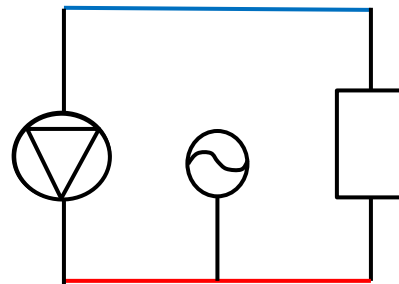
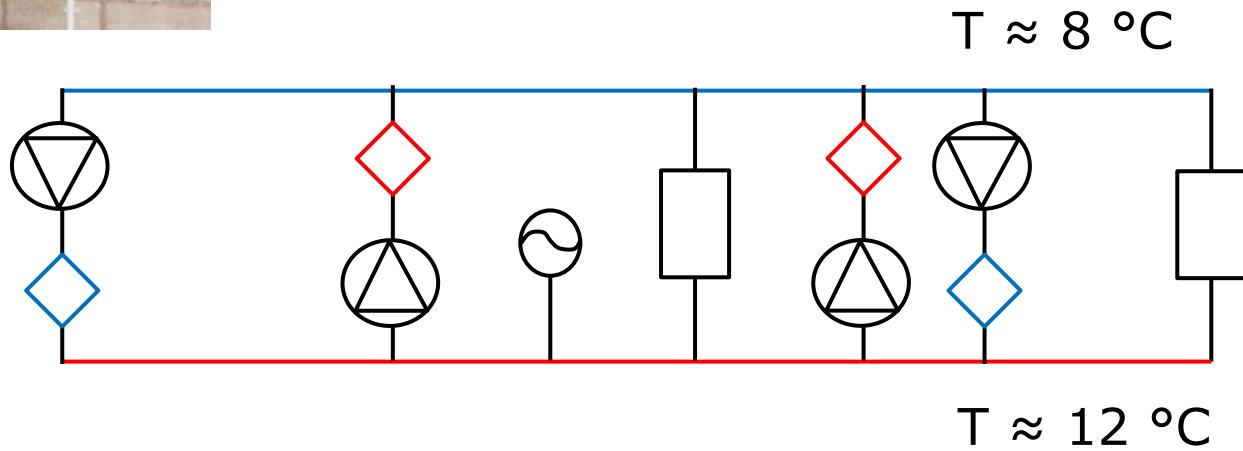


Klick - klack
Pressure reduction in hydraulic systems

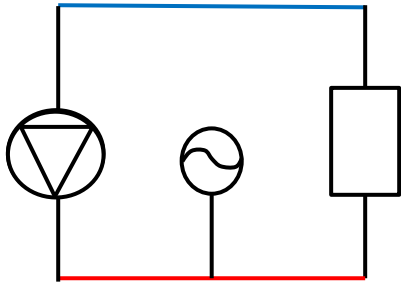
Low temperature networks $T < 20\text{ }^{\circ}\text{C}$





