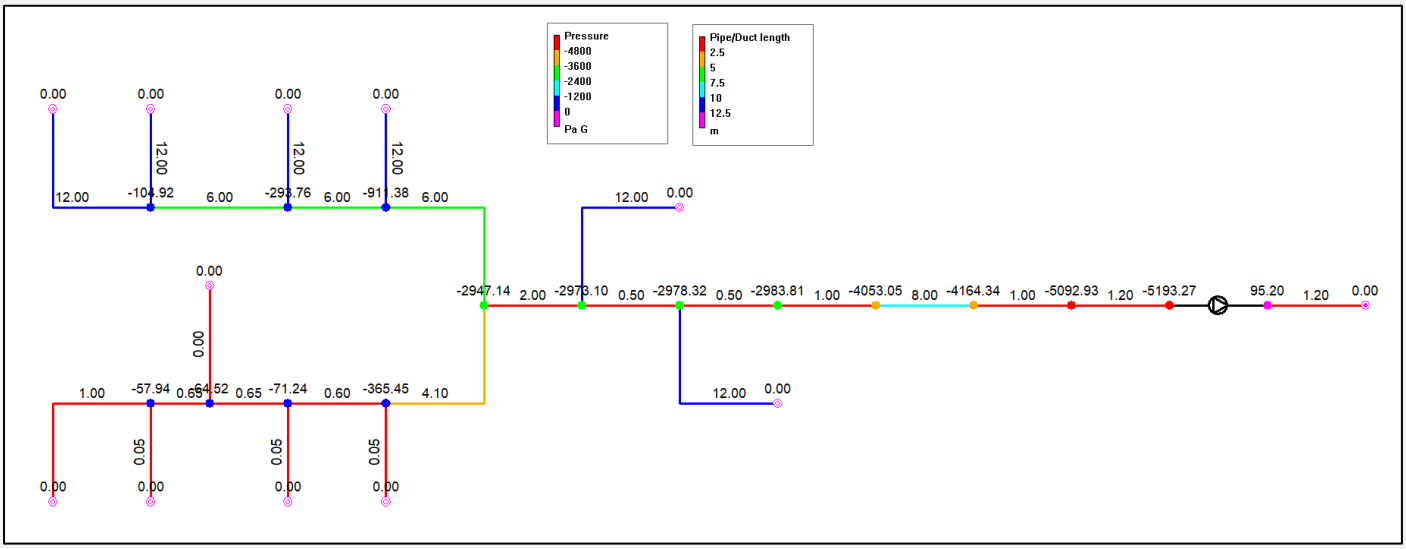
Advantages and Unique Features of PIPENET Standard Module

- **Acceptability:** Wherever you go, PIPENET is accepted, approved and frequently required. Some of the largest companies in the world specify PIPENET on their projects.
- **Comprehensive fluid choices:** PIPENET Standard can deal with compressible as well as incompressible flow and steam.
- **Simplicity combined with powerful capability:** PIPENET simple and user-friendly interface ensures fast and easy learning, saving a lot of your time and money on training.
- **Fast calculations:** obtaining calculation results within seconds, you can run multiple scenarios quickly and optimize your design in the best possible way.
- **Accurate results:** validation documents demonstrate the accuracy of PIPENET results.
- **Applications:** air, water, steam utility systems design, and ventilation (HVAC) systems design.
- **Versatile calculation options:** pressure drop, flow balance, pipe sizing and temperature calculations.
- **Comprehensive modelling tools:** pipes, ducts, pumps, fans, heat exchangers, control valves, nozzles, orifice plates, elastomeric valves, check valves, fixed pressure losses, filters, leaks, breaks/blocks and other items.

Ventilation system leak modelling



- **Fast and efficient creation of large and complex networks:** an extensive range of tools for building the most complex networks easily and quickly

  - ✓ **Copy/paste function:** Copy, cut, and paste functions are available for whole sub-networks including schematic and data. Copy and paste between different networks or within the same network.

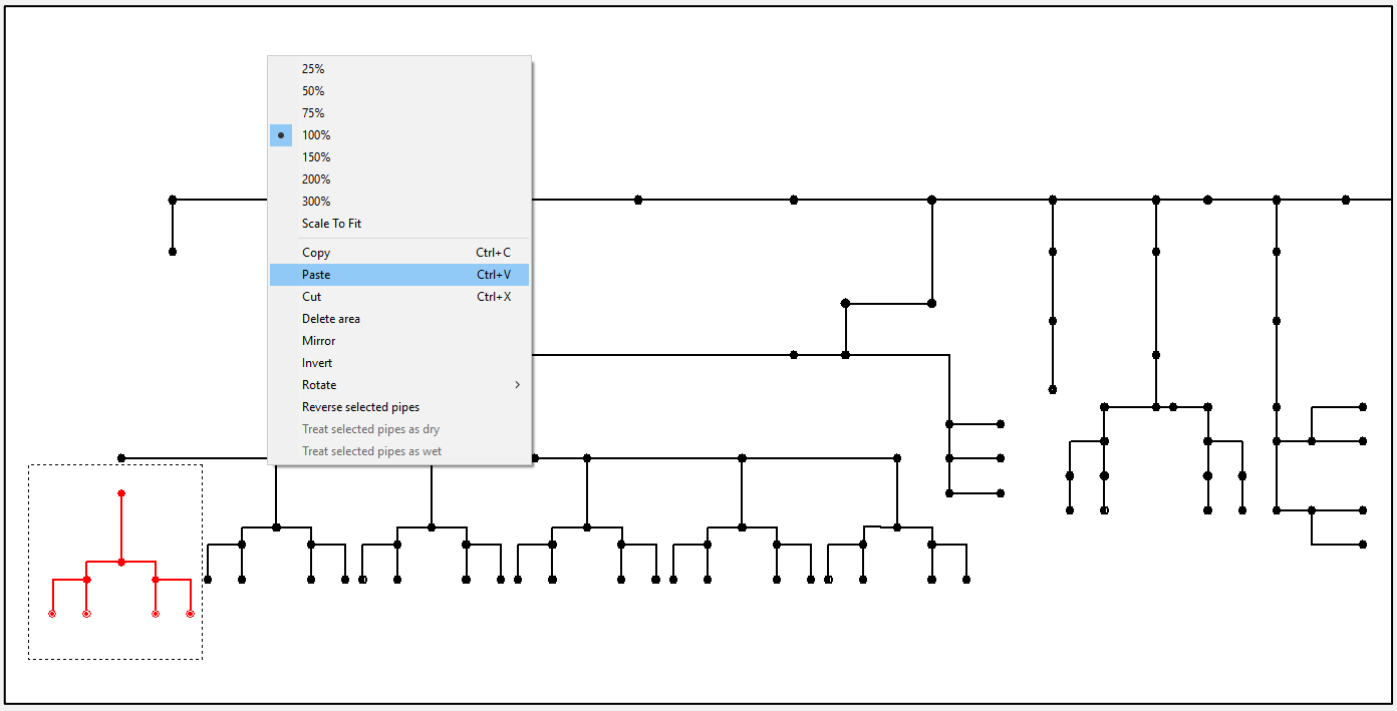
  - ✓ **"Area" tool and "polygon" tool:** With those two tools, simply choose an area in the schematic using the mouse, then copy, cut, paste, delete, mirror, invert and rotate all the components in this area in one step. This really saves time!

