SAVELEC, WP 3

Grundfos UPER pumps

Niels Bidstrup
Grundfos
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BE>THINK>INNOVATE>

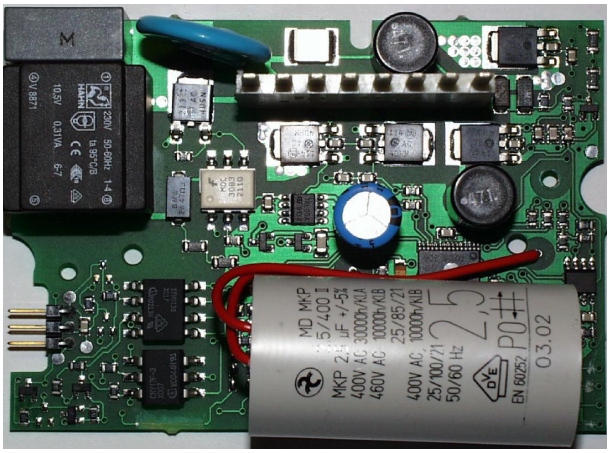
GRUNDFOS

UPER Pump

- An electronic controlled UP pump.
- Remote controlled, by the boiler control unit

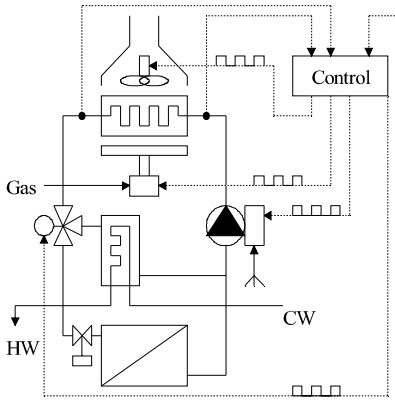
UPER Pump

- Electronic control up to 150 W
- Standby consumption < 2W
- Regulation performed by triac's
- Low noise regulation performed by a toggle solution
- Galvanic or no galvanic isolation of signal line:
  - *Voltage:*
    - ViH = 4 - 15 V
    - ViL < 0.5 V
  - *Power consumption:*
    - 4 mA < I < 10 mA
  - *Polarity:*
    - Optional polarity on connection of PWM signal
  - *Variable parameters:*
    - d = t/T (Duty-cucle)
- 4 – 30 different speeds (decided by the customer)
- Flexible mounting :
  - Hour → Clockwise 3, 6, 9 or 12
  - Cable entrance → Right or left
- Produced by Grundfos Electronics

