University of Science and Technology
AGH

Department of Robotics and Mechatronics

Industrial Robots

Example: Project In AutomationStudio

Opracował
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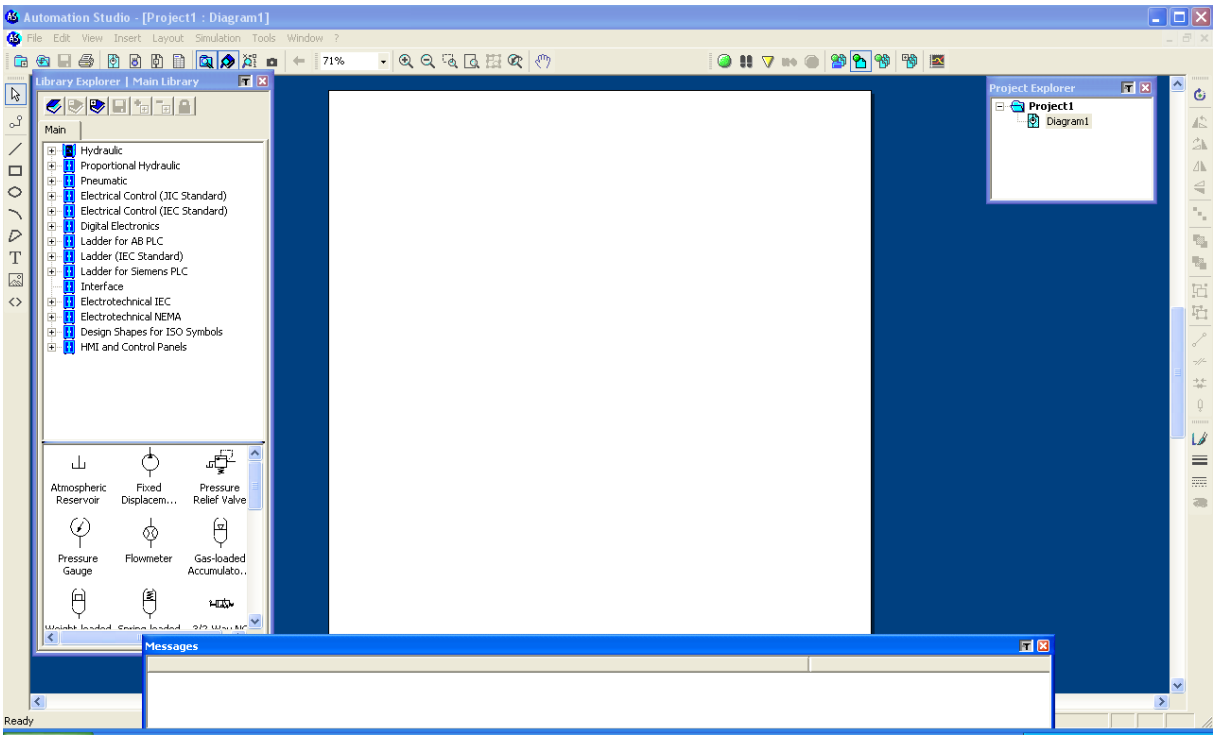
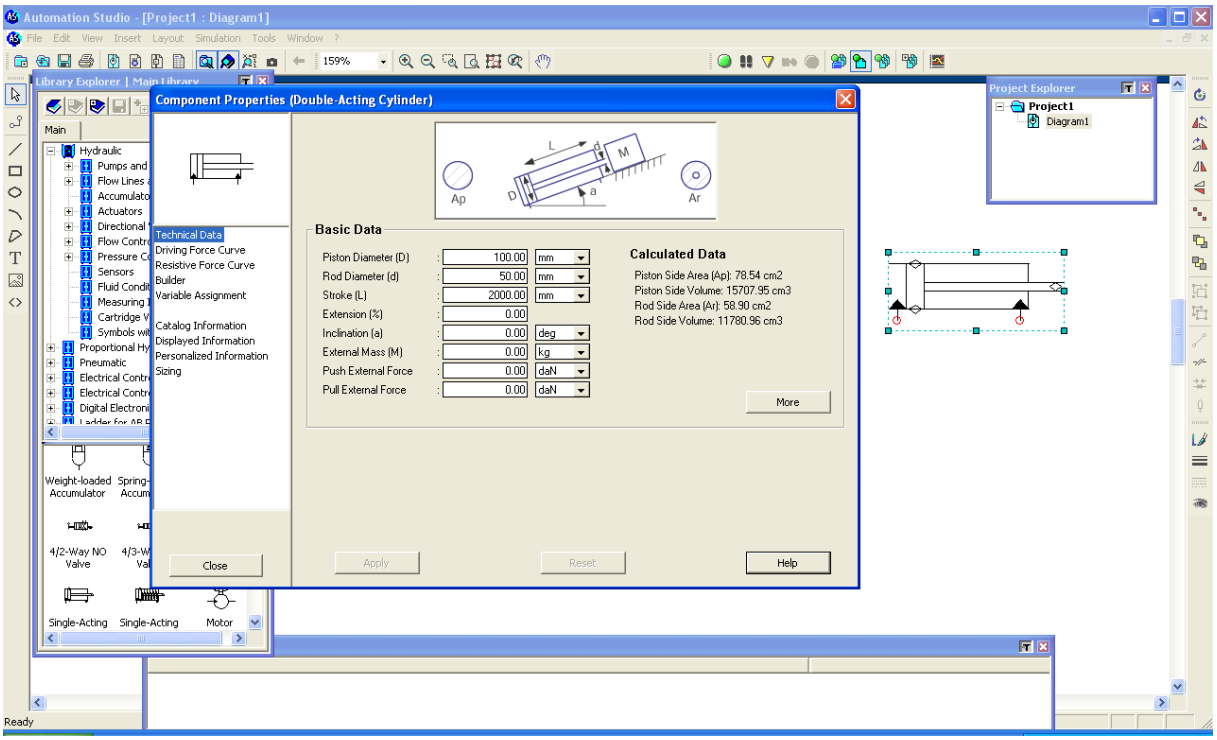
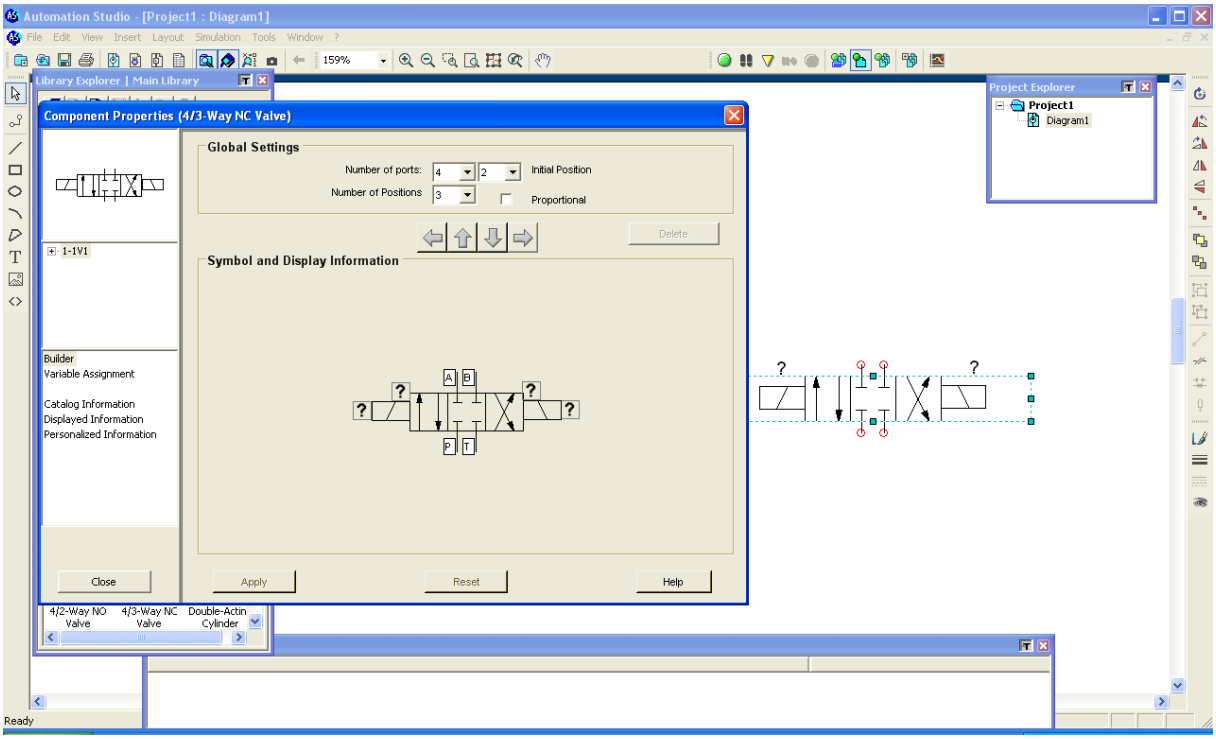
Open new project. Display of the initial screen after project opening is shown in Picture below. On the screen you may find windows “Library” and “Project Explorer”