  - ✓ **Multiple components creation tools:** "Add multiple pipes" tool is especially useful in creating multiple pipes at the touch of a button.

  - ✓ **Component graphical manipulation:** The components can be flipped or rotated by dragging the ends of the components or by using the mirror, invert and rotate functions. In addition, undo/ redo, zoom/pan, schematic overview, combination of subnets, and an easy to use data window also make the component graphical manipulation a simple task.

  - ✓ **Global edit function:** Using this function, the attributes for all the components can be edited in one step.

  Creating large networks by copying and pasting subnetworks



- **Powerful network solving ability:** no matter how complex a network, and how many loops are included, how many pumps there are and where they are located, the network can be solved precisely and quickly.

- **Extensive network modelling capabilities:** inbuilt and user-defined properties, units, schedules, fittings etc.

  - ✓ **Pipe sizing:** PIPENET has a huge range in its pipe sizing function, enabling engineers to plan as easily for massive pipes as for small pipes.

  - ✓ **Pipe status:** PIPENET recognises pipes as blocked or broken, enabling fast repair, crucial for piping systems.

- ✓ **Units:** PIPENET has convenient unit options, including SI, Metric, British, US, and user defined. The user defined unit option allows users to define their own preferred unit combination and save it as a default.

- ✓ **Libraries:** Extensive libraries are available for pipe schedules, pumps, nozzles, linings and deluge valves. User can customise and add their own data to a library.

- ✓ **Fittings:** Most popular fittings are available as the built-in fittings in PIPENET, such as tilting disc, 3-way cock, elbow, bend, ball valve, butterfly valve, gate valve, etc. User can also define their own fittings.

- ✓ **Heat transfer:** capability of modelling heat transfer from and to the environment with lagged or unlagged pipes.

- ✓ **Thermodynamic properties:** built-in databank of hydrocarbons, Peng-Robinson and SRK equations of state, mixing rules, computation of thermodynamic and transport properties.

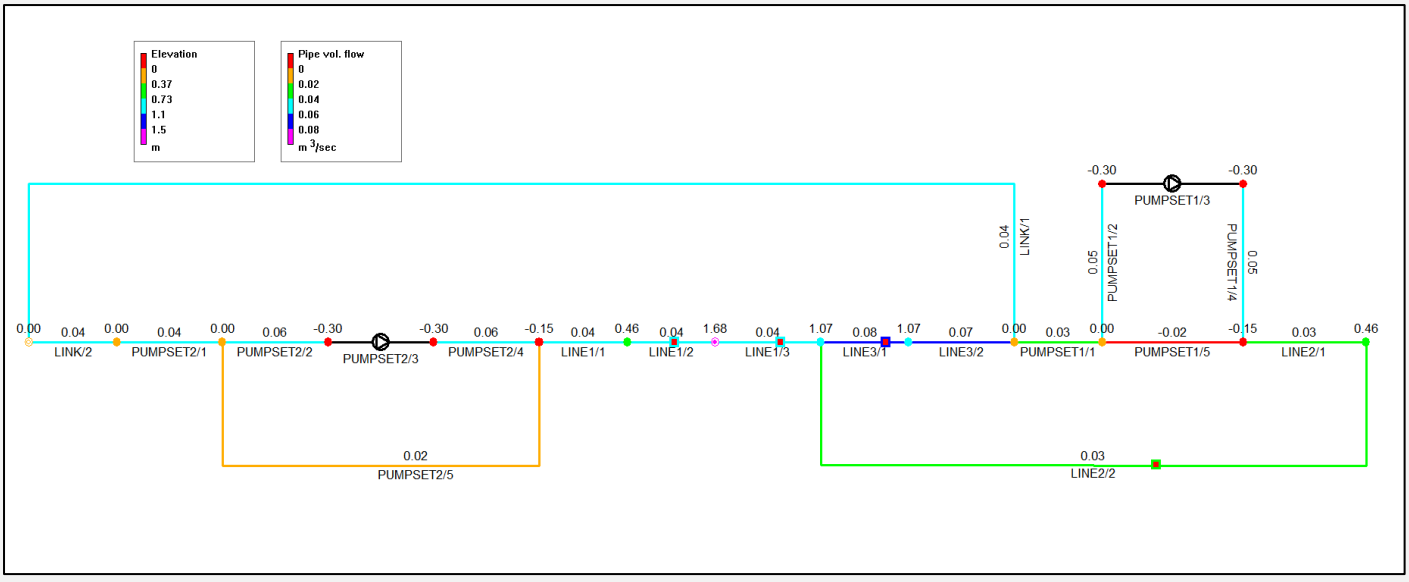
- ✓ **Pump curves:** PIPENET has three different types of pump curve: quadratic, cubic and spline smooth. Pumps can be defined flexibly, precisely and easily with these options.