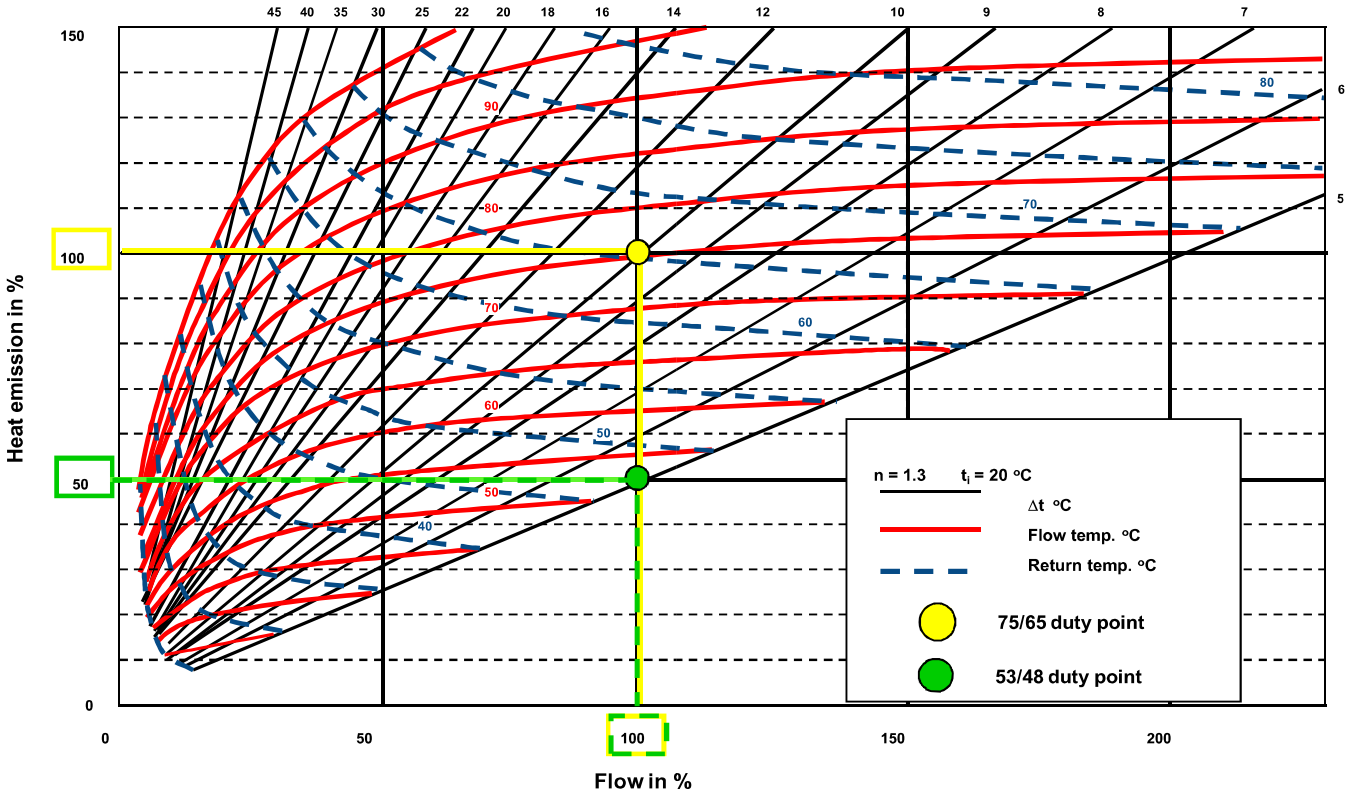


Signals for controlling the UPER pump

- 1 way signal
  - 1 way (Pulse Width Modulation):
    - Speed selecting
    - PWM frequency 100-4000 Hz
    - Duty cycle 0-100%
- 2 way signal
  - 2 way (Pulse Width Modulation):
    - Speed selecting
    - Setpoint information of Q/H
      - PWM signal (75 hz, duty cycle 10-50%)
- 2 way KM bus
    - Speed selecting
    - Setpoint information
    - 1-4 pumps can be connected to one signal line