NODES Lab

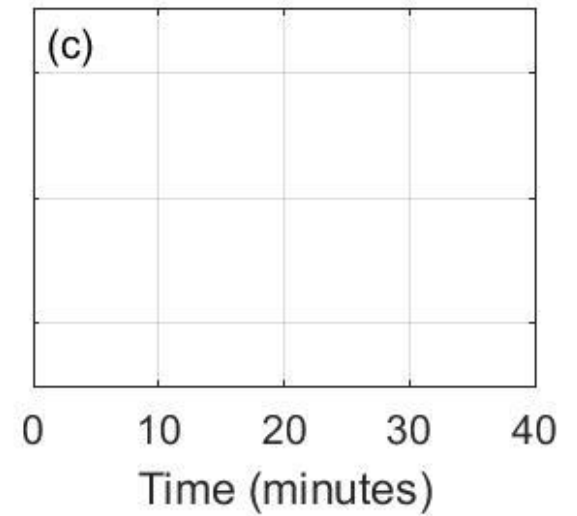
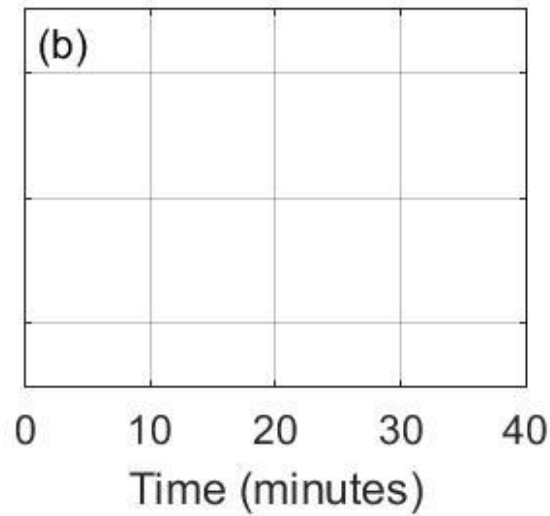
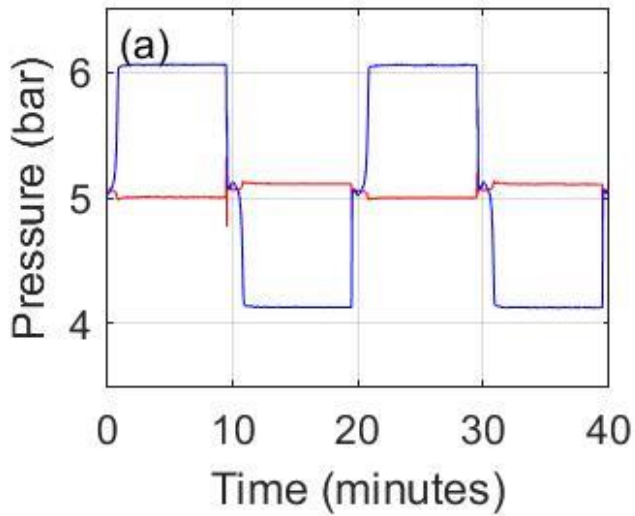


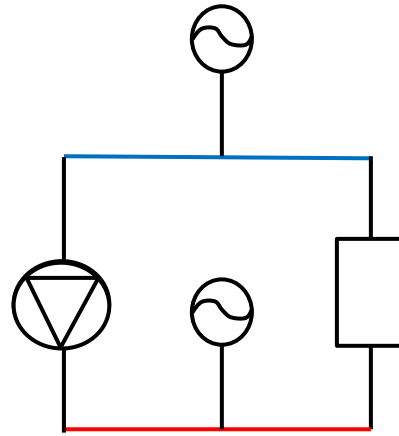


Expansion vessel in
warm line

Variable
connection of the
expansion vessel

Variable connection of the
expansion vessel after
pressure reduction

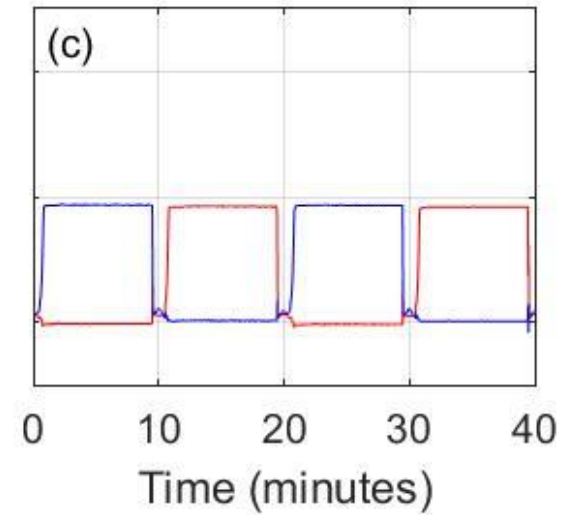
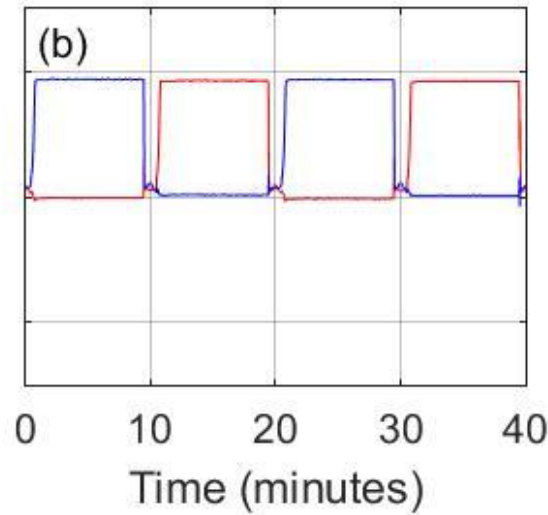
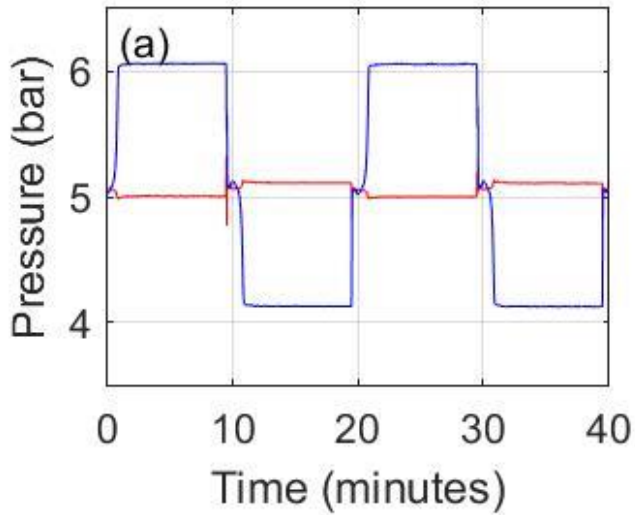