- ✓ **Checking facilities:** PIPENET provides helpful checking facilities, for example PIPENET can identify an elevation error easily.

- ✓ **Autosave:** The engineer can specify the frequency at which the autosave operations should be performed.

- ✓ **Default values:** Set up default values for the common attributes, and there will be no need to re-input values in the table.

Closed loop system



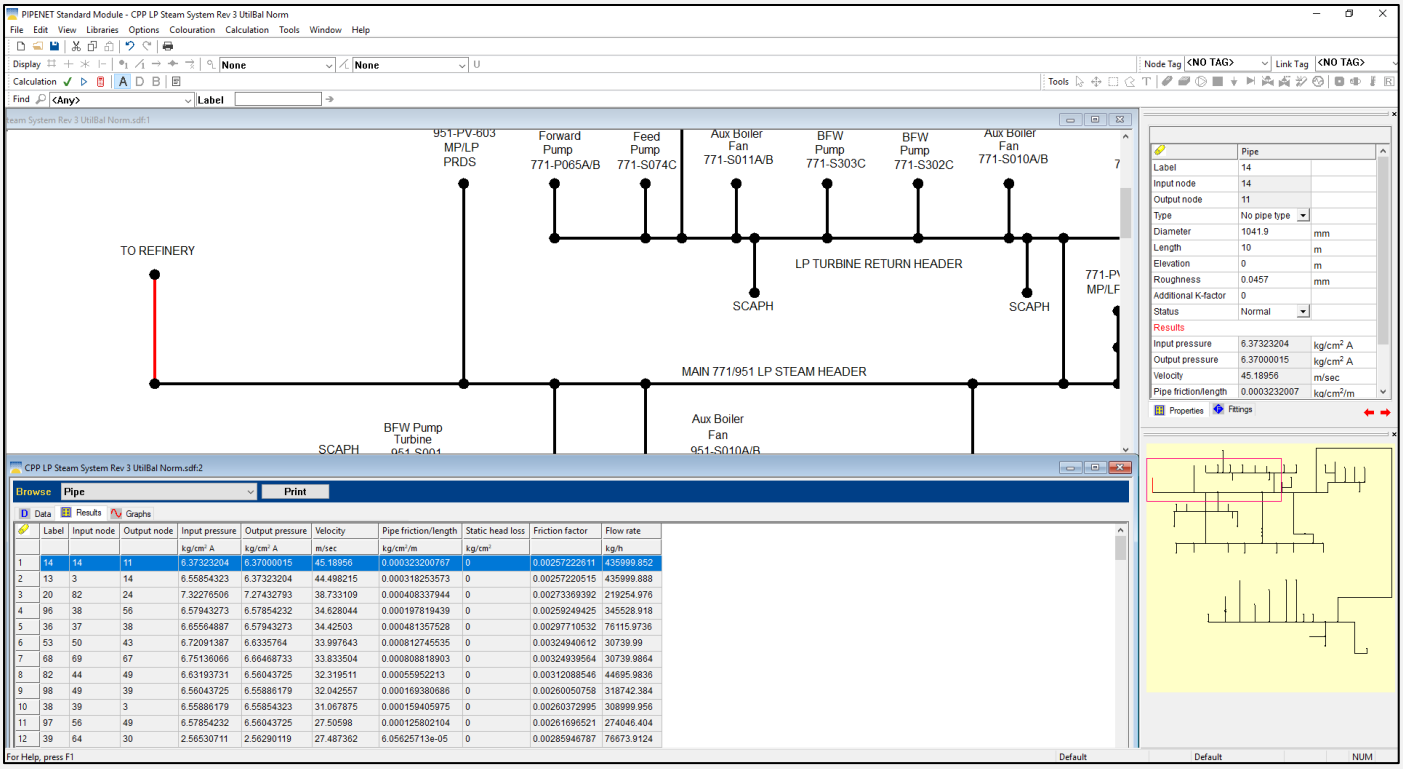
- **Clear results display:** The results are summarized in the output report, shown in the property window of each component, listed in the data window as tables, and also can be displayed in the schematics. Due to these features, the results can be read clearly, easily and conveniently.

  - ✓ **Data table:** PIPENET presents all the data in table format. The table is clear, easy to read and can be easily modified.

  - ✓ **Colouration:** All the nodes, pipes and nozzles can be coloured according to user selected attributes. Such attributes can be data or calculated results.

- ✓ **Sorting function:** Sort the data as you prefer in the data window. For example, the pipes can be sorted according to the velocity and the nozzles can be sorted according to the deviation. Thanks to the sorting function you can find the components with highest and lowest attributes by just a mouse click, no matter how large and complex the network is.

Sorting function: Pipe velocity is sorted in the decreasing order. The pipe with the highest velocity is highlighted red



	Label	Input node	Output node	Input pressure kg/cm² A	Output pressure kg/cm² A	Velocity m/sec	Pipe friction/length kg/cm²/m	Static head loss kg/cm²	Friction factor	Flow rate kg/h
1	14	14	11	6.37323204	6.37000015	45.18956	0.000323200767	0	0.00257222611	435999.852
2	13	3	14	6.55854323	6.37323204	44.498215	0.000318253573	0	0.00257220515	435999.888
3	20	82	24	7.32276506	7.27432793	38.733109	0.000408337944	0	0.00273369392	219254.976
4	96	38	56	6.57943273	6.57854232	34.628044	0.000197819439	0	0.00259249425	345528.918
5	36	37	38	6.65564887	6.57943273	34.42503	0.000481357528	0	0.00297710532	76115.9736
6	53	50	43	6.72091387	6.6335764	33.997643	0.000812745535	0	0.00324940612	30739.99
7	68	69	67	6.75136066	6.66468733	33.833504	0.000808818903	0	0.00324939564	30739.9864
8	82	44	49	6.63193731	6.56043725	32.319511	0.00055952213	0	0.00312088546	44695.9836
9	98	49	39	6.56043725	6.55886179	32.042557	0.000169380686	0	0.00260050758	318742.384
10	38	39	3	6.55886179	6.55854323	31.067875	0.000159405975	0	0.00260372995	308999.956
11	97	56	49	6.57854232	6.56043725	27.50598	0.000125802104	0	0.00261696521	274046.404
12	39	64	30	2.56530711	2.56290119	27.487362	6.05625713e-05	0	0.00285946787	76673.9124

- **Connection with other software programs:** PIPENET has interface with other widely used software programs.