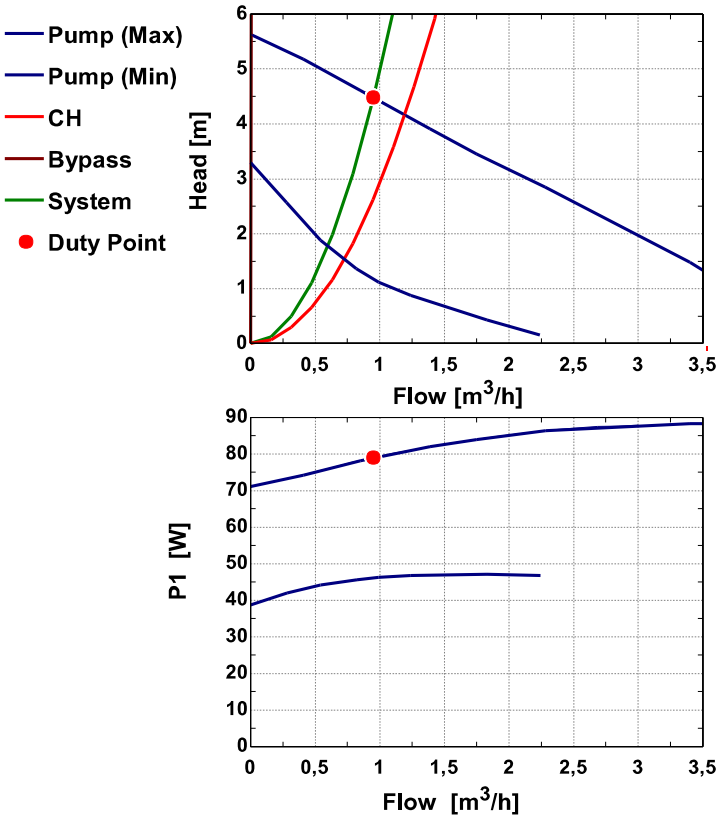
Heat emission from a radiator

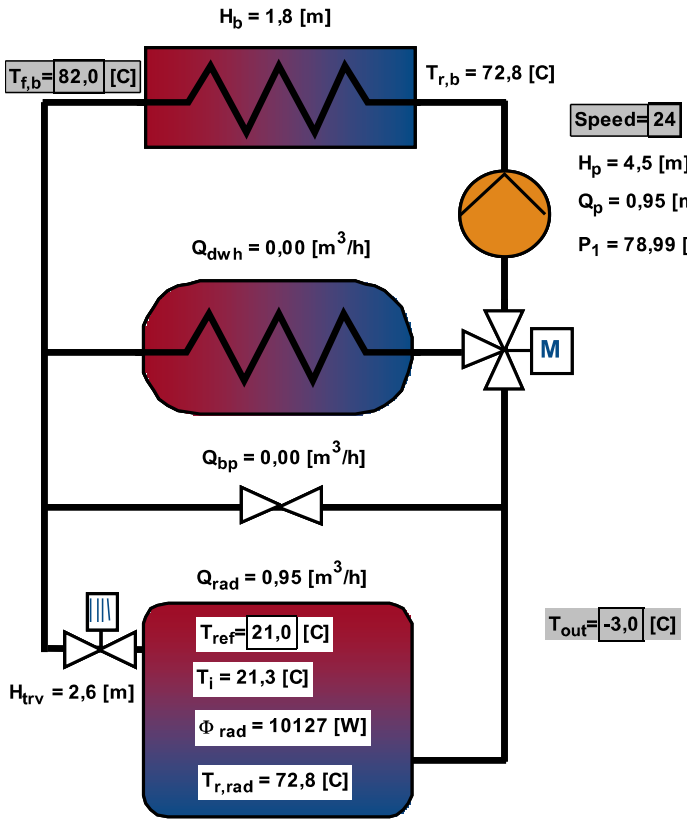


Analysis

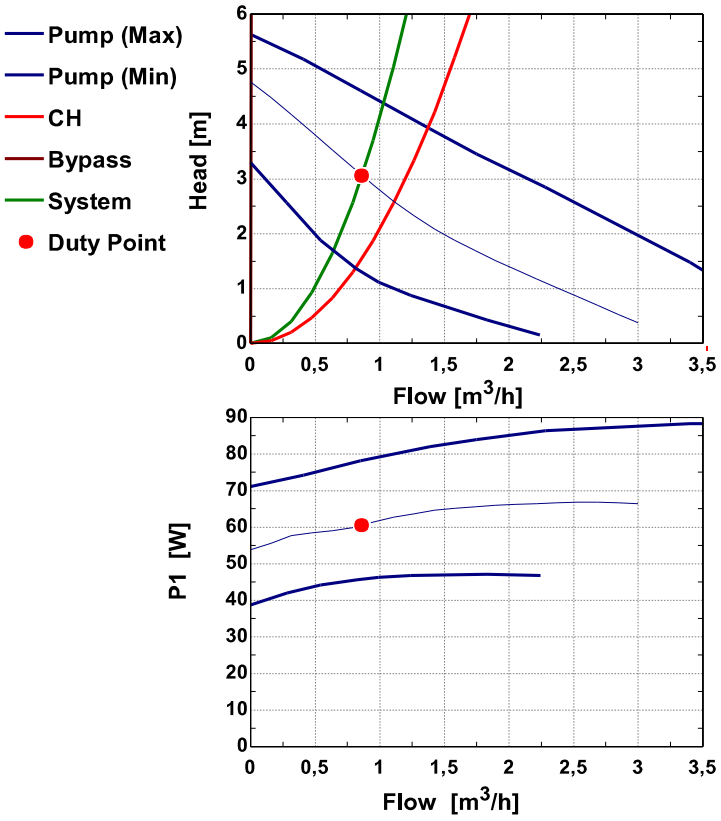
- Dimensioned Central heating flow: 864 l/h (10000 [W] at 82/72 [°C])
- Full CH load corresponds to Tout is –3 [°C]
- Partial CH load corresponds to Tout is 10 [°C]
- Max flow temperature is 82 [°C]
- Reduced flow temperature is 60 [°C]
- Max speed is 24
- Reduced speed is 10
- Min speed is 1