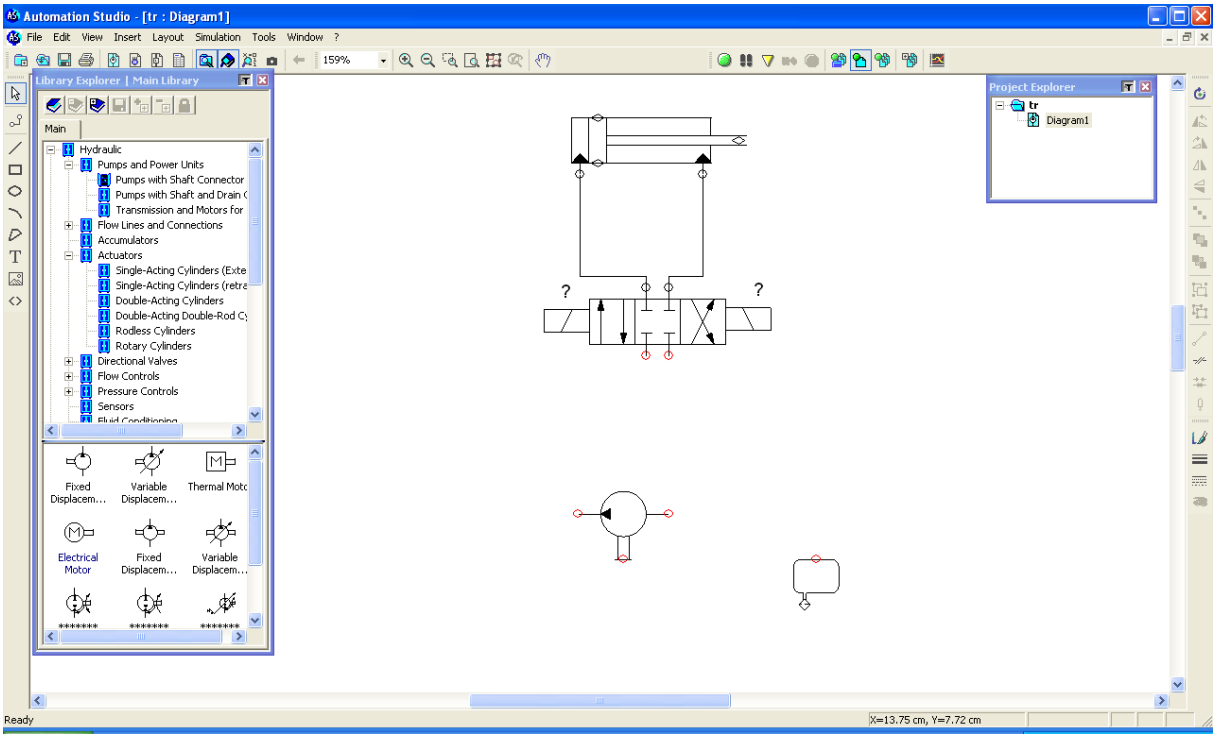
From “Hydraulic” library choose “double acting cylinder”