  - ✓ **Interface with PDMS:** PIPENET Standard and PDMS have an interface. This interface was written by Aveva plc. and its intellectual property rights belong to them. It can extract data from the 3D model of PDMS, add performance data for items such as pumps (which are not stored in the PDMS model) and write a complete input file to PIPENET, including PIPENET network drawing. This can be opened in PIPENET and calculations can be performed directly.

  - ✓ **Interface with WORD:** PIPENET can export the schematic to clipboard, and then paste in other programs such as WORD. The calculated results from PIPENET can also be presented in WORD.

  - ✓ **Output to plotter:** PIPENET can export the schematic as HP-GL/2 format.

  - ✓ **Output to AutoCAD:** PIPENET can export DXF file which can then be imported into AutoCAD.

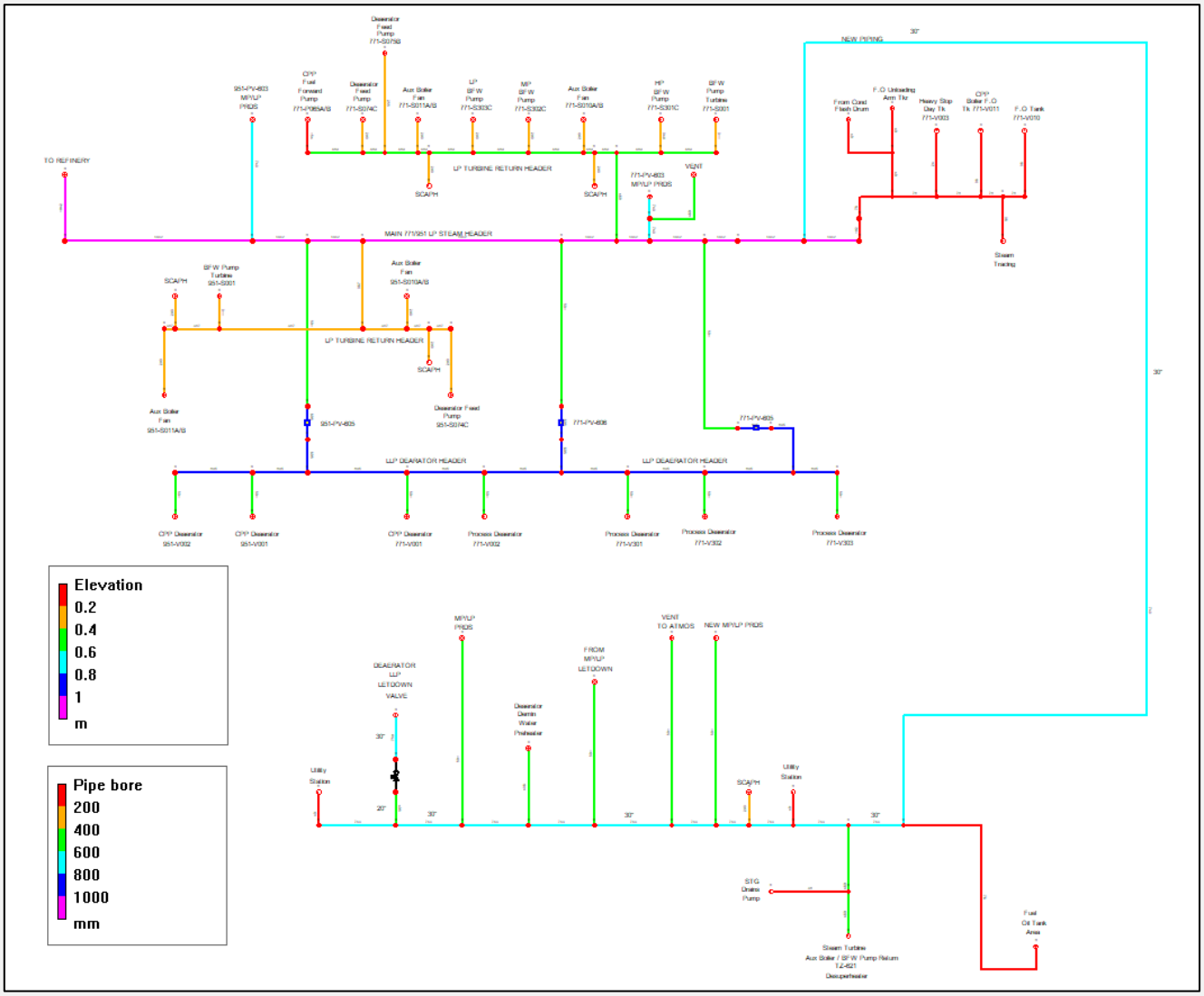
- **Comprehensive help information:** PIPENET provides comprehensive help information through the Sunrise website: www.sunrise-sys.com, help manuals, user manuals, training manuals and PIPENET News. Sunrise Systems Limited also organizes seminars and training courses to help users to enjoy the many features of PIPENET.

