Guideline to Working with the Editor
of Water Supply Networks Parametric Models

The model editor is designed to change the configuration of the laboratory setup and set the initial parameters of the experiment. The result of the module is a saved parameter file with the extension «* .pdat». After launching the program executable file, the process of loading graphic elements takes place. At the end of the loading process, a working view of the model of the laboratory setup will be displayed on the screen (Figure 1).

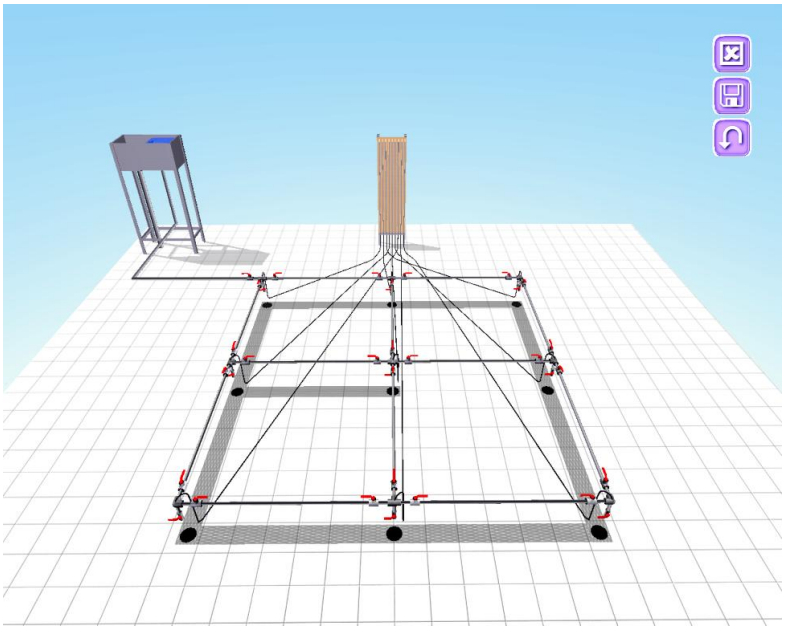

Figure 1 – General View of the Parametric Model Editor

The program control buttons are located in the upper right part of the screen (from top to bottom): «Exit the program», «Save Model File», «Reset parameters».

The rotation of the 3D view is carried out in two ways - using the cursor keys and moving the mouse pointer while holding the left mouse button, while the mouse button must be pressed while the pointer is in a free area (not on elements of the 3D installation model). Scaling a view is also carried out in two ways – using the «+» and «–» keys (on an additional digital keyboard block) and rotating the mouse wheel.

The configuration of the pipeline is changed using nodal points (intersection of straight sections of the pipeline). When you hover the mouse over the center of the node, the node designation and its number are displayed, in addition, the projection of the pipeline in the form of dimension lines and the height of the nodal point above the base plane are displayed on the base plane (floor plane) (Figure 2). In this mode, the nodal points (except for the central node №5) can be moved in the horizontal plane, thereby changing the length of the plumbing sections.

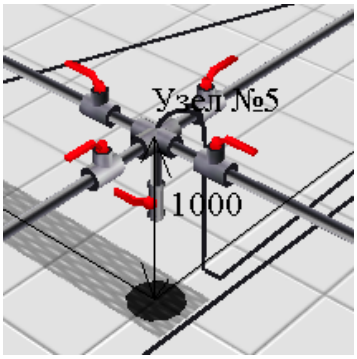

Figure 2 – Node Point №5

The nodes are moved with the mouse while the left button is pressed. The height of each node is changed by moving the mouse with the right button pressed (Figure 3).