In the Properties of the block we can define parameters of the cylinder.

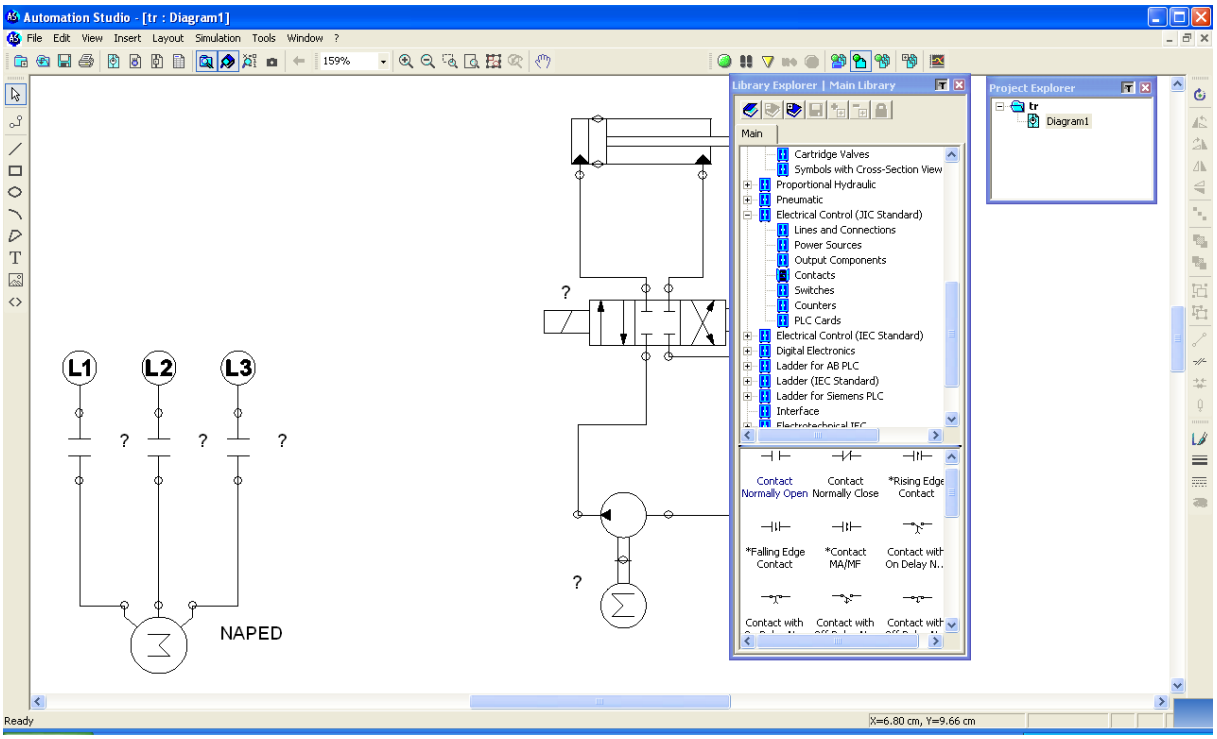


From the same library choose “4/3-Way NC valve” and in its properties/builder change appearance of the valve to appearance shown in picture above.
Next connect outputs of the valve with cylinder’s inputs.
Next step is connecting valve with pump to do this choose „fixed displacement pump with shaft” and „reservoir” from library.