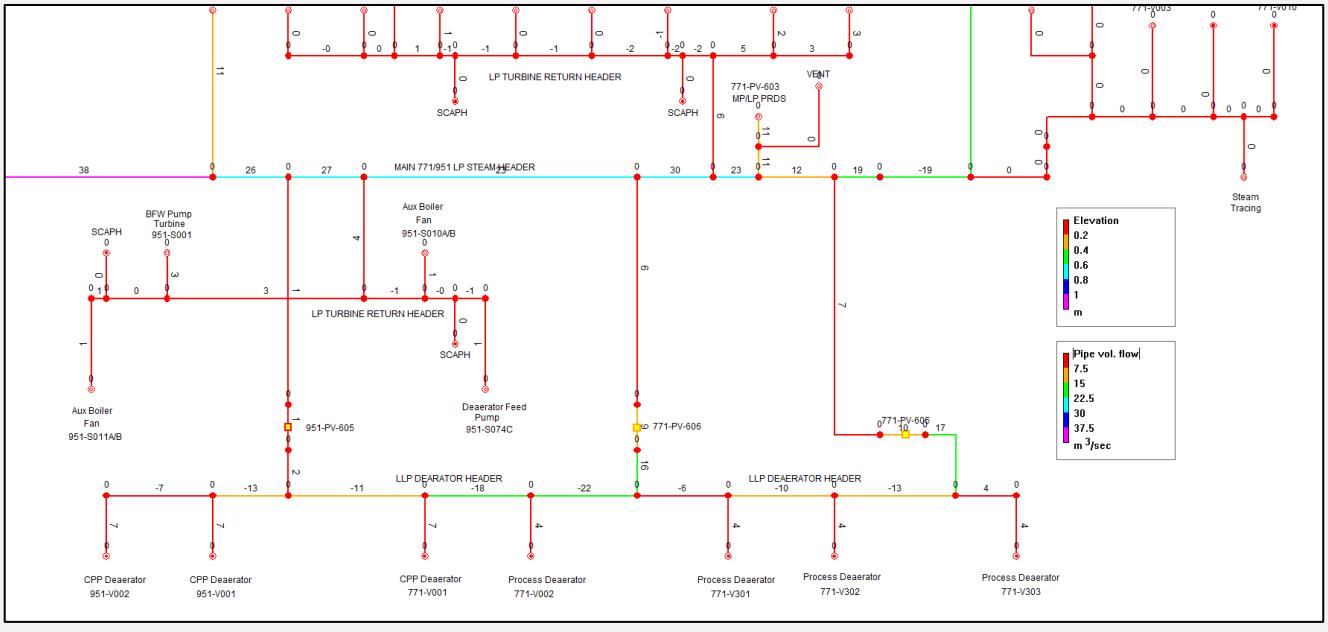
- **Customer support:** Sunrise Systems Limited provides prompt, friendly and professional customer support. Customer service to support our outstanding product is our first concern!

- **High quality standard:** Sunrise Systems Limited is qualified with ISO9001.