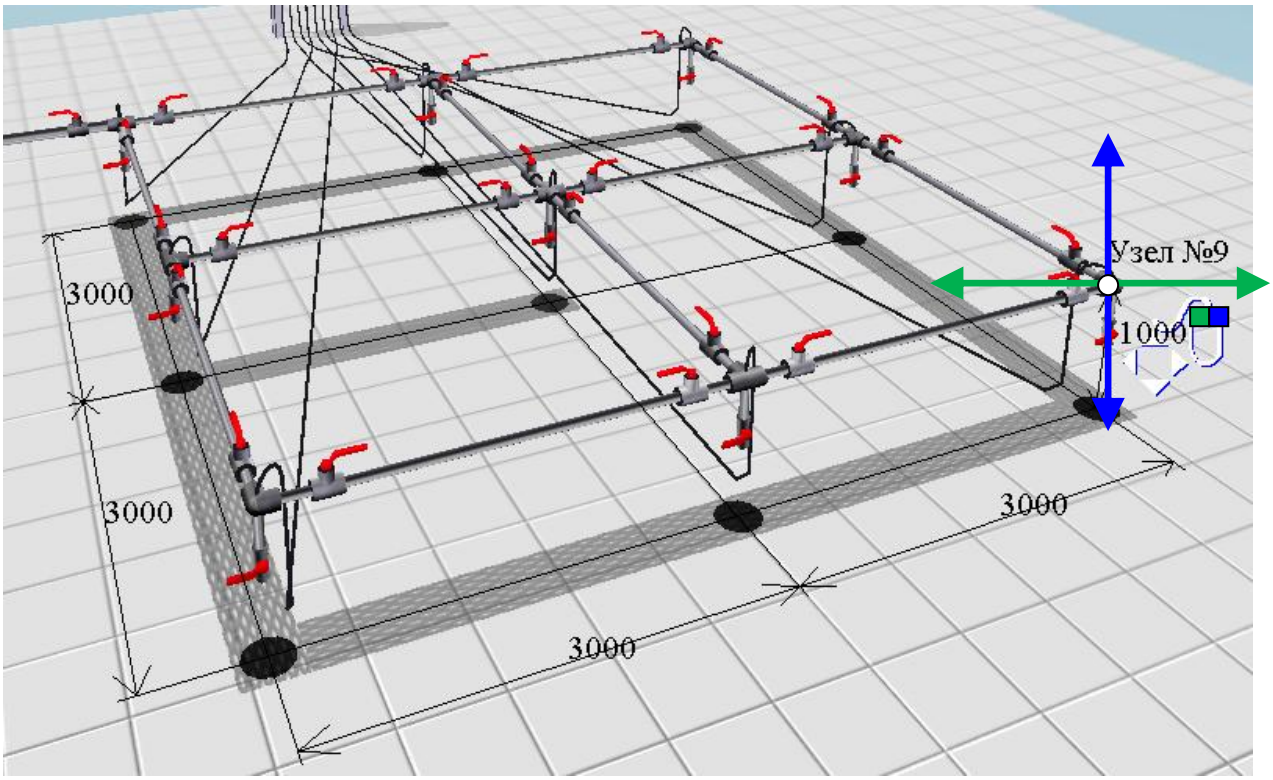

Figure 3 – Changing the Position of the Node Point

Hovering over the valves located on horizontal sections of the pipeline, each highlighted valve is colored in blue (Figure 4). Left-clicking on the selected crane switches its position (open/closed).

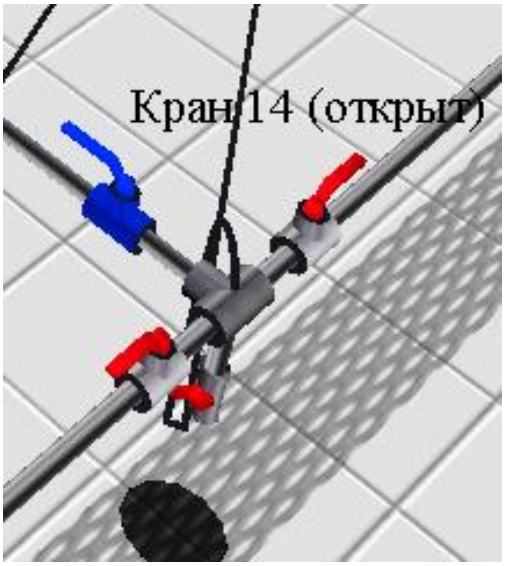

Figure 4 – Flow Valve Control

Hovering over the sections of the pipeline connecting the nodal points paints each selected section in blue (Figure 5).

