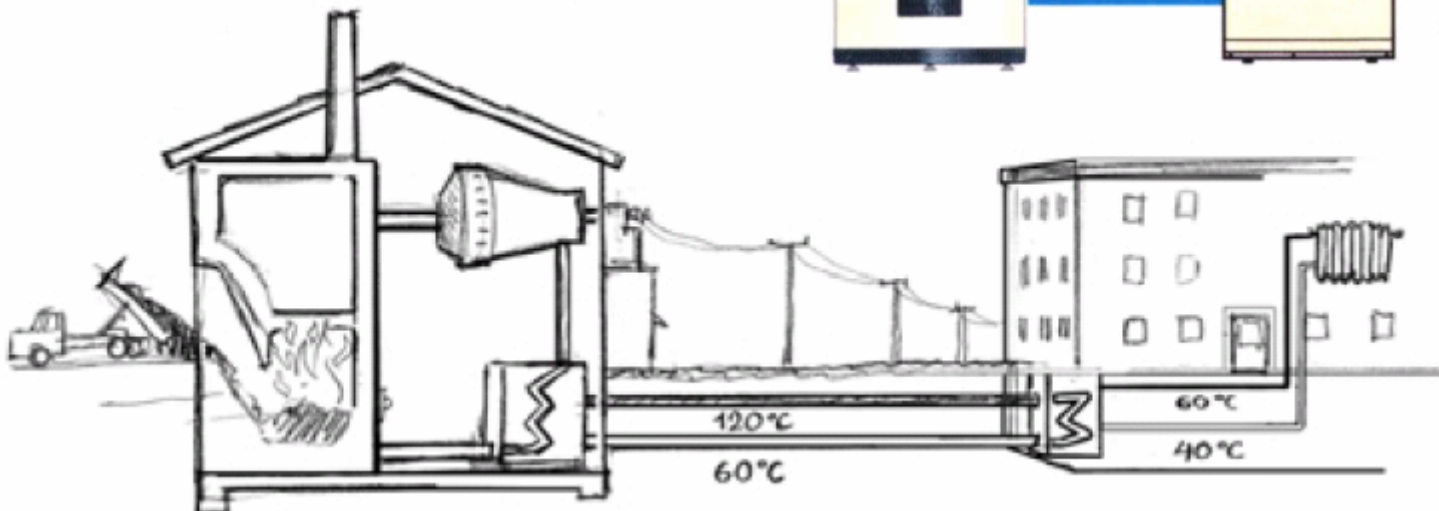
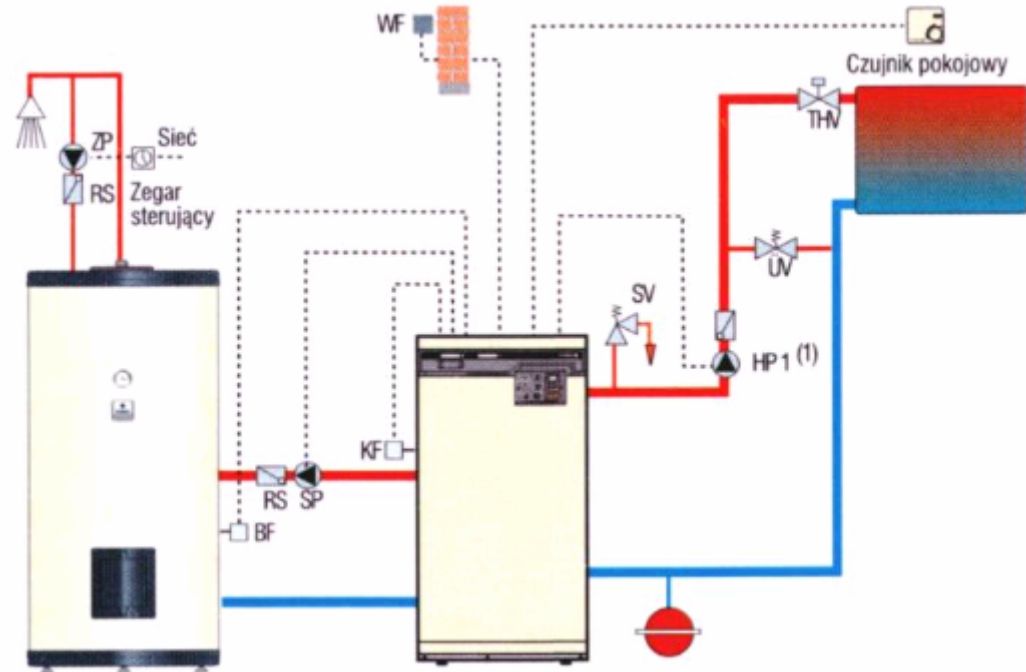
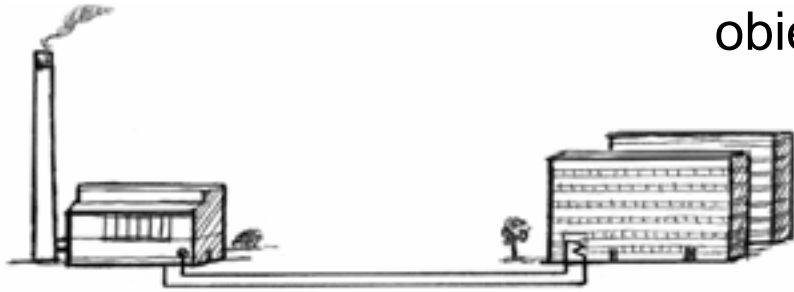
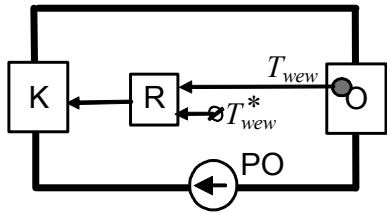