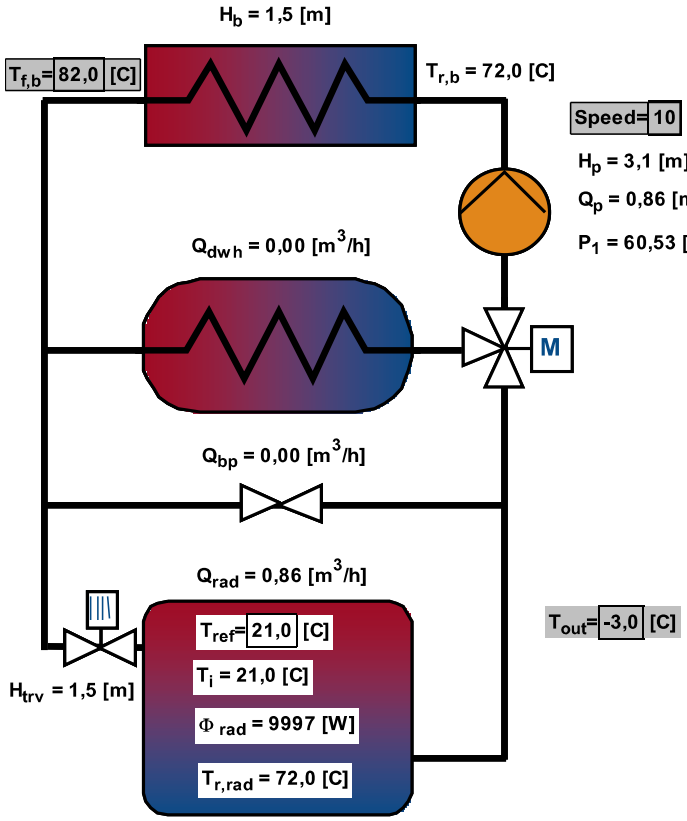
UPER 15-60, ΔT Control (Full CH load, Max speed, Max flow temperature)