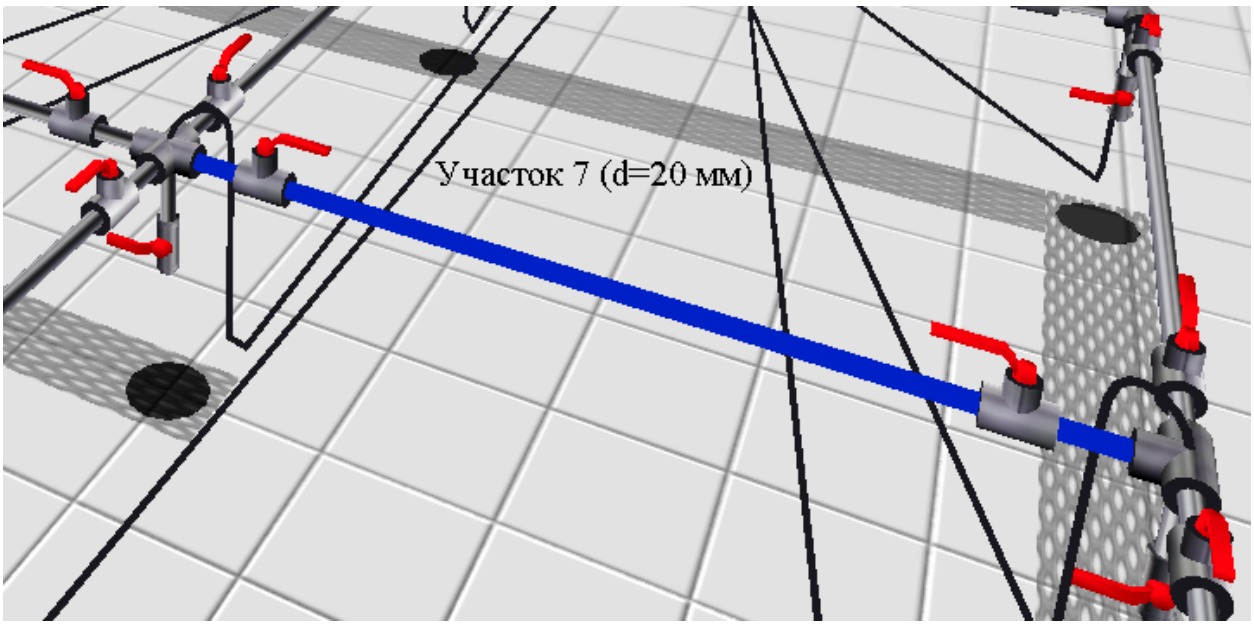

Figure 5 – Highlighting a Section of the Pipeline

Left-clicking on a selected section of the pipeline will open the context menu (Figure 6) for selecting the pipe diameter (in millimeters). Pipe diameter is selected by left-clicking on one of the three available buttons with numerical designations of standard diameters. To close the diameter selection menu, just click any mouse button in the free area around the menu.

Figure 6 – Pipe Diameter Selection Menu

Under each node there is a vertical section of the drain pipe with a drain valve, which can take three fixed positions – «Closed», «Open for 50%» and «Open for 100%». To change the position of the valve, you need to hover over it (the valve is highlighted in blue) and left-click. As a result, the context menu for selecting the value of opening the valve will be opened (Figure 7). The principle of working with this menu is similar to the above principle of working with the context menu for selecting pipe diameters.

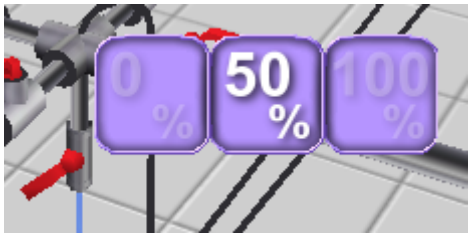

Figure 7 – Drain Valve Opening Selection Menu

As a result of opening the valve, a jet of draining water will be displayed (Figure 8).

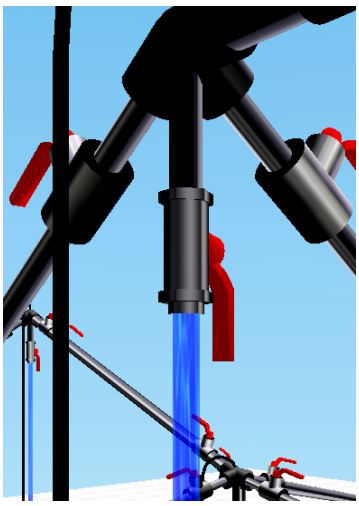

Figure 8 – A jet of Draining Water

Clicking the left button on the jet of draining water will open the flow setup dialog box for the current node (Figure 9).

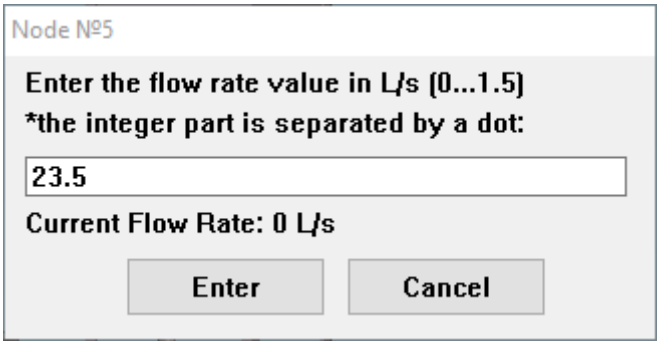

Figure 9 – Dialog Box for Setting the Water Flow for the Current Node

The input of the water flow rate (L/s) is carried out using the keyboard. The available range of flow rates for one node is 0...1.5 L/s. When you enter the flow rate in the text field, the integer part of the number is separated by a dot from the fractional part. The entered value is confirmed by pressing the «Enter» button in the dialog box.