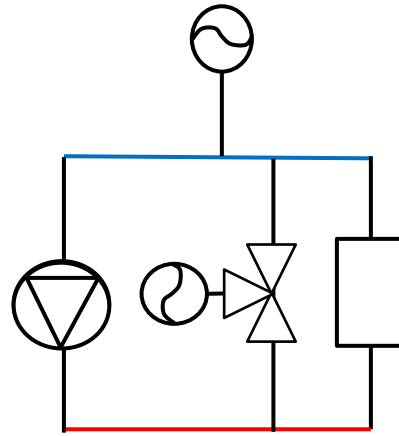


Expansion vessel in
warm line

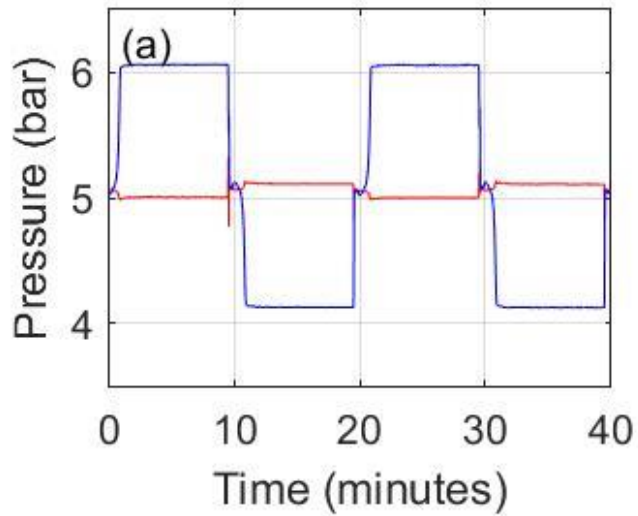
Variable
connection of the
expansion vessel