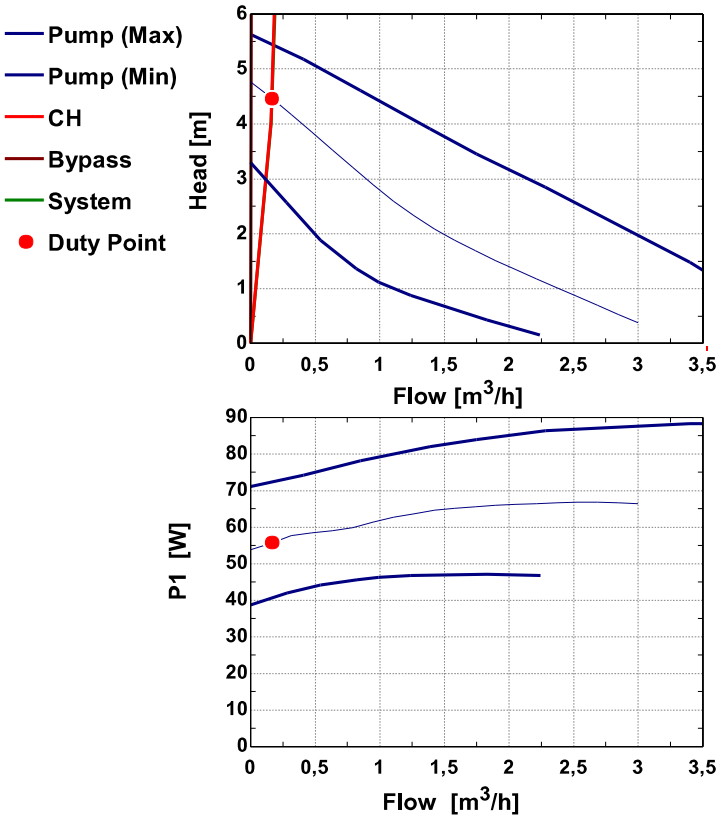


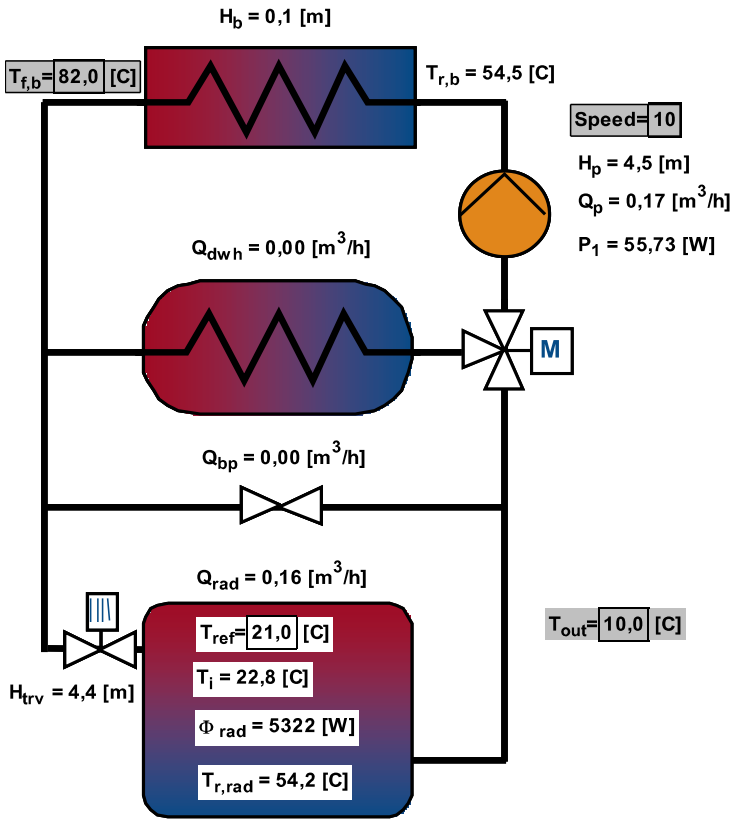
UPER 15-60, ΔT Control (Full CH Load, Reduced speed, Max flow temperature)