# obiekty ciepłownicze

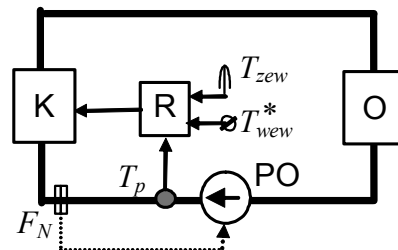
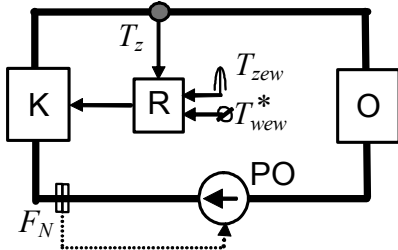


# układy sterowania

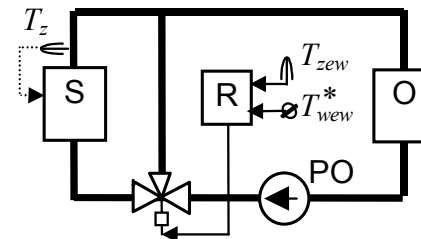
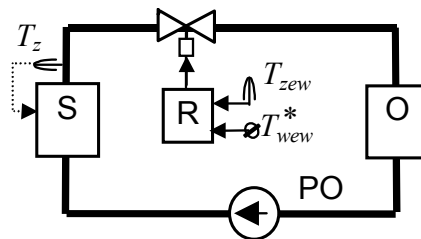
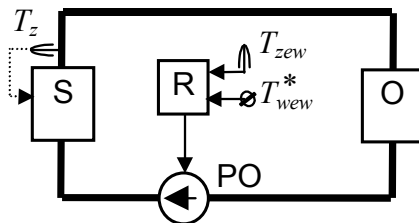
## regulacja bezpośrednia