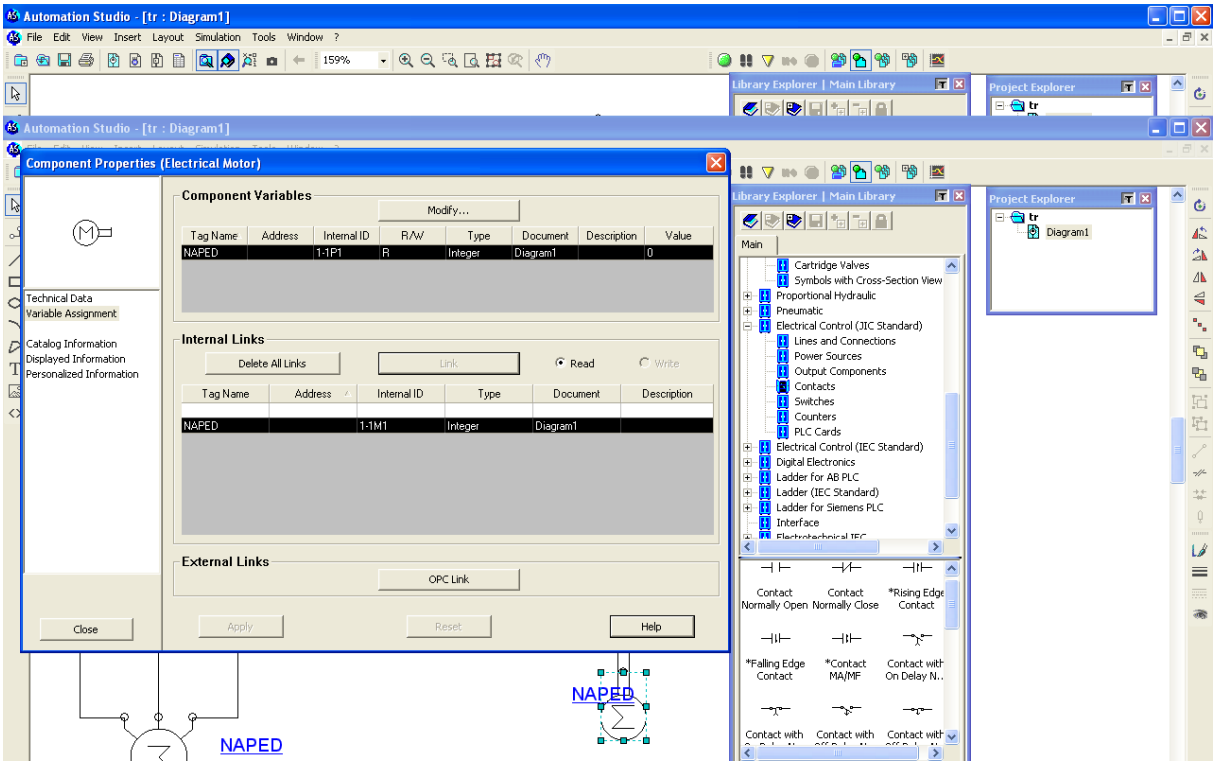


Pump’s output connect with first input of the 4/3 Valve and input of the pump with reservoir. Reservoir should be also connected with second output of the valve
Pomp that is used is driven by motor, in our case lets use three phase motor. To do this choose “three phase motor” from “electric” library. To power the motor connect it with power

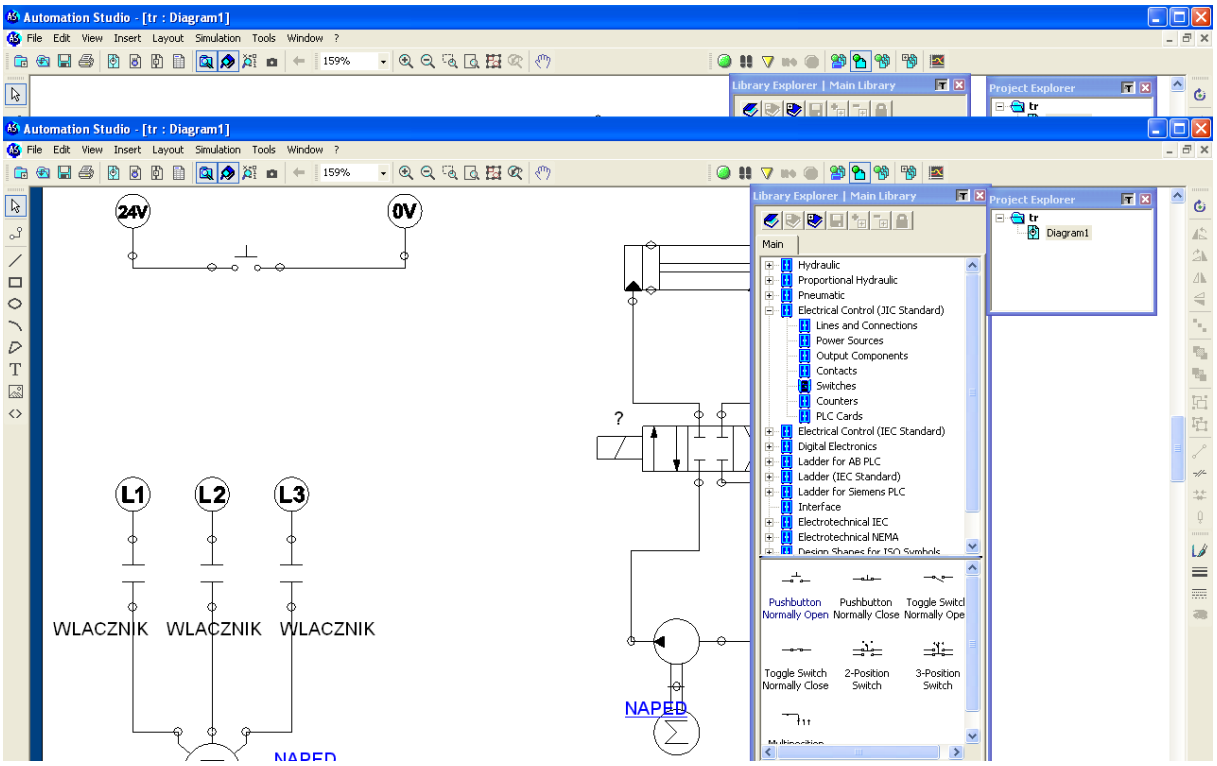
supply, to do this choose „Power supply L1-L3”. To control the motor put „Contact normally open” between motor and power supply .