PIPENET Standard Module – Selected Applications

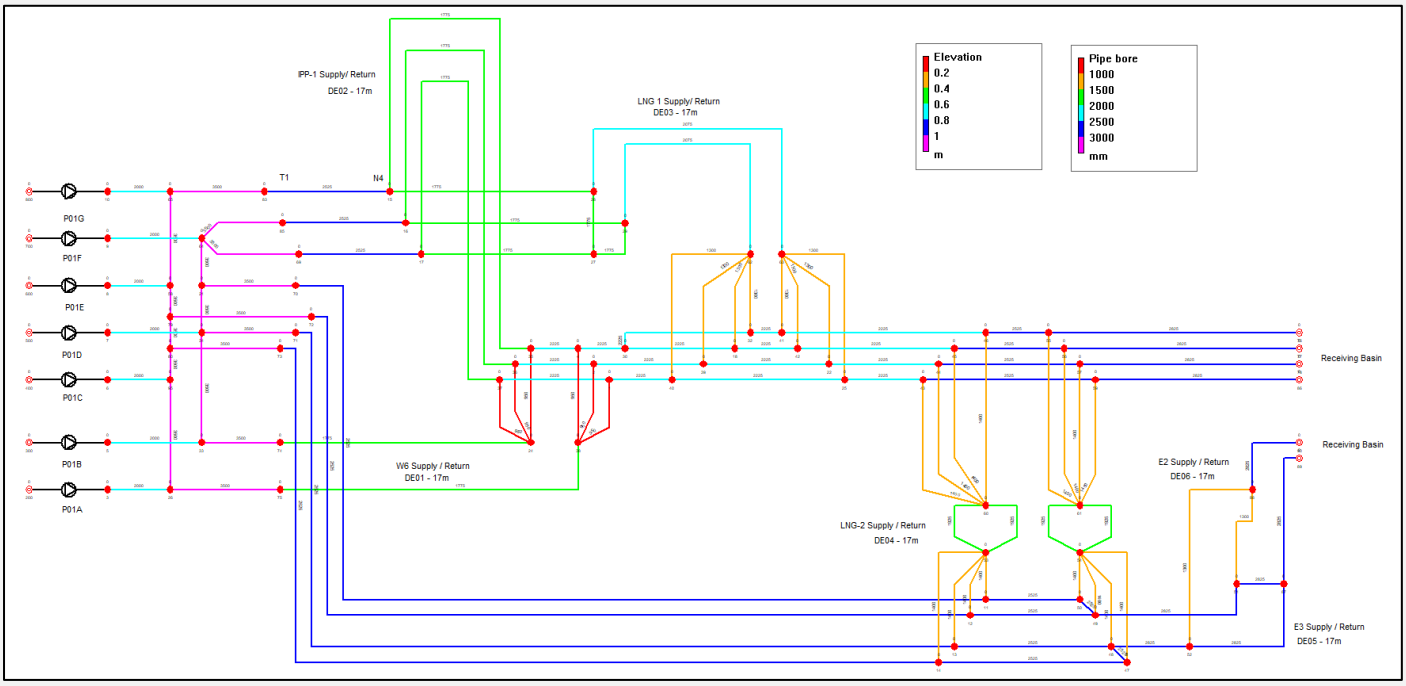
1. Refinery steam distribution system

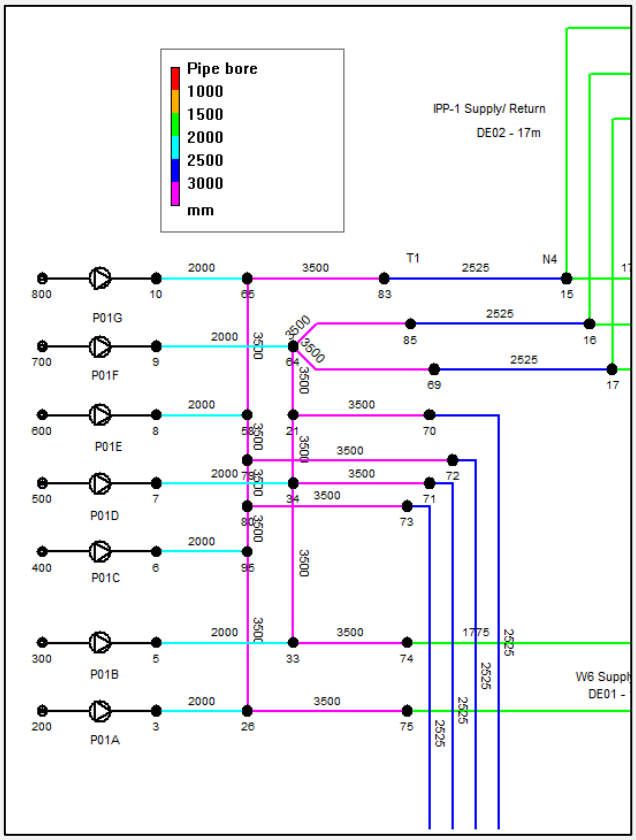


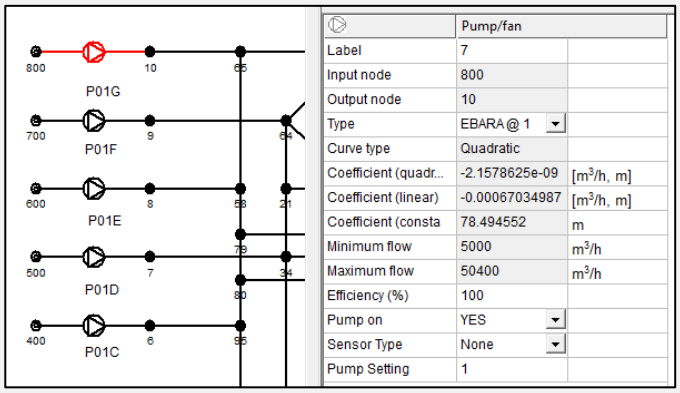


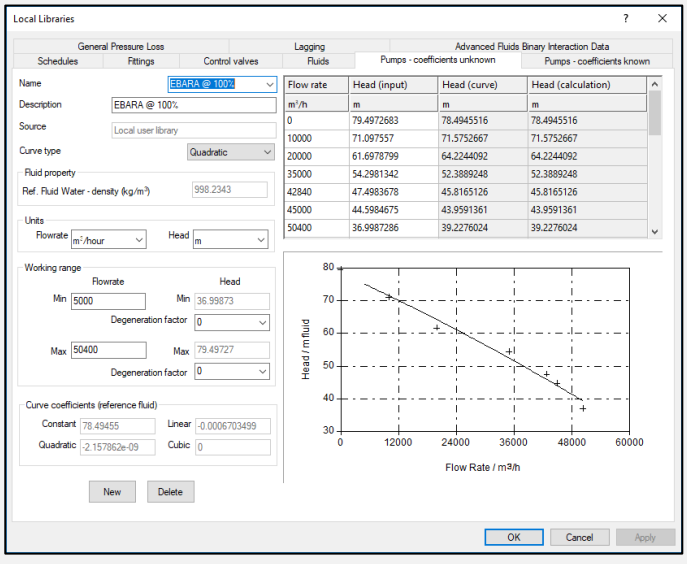
PIPENET Standard Module – Selected Applications