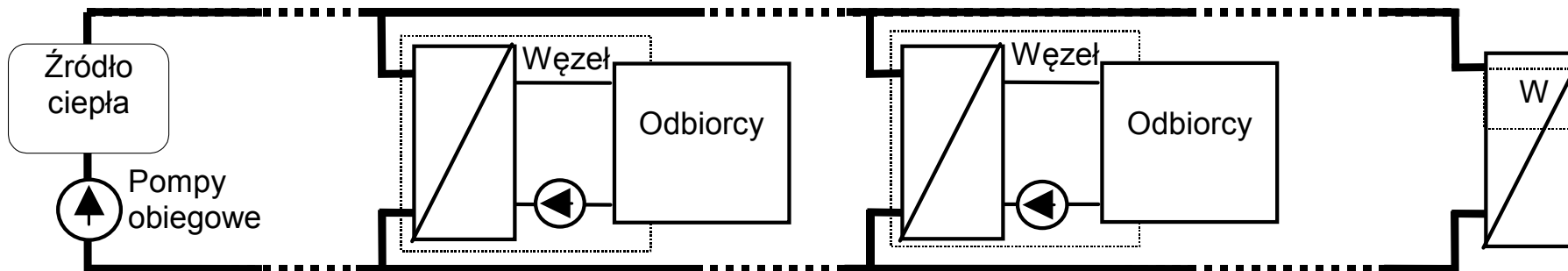
## regulacja jakościowa



## regulacja ilościowa

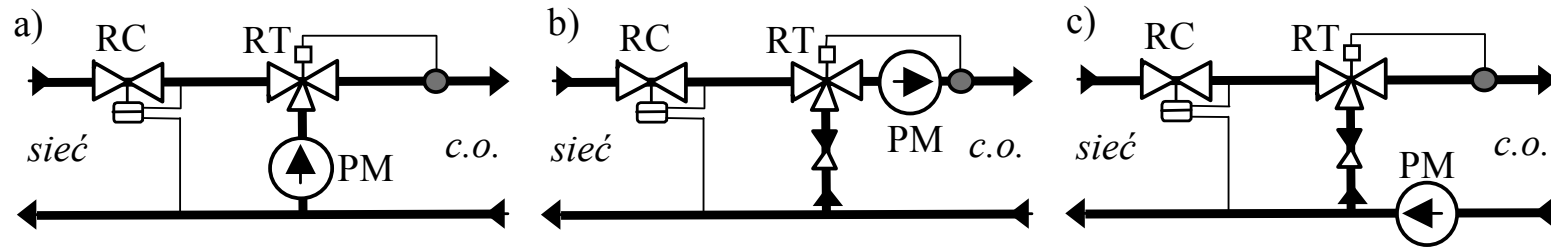


# Sieć ciepłownicza

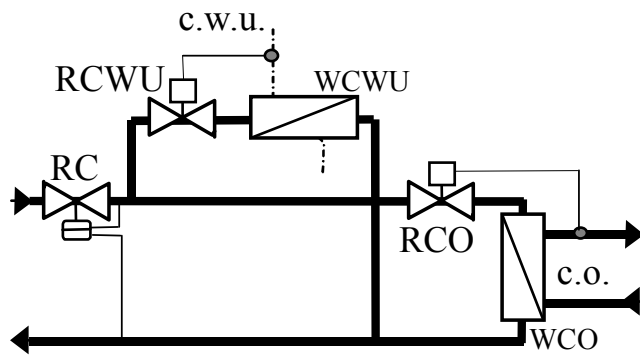
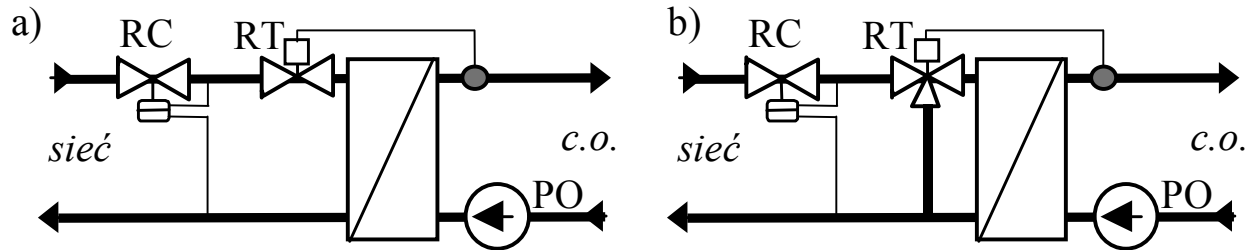