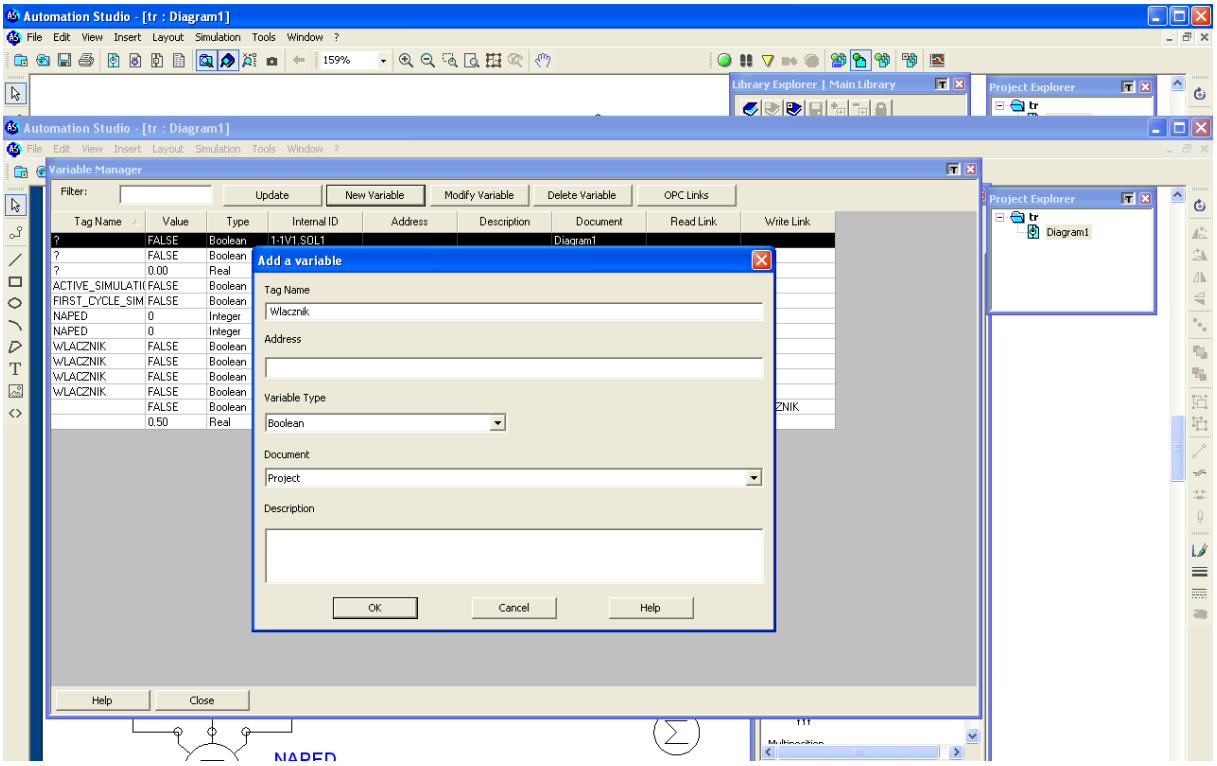
In order to connect electrical motor with pump’s shaft insert an additional block from hydraulic library called „electrical motor”.
When three phase motor was added to the system we had to give him a name (i.e. NAPED) and now we have to choose the same name/variable as the control variable for “electrical motor” block from hydraulic library. If the names will be the same system will consider both blocks (from hydraulic and electric library) as the same motor.



