Accumulator in RT model

It is currently not possible to define a stand-alone accumulator object in TERMIS. An accumulator can only be inserted by being attached to a plant object. This provides a challenge when building models of networks containing stand-alone accumulators. In this KB it is described how an accumulator can be inserted in a model.

In the model two plants should be defined: One plant representing the main plant and one plant with an attached accumulator. The plant with the attached accumulator must be the free plant which means that a measured power must be defined for the main plant.

The accumulator can be defined as shown on the figure below.

	AC
Plant ID	N_54
Initial Power from Plant Station [kW]	0.00
Initial Power from Accumulator [kW]	
Ambient Temperature [°C]	15.0
Initial Hot Water Temperature [°C]	90.0
Initial Cold Water Temperature [°C]	60.0
Initial Hot Water Volume [m³]	200.00
Tank Volume [m³]	2000.00
Tank Heat Transfer Coeff. [W/K]	0.20
Enable Accumulator Optimization	☐

The important thing to note here is that "Initial Power from Plant Station" should be constantly equal to zero. Thereby the power from the accumulator can vary and be both negative (the accumulator is charged with energy) and positive (the accumulator supplies energy to the network).

The plant containing the accumulator must be defined such that it has a measured supply temperature, a measured flow and a measured return temperature. When the accumulator is being charged the measured flow value must be negative (water running into the plant). When the accumulator supplies energy the measured flow value must be positive (water running out of the plant).

Note that the real time simulation will provide a picture of the current state of the network. It is however not possible to get a reasonable view of what the state will be in the future, since the program cannot predict how the flow in and out of the accumulator will vary.
In addition to this flow adaption will not work if the accumulator is empty.

Test model

There is a test model available showing the basic setup as described in the above section. The test model uses time series as input for flow and power to demonstrate how the accumulator can act as both a consumer and a production unit.