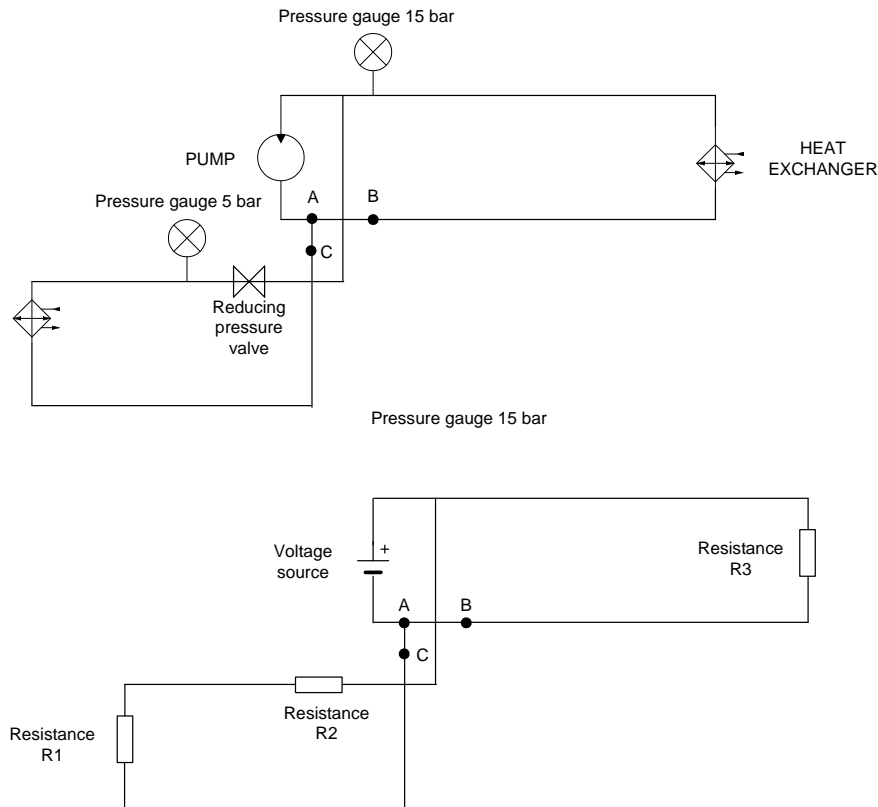


Hello to all,

I'm reading about analogy between electrical and mechanical quantities. I found interesting analogy between pressure and voltage. That analogy states that what voltage source represent in electrical circuit the same is what pressure represents in fluid mechanics circuit.

Look at this schemes:



I tried to make electrical-fluid analogy in above's picture. Now main question is this: Will pressures in points B and C will be equal $B = C$ since pipes are connected to the same point A. Pump is simply recirculating pump, which means no new mass is loaded into system. In electrical circuit things are cleared (at least to me). Points B and C are on the same voltage potential since they are connected to the same point A. Is it OK to conclude that pressures on B and C will be also equal? I must say that I don't believe such analogy will give correct answer. I think that this simple analogy has certain number of „drawbacks“. First if I understand fluids correctly that is example of system where parameters (resistance to flow) is distributed and concentrated like resistances in electrical schemes. Also electricity impulse is propagated at velocity that is close to the speed of light, and velocity of water in pipe line is much smaller comparing with speed of light. Also in electrical circuit, all resistance is concentrated into resistors R1, R2 and R3, and wires has resistance that is close to 0. Because of that there is no dilemma if Voltages of B and C are equal, they are equal.

But what happens in water flow circuit? It is natural to assume that in A pressures for one pipe and from another (pipes have different diameter) are same in point of connection, but what are pressures in points B and C (where length $AB = \text{length } BC = 5$ meters)?

Can someone explain me if voltage->pressure analogy is possible and what happens in water flow system such as one drawn in picture?

Thank you