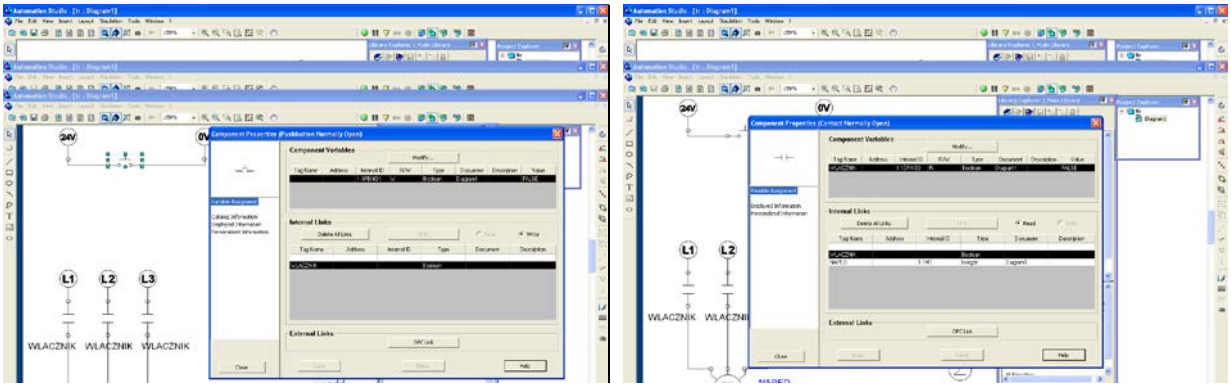
In order to control behavior of the pump in the system low voltage circuit has to be inserted. From „Electrical control" library choose power supply 24V and 0V and „pushbutton" and connect them together.



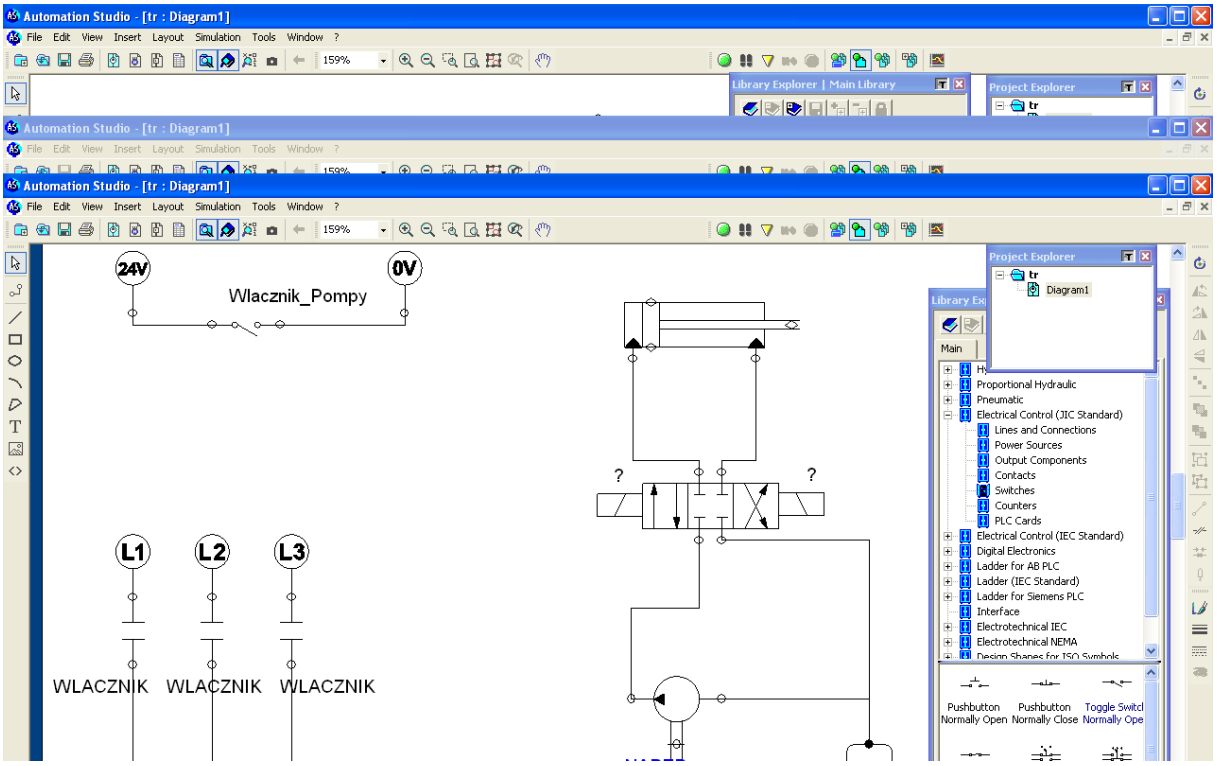
To control contacts you need to define control variable. To do this open variable manager and add new variable (i.e.WLACZNIK)