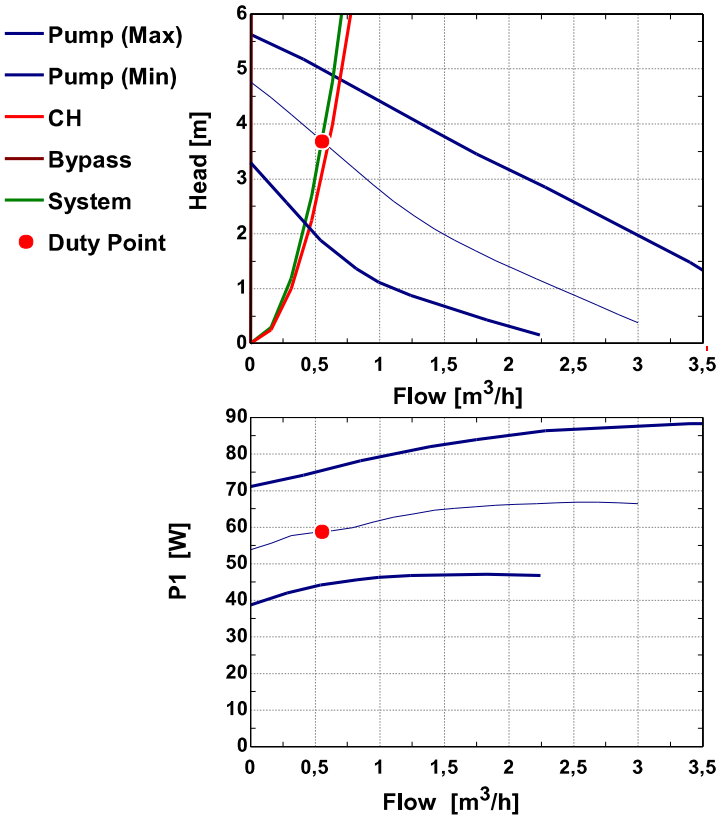


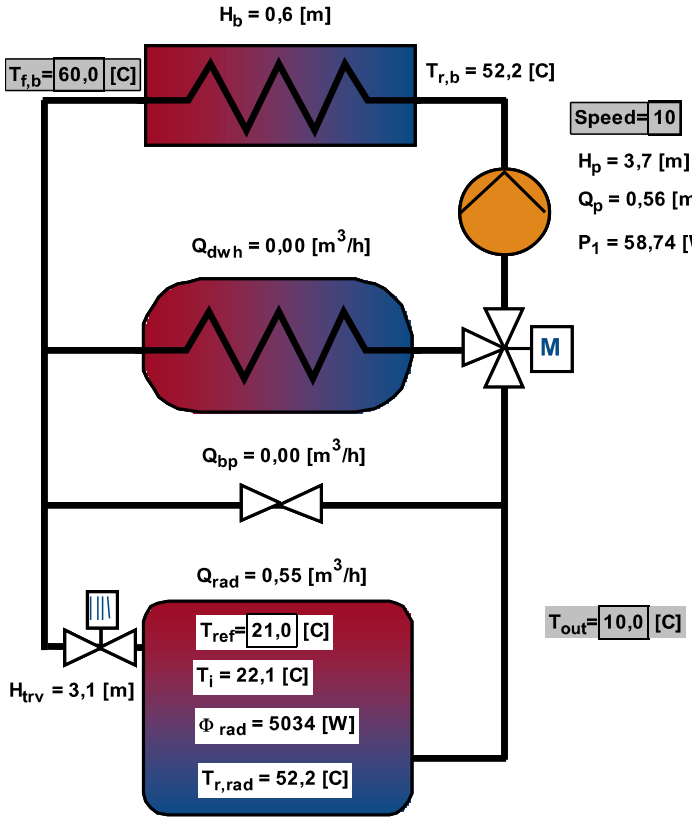
UPER 15-60, ΔT Control (Partial CH load, Reduced speed, Max flow temperature)