# węzły ciepłownicze

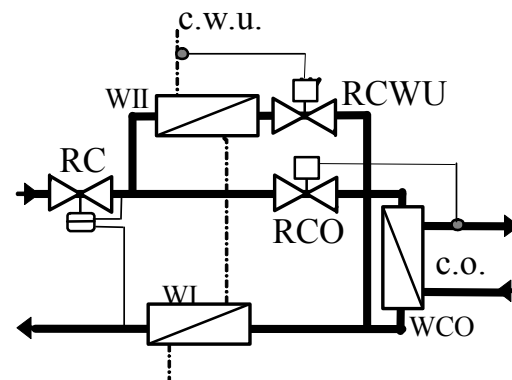
ze zmieszaniem pompowym



wymiennikowe

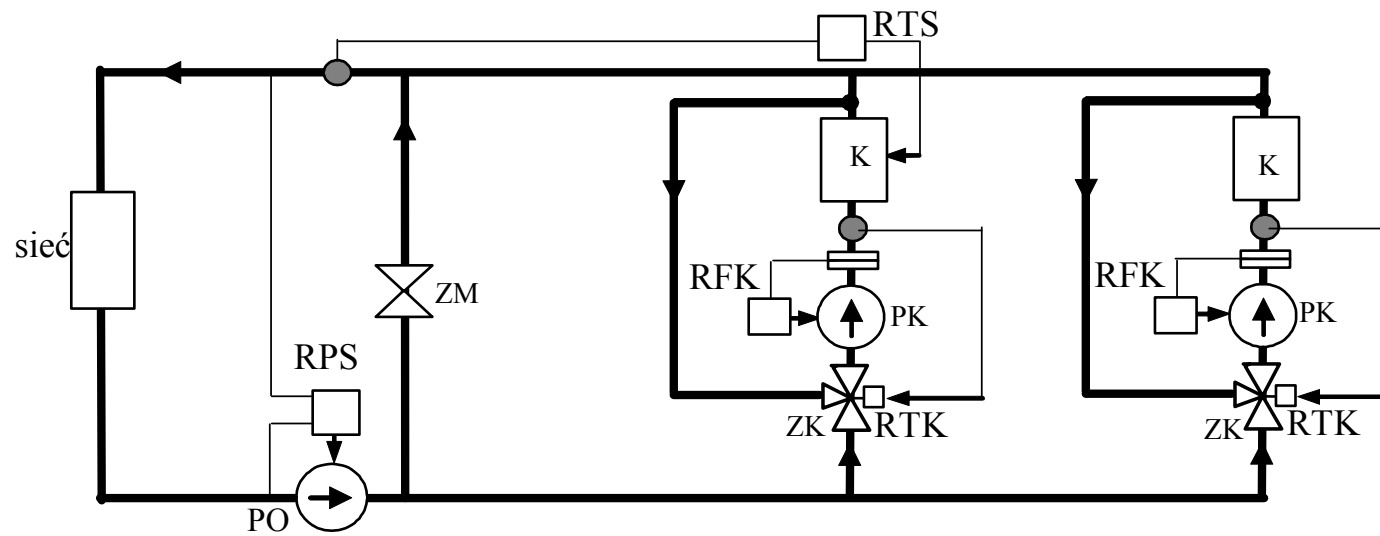
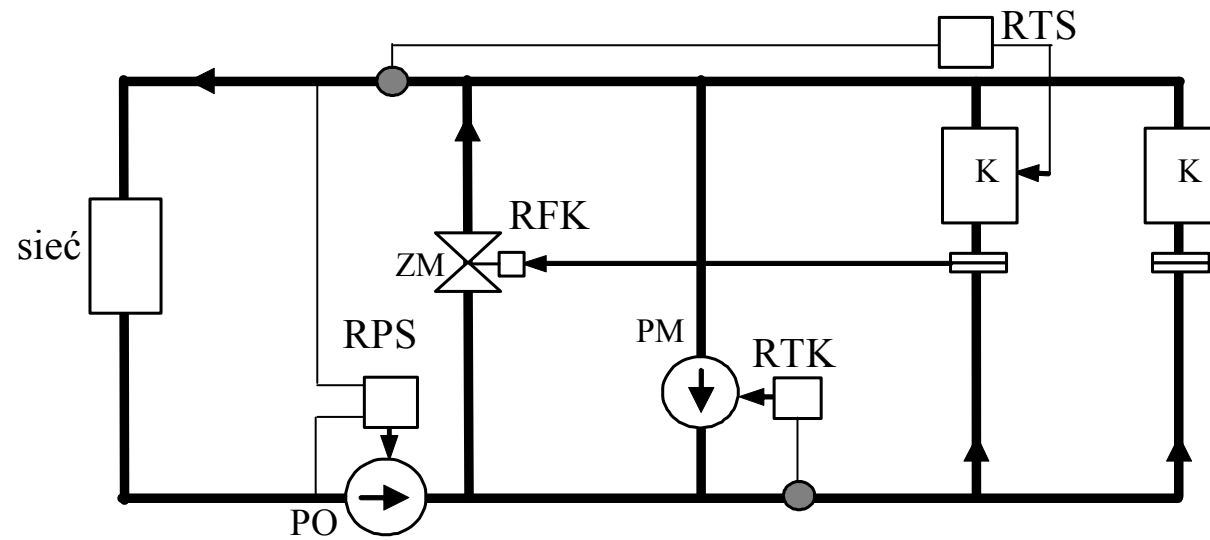