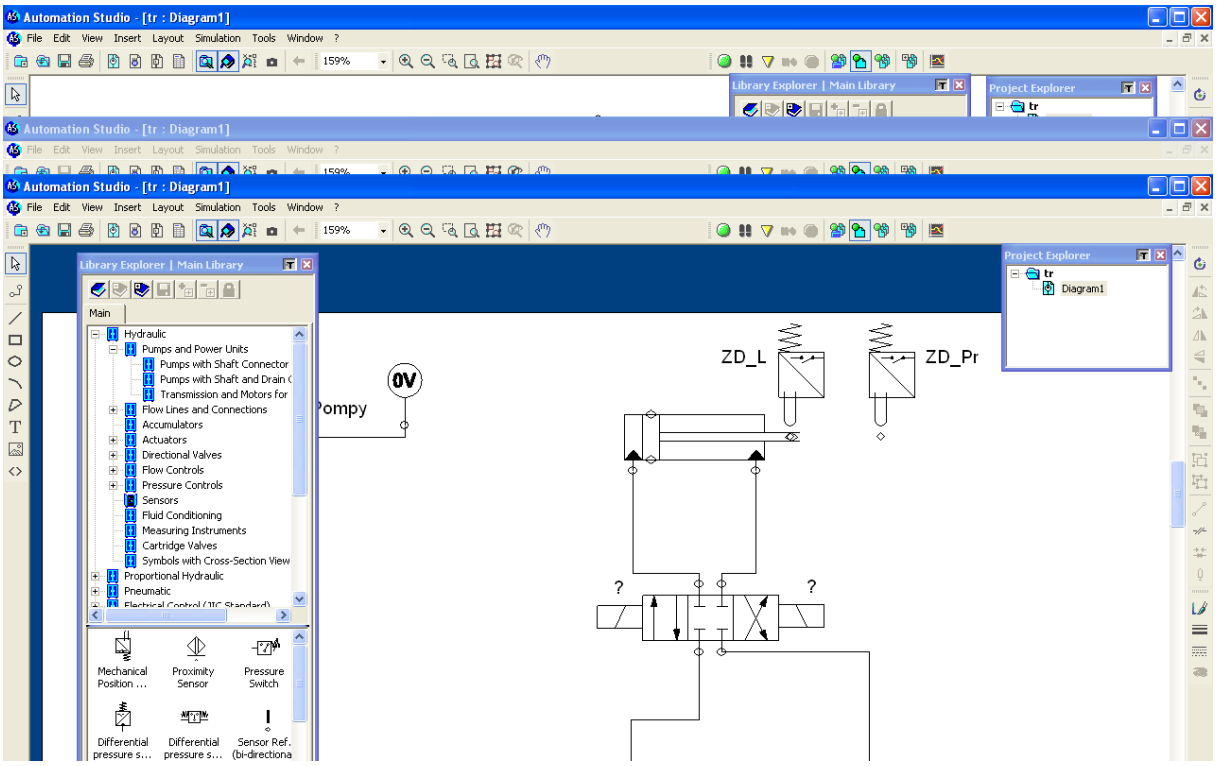
Next in contacts' and pushbutton's properties this new variable has to be chosen as control variable.



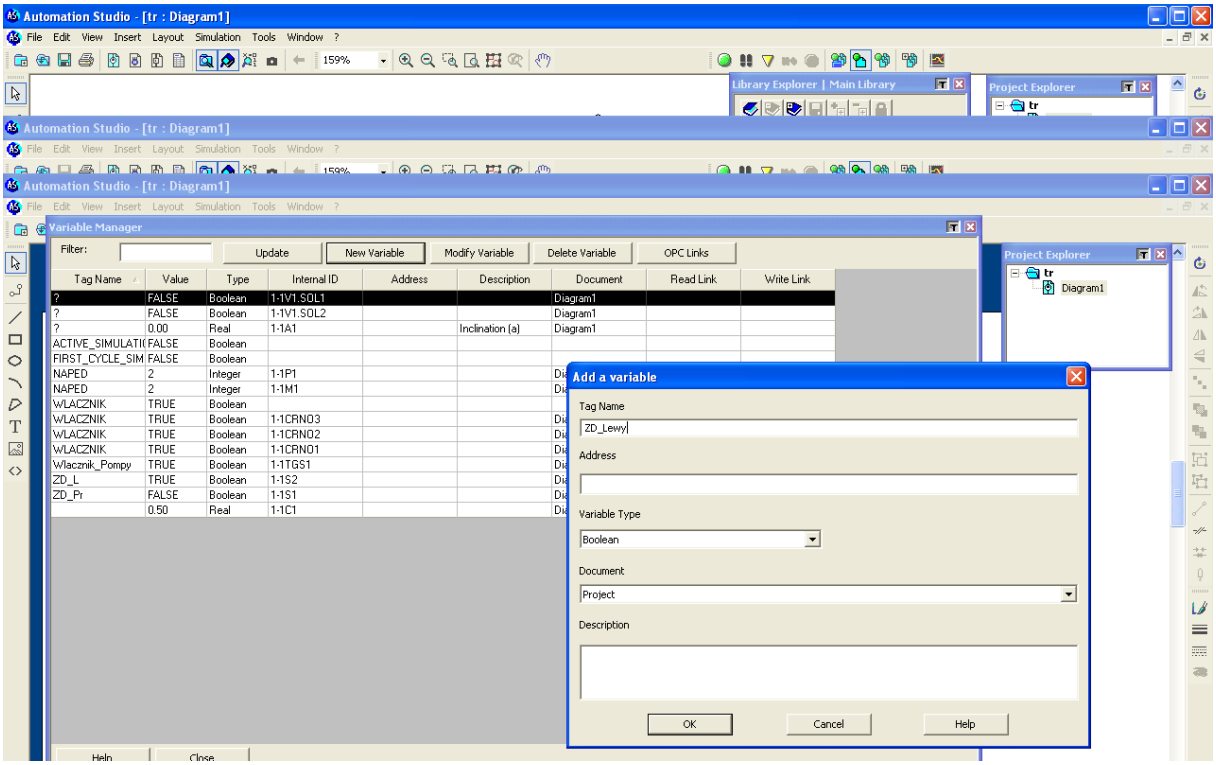
Now simulations can be started and if the pushbutton is pressed the motor will start and pump will generate pressure to move cylinder.
In order to start the pump and keep it working continuously switch "pushbutton" with the "toggle button", and this new switch connect with variable „WŁACZNIK"