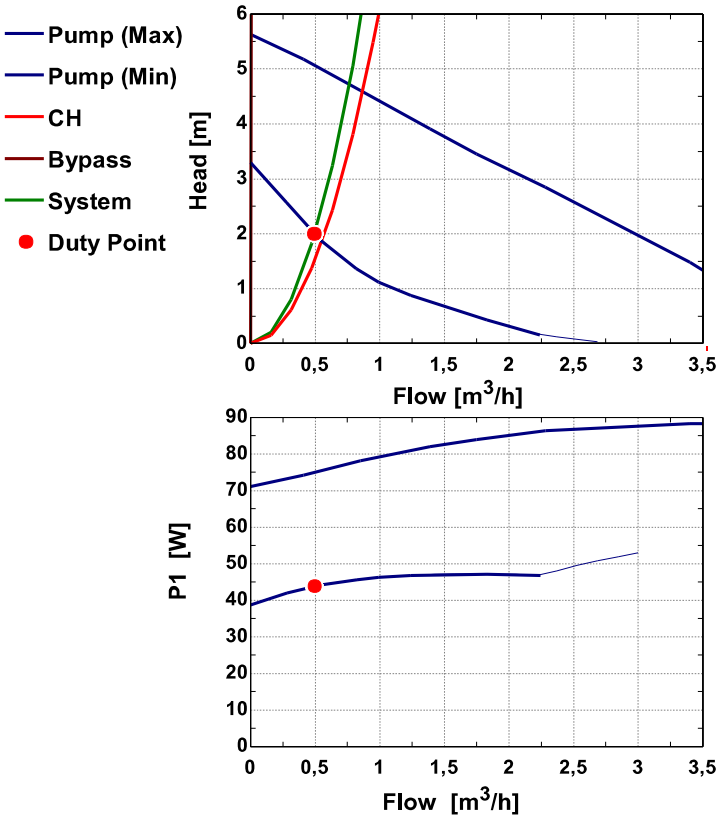


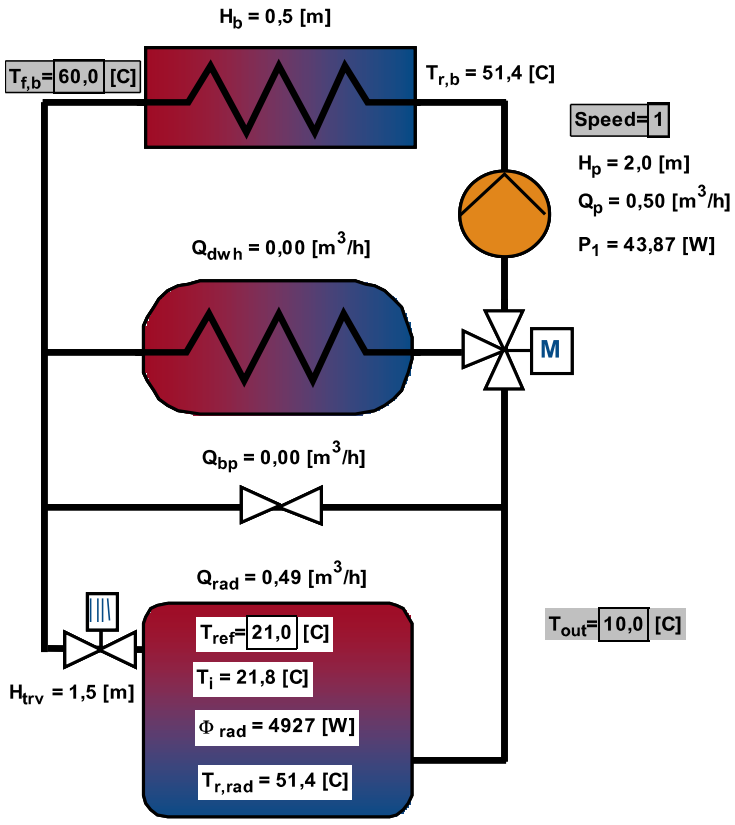
UPER 15-60, ΔT Control (Partial CH load, Reduced speed, Reduced flow temperature)





UPER 15-60, ΔT Control (Partial CH load, Min speed, Reduced flow temperature)





Benefits of using a UPER pump

- Higher efficiency in condensing boilers
- Lower energy consumption of the pump
- Domestic hot water priority
- More comfort in heating system (Reduced valve noise)