Variable connection of the
expansion vessel after
pressure reduction

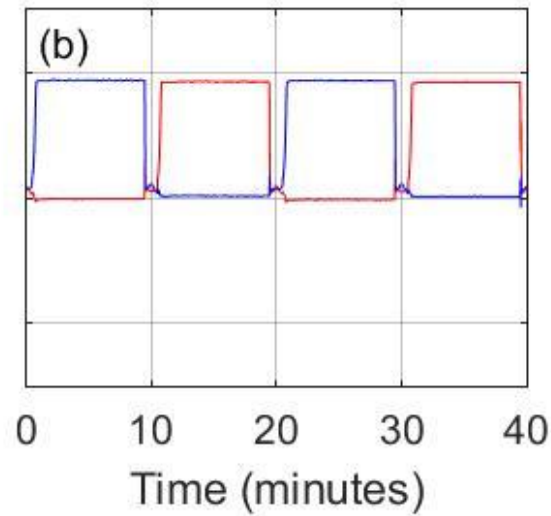




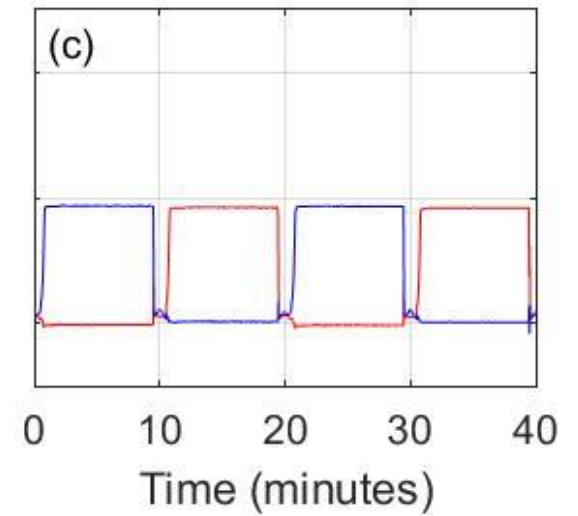
Expansion vessel in warm line

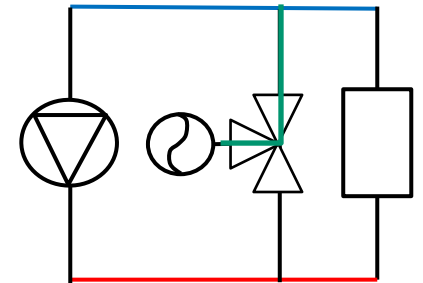
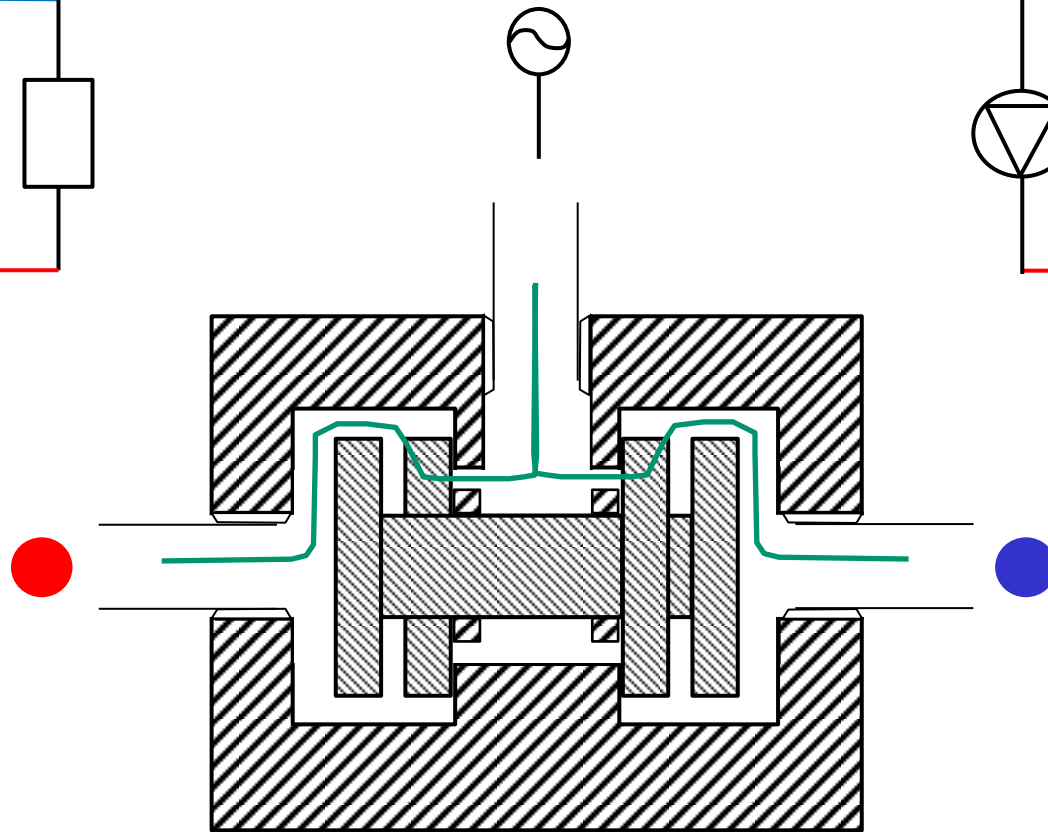
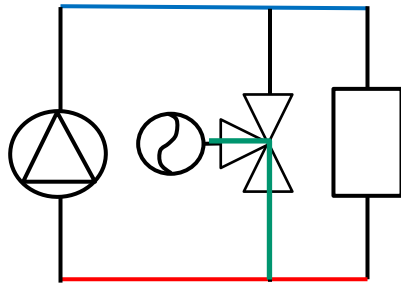


Variable connection of the expansion vessel



Variable connection of the expansion vessel after pressure reduction





Pressure reduction

Pressure in the low temperature network of ETH Zurich can be lowered by 0.5 bar.