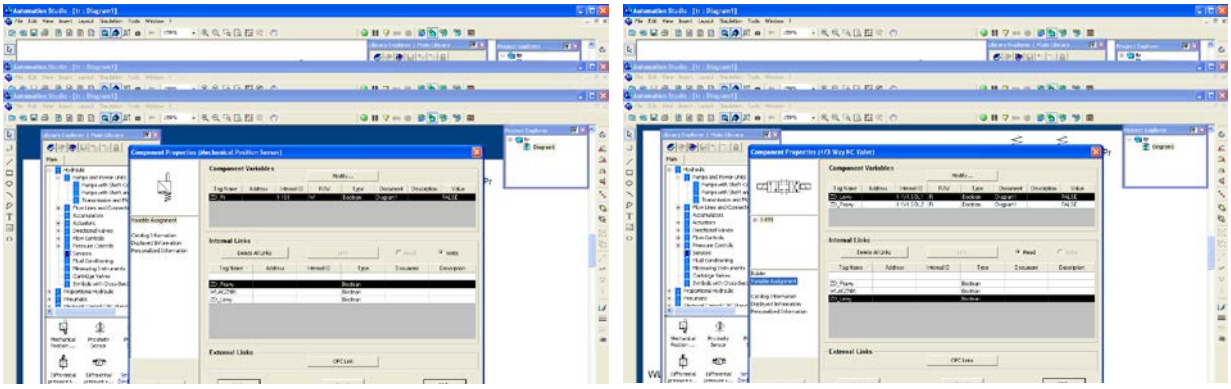
Next step is defining position sensors for cylinder. In order to do this choose from hydraulics' library „mechanical position sensor" and define its name. Do this twice for left and right sensor.



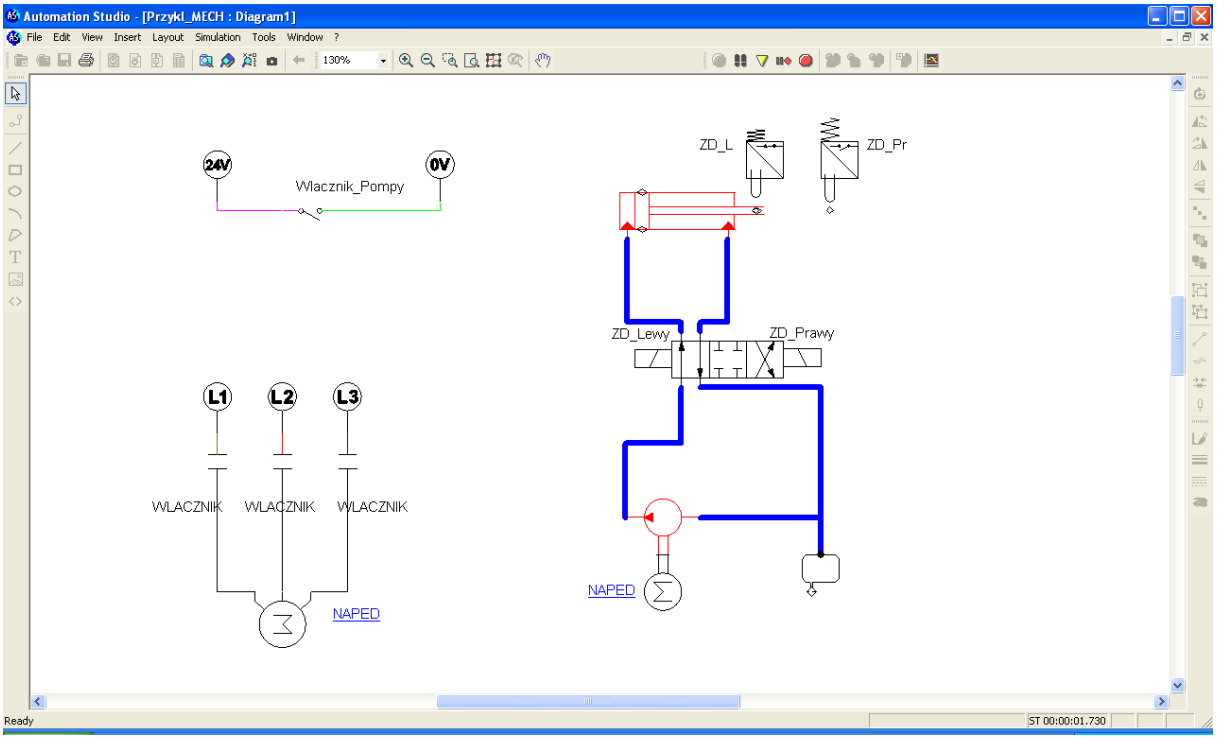
Similar to the pushbutton a new variables also have to be defined for each of the sensors.



After connection of variables to each of the sensors, they has to be also connected with inputs to the 4/3 valve.



Now the system is ready to work and simulation can be started.


Automation Studio - [Przykl_MECH : Diagram1]
File Edit View Insert Layout Simulation Tools Window ?
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