2. Very large cooling water system



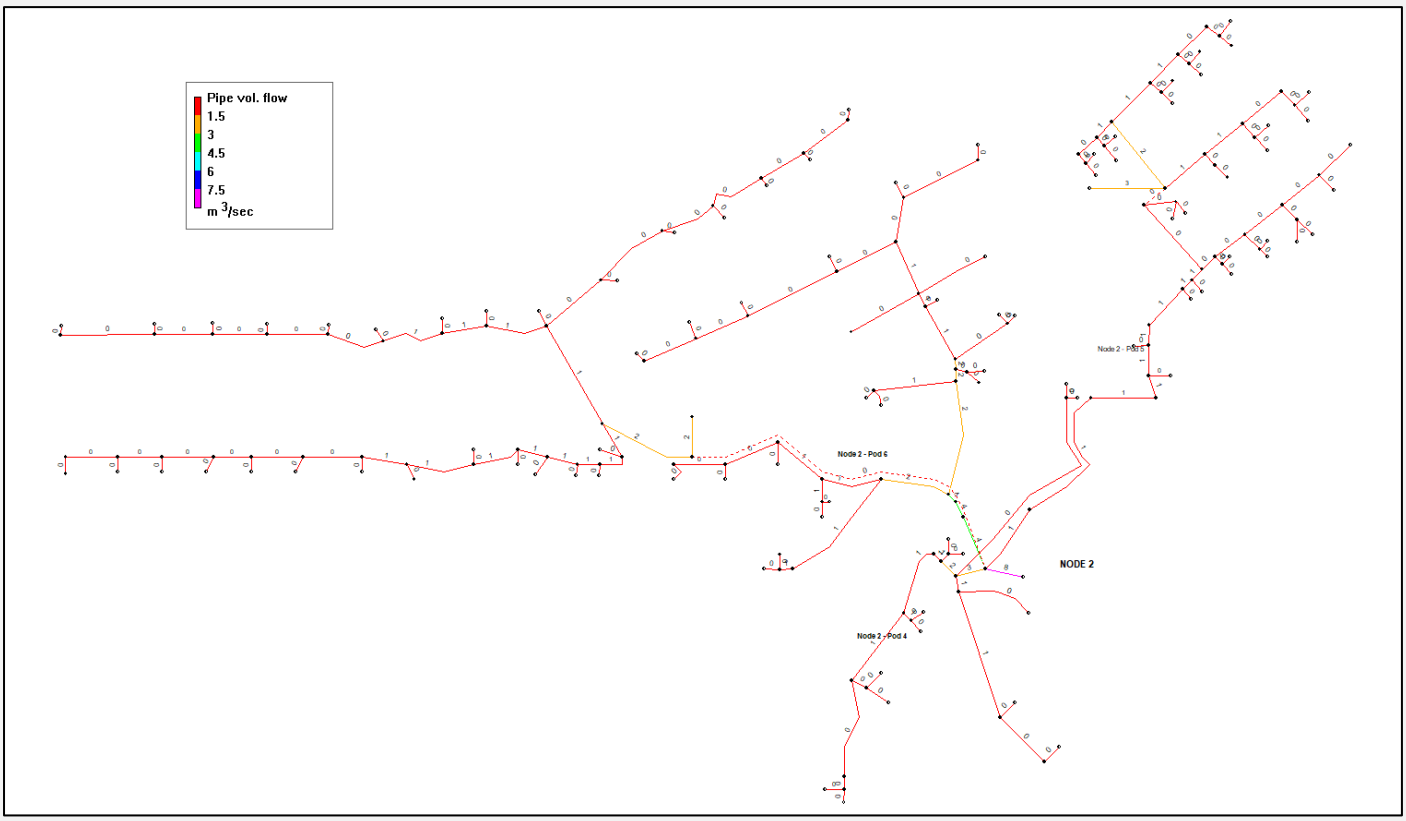


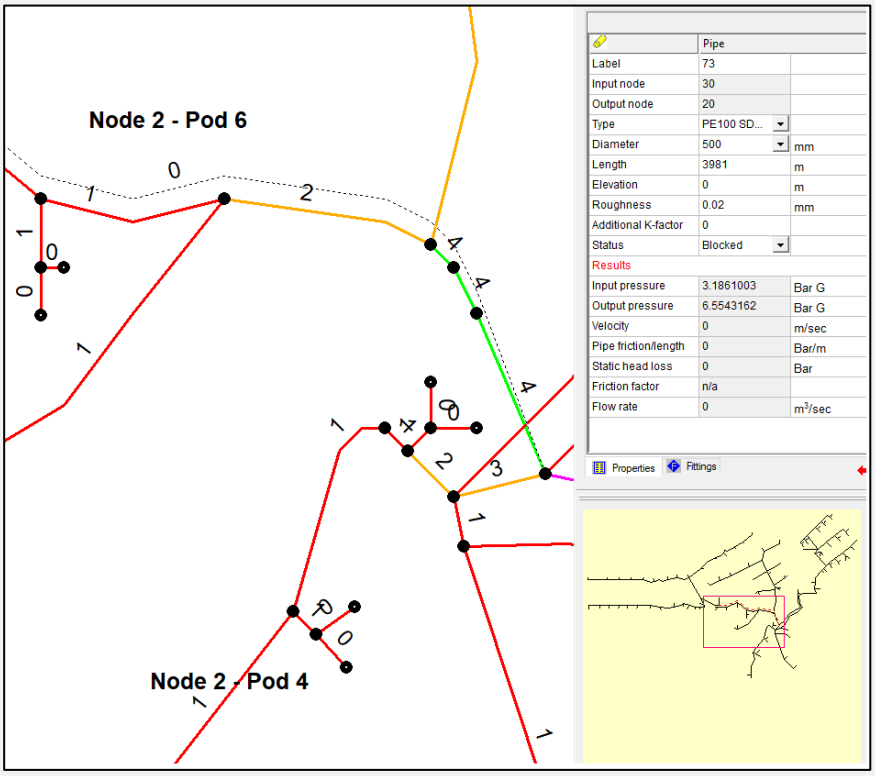


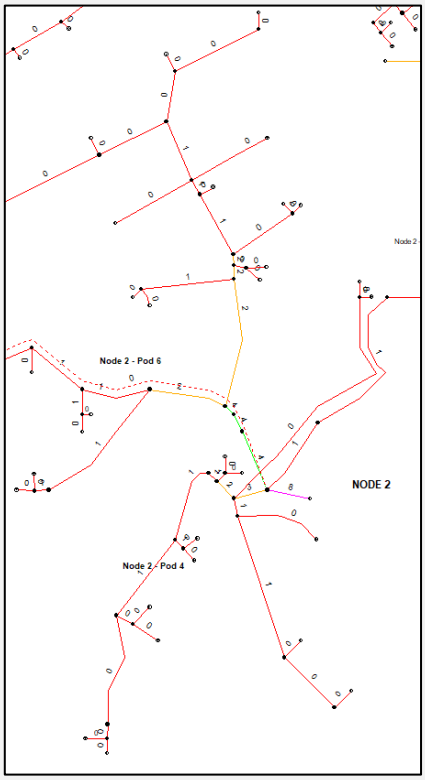


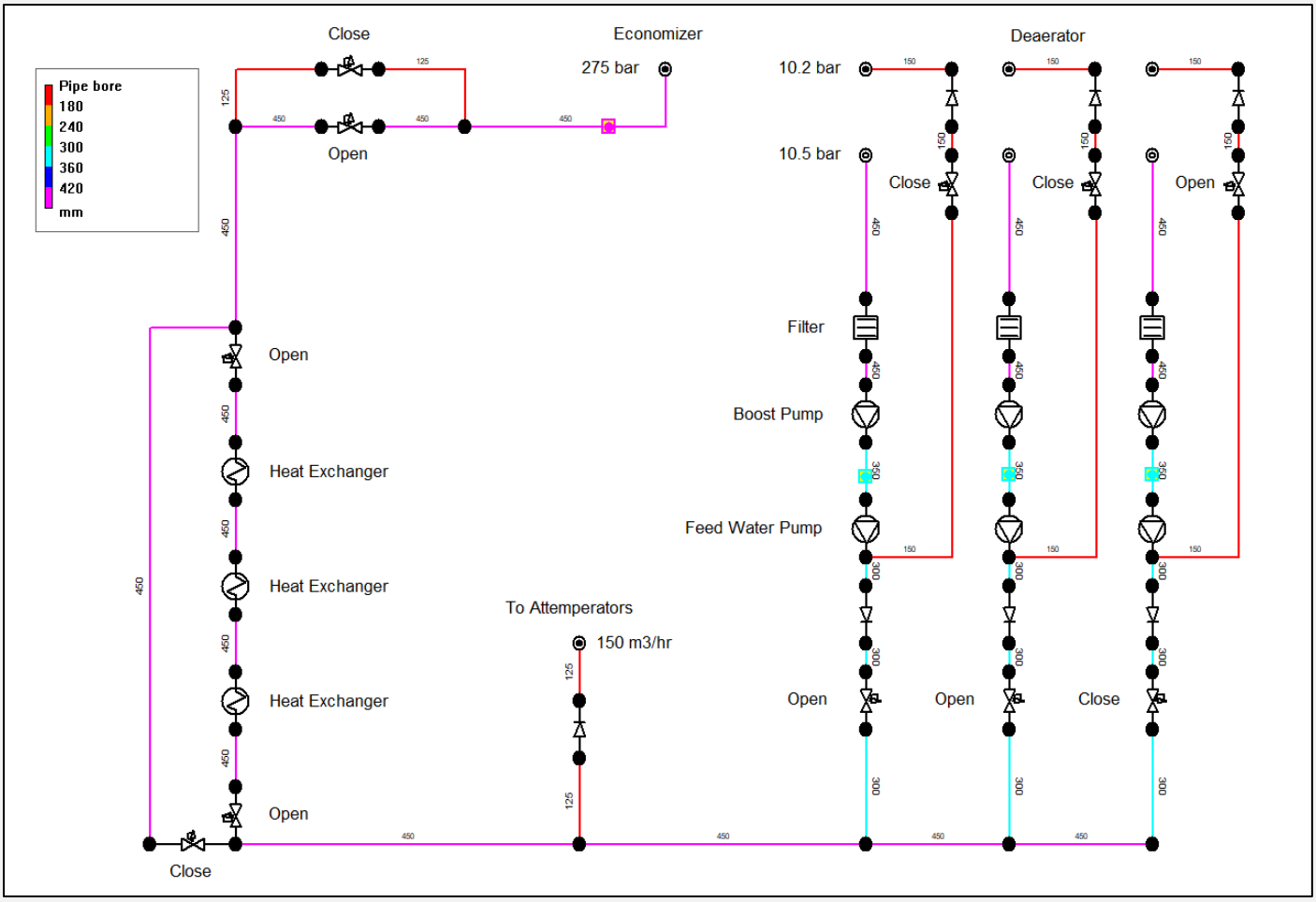