równoległe

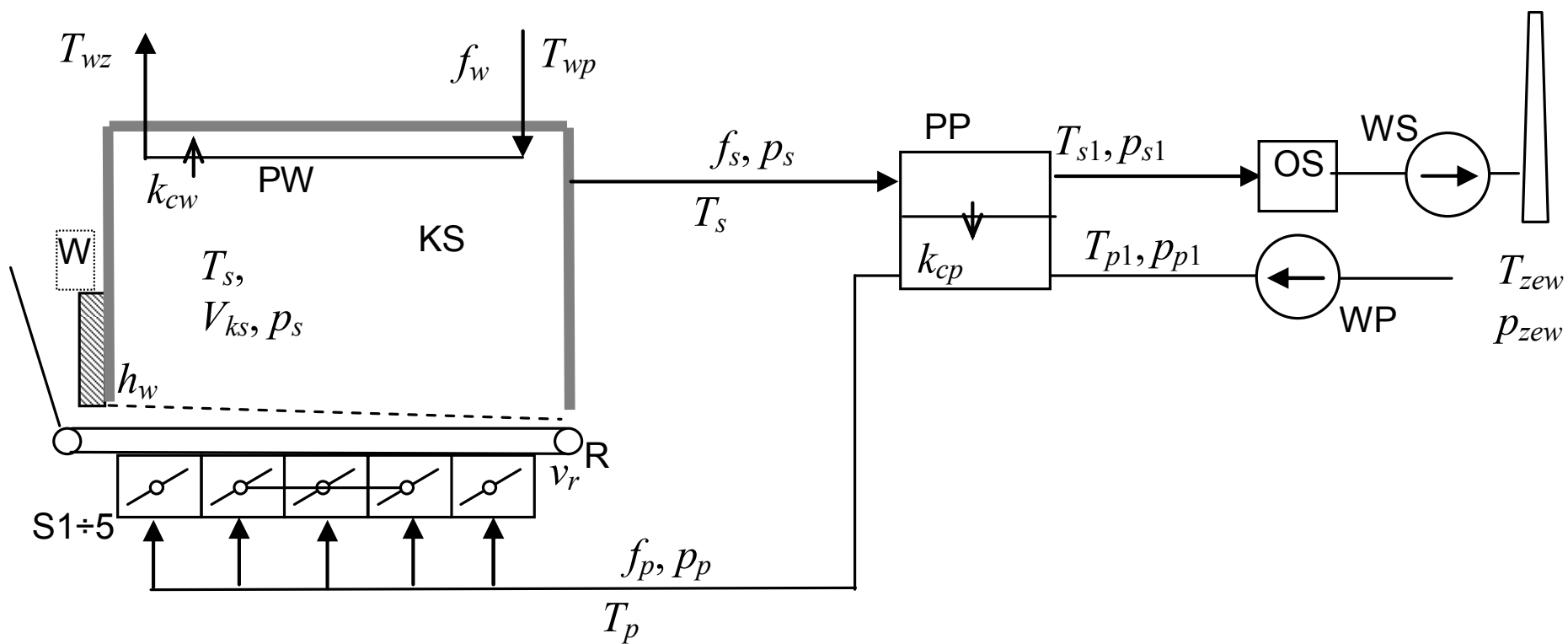


szeregowo-równoległe

# Ciepłownie – układy hydrauliczne



# Ciepłownie - kotły



PV:  $Q_k$     CV:  $h_w, v_r$   
 O<sub>2</sub>        S2-4  
 p<sub>p</sub>        WP  
 p<sub>s</sub>        WS  
 T<sub>1</sub>        S1  
 T<sub>5</sub>        S5