Savings

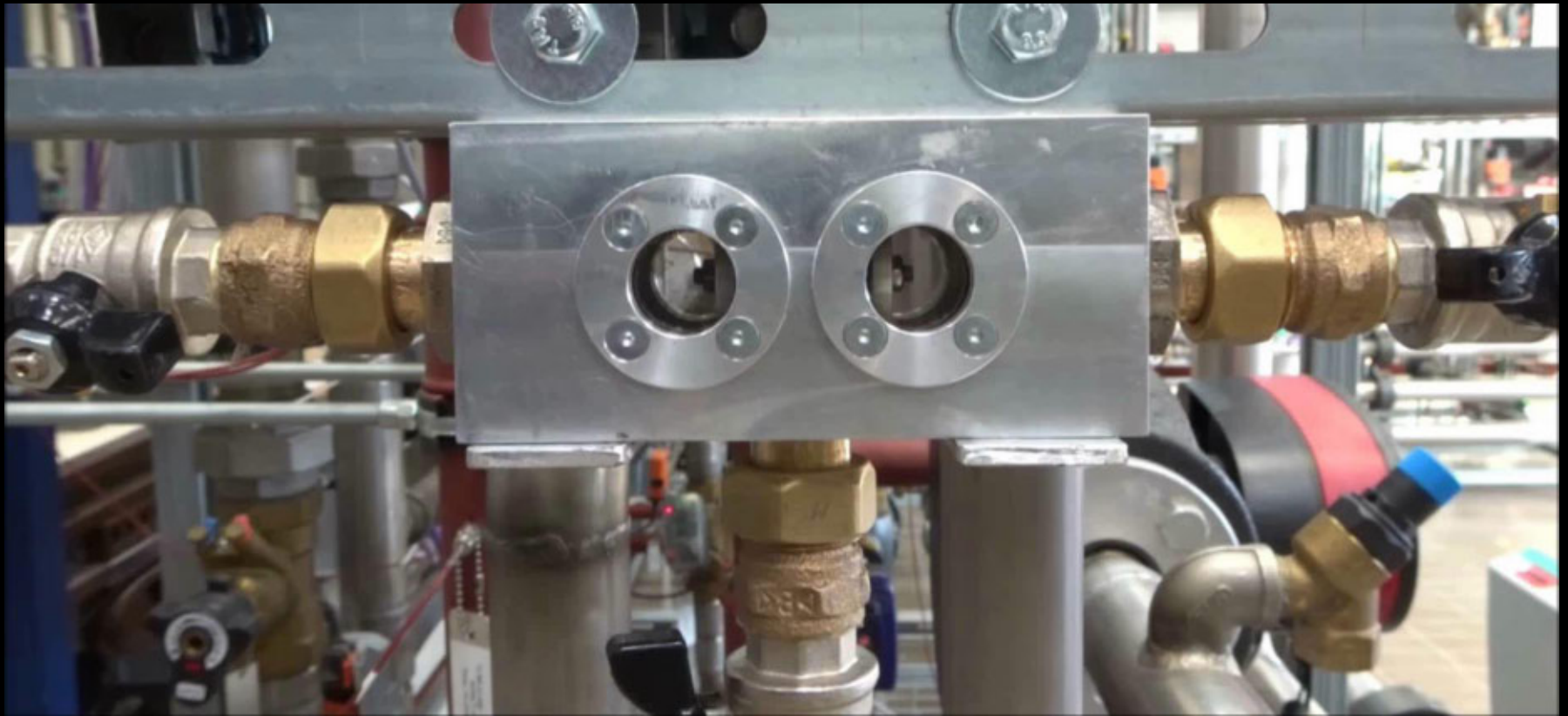
PN10 pipe is 30 % cheaper than a PN16 pipe.

Save operation

Cavitation free operation without previous knowledge of pump activities.

Simple realisation

Work arounds are all more complicated (adjustable system pressure, motor driven three way valve)



Patent registration Nr. 01308/17