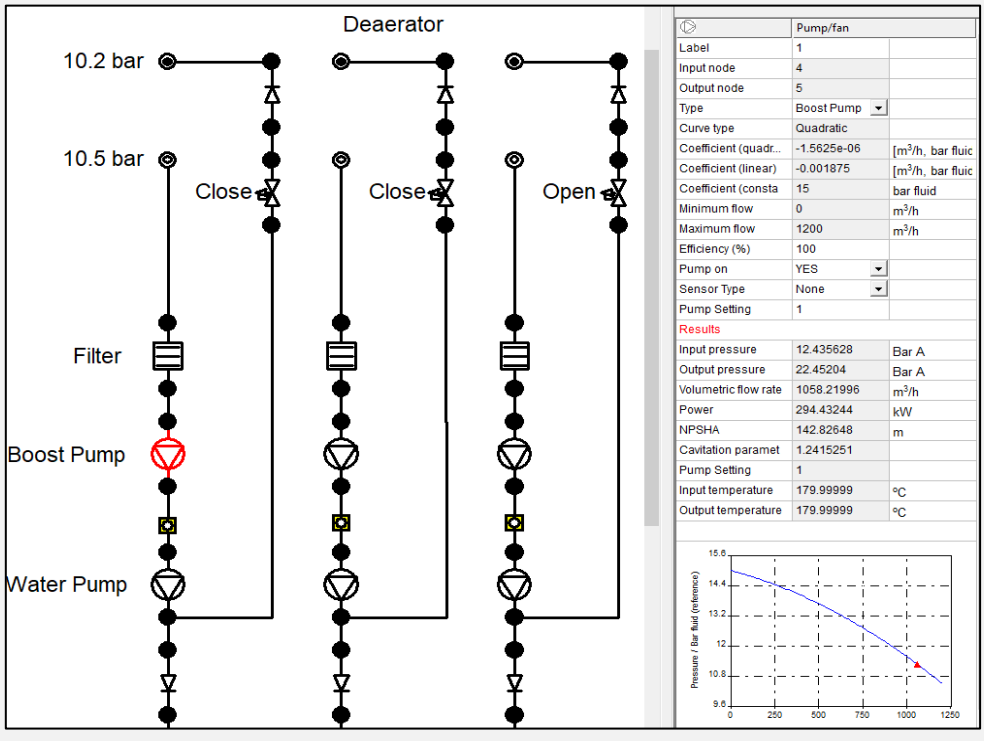
PIPENET Standard Module – Selected Applications

3. Methane capture system in a mine







PIPENET Standard Module – Selected Applications

4. Feed water system from a power station