Setting the head for each nodal point is carried out in the mode of operation with the stand of the piezometers. In this case, move the mouse pointer over the stand of the piezometers, and click the left button (Figure 10).

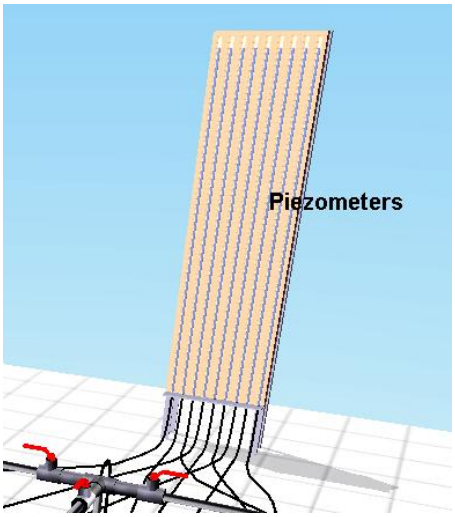

Figure 10 – Piezometers Stand

In the mode of operation with piezometers, the camera is located frontally to the stand. Moving the camera (and zooming the view) is carried out using the cursor keys (and the «+» and «–» keys), as well as by moving the mouse to the edges of the screen (and rotating the mouse wheel). Piezometer tubes are highlighted by hovering over them (Figure 11).

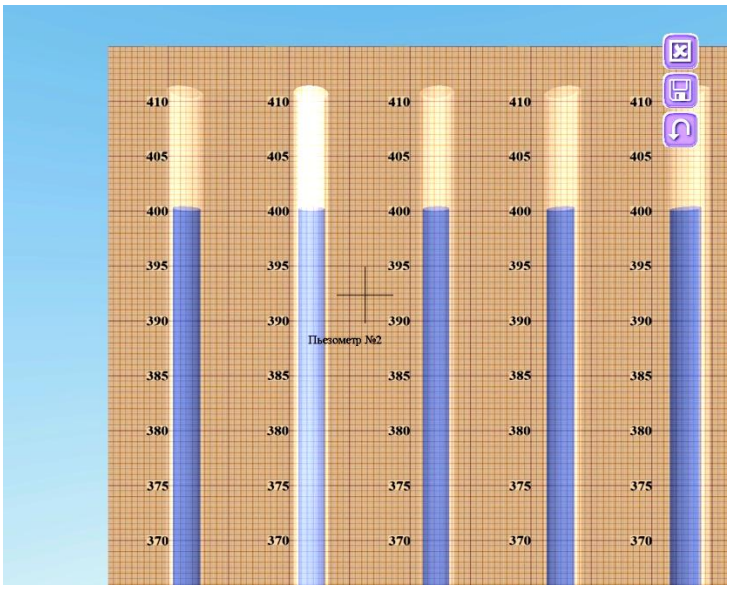

Figure 11 – Mouse Selection of a Piezometric Tube on a Stand

Left-clicking on the selected piezometer will open the dialog box for setting the hydrostatic head at a specific nodal point (Figure 12).

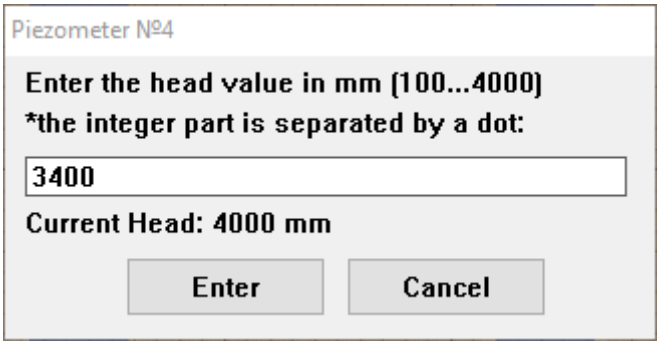

Figure 12 – Dialog Box for Setting the Head for a Specific Piezometer

The pressure value (mm) is entered using the keyboard. The available pressure range for one node is 100...4000 mm. When you enter the pressure value in the text field, the integer part of the number is separated by a point from the fractional part. The entered value is confirmed by pressing the «Enter» button in the dialog box.

The camera is returned from the piezometer stand to its initial position by clicking the right mouse button.

Model parameters are saved to a file using the «Save Parameters» button.