

- alias: Vorlauftemperaturregelung (Mehrpunkt-Heizkurve)

id: vorlauftemperaturregelung_mehrpunkt_heizkurve

mode: single

trigger:

- platform: time_pattern

minutes: "/1"

condition: []

action:

- variables:

 Fest definierte Außentemperaturpunkte (X) – NICHT veränderbar

x_points: [-25, -20, -15, -10, -5, 0, 5, 10, 15, 20]

 Einstellbare Vorlauf-Sollwerte (Y) über input_number

y_points: >

```
{{
  [
    states('input_number.point1_y') | float,
    states('input_number.point2_y') | float,
    states('input_number.point3_y') | float,
    states('input_number.point4_y') | float,
    states('input_number.point5_y') | float,
    states('input_number.point6_y') | float,
    states('input_number.point7_y') | float,
    states('input_number.point8_y') | float,
    states('input_number.point9_y') | float,
    states('input_number.point10_y') | float
  ]
}}
```

heizgrenze: "{{ states('input_number.heizgrenze') | float }}"

t_aussen: "{{ states('sensor.28_a32b46422001_temperatur') | float }}"

t_ist: "{{ states('sensor.28_44c733422001_temperatur') | float }}"

heizbedarf: "{{ t_aussen < heizgrenze }}"

 Berechnung der Vorlauftemperatur via Interpolation

t_soll: >

```
{% set t = t_aussen %}
```

```
{% set t_soll = y_points[0] if t <= x_points[0] else y_points[-1] if t >= x_points[-1] else 0
```

%}

```
{% for i in range(x_points | length - 1) %}
```

```
{% set x0 = x_points[i] %}
```

```
{% set y0 = y_points[i] %}
```

```
{% set x1 = x_points[i+1] %}
```

```
{% set y1 = y_points[i+1] %}
```

```
{% if t >= x0 and t <= x1 %}
```

```
{% set slope = (y1 - y0) / (x1 - x0) %}
```

```

    {% set t_soll = y0 + slope * (t - x0) %}
  {% endif %}
{% endfor %}
{{ t_soll | round(1) }}

```

```
diff: "{{ t_soll - t_ist }}"
```

 Setze berechneten Soll-Wert in die Input Number

```

- service: input_number.set_value
  target:
    entity_id: input_number.vorlauftemperatur_soll
  data:
    value: "{{ t_soll }}"

```

 Heizlogik per Shelly – nur wenn heizbedarf

```

- choose:
  #  Kein Heizbedarf → Heizkreis schließen
  - conditions:
    - condition: template
      value_template: "{{ not heizbedarf }}"
    sequence:
      - service: switch.turn_on
        target:
          entity_id: switch.shellyplus2pm_zu
      - delay:
          seconds: 2
      - service: switch.turn_off
        target:
          entity_id: switch.shellyplus2pm_zu

```

 Heizbedarf + Vorlauf zu kalt → auf

```

- conditions:
  - condition: template
    value_template: "{{ heizbedarf }}"
  - condition: template
    value_template: "{{ t_ist < t_soll - 0.5 }}"
  sequence:
    - service: switch.turn_on
      target:
        entity_id: switch.shellyplus2pm_auf
    - delay:
        seconds: 2
    - service: switch.turn_off
      target:
        entity_id: switch.shellyplus2pm_auf

```

 Heizbedarf + Vorlauf zu warm → zu

```

- conditions:

```

- condition: template
 - value_template: "{{ heizbedarf }}"
- condition: template
 - value_template: "{{ t_ist > t_soll + 0.5 }}"

sequence:

- service: switch.turn_on
 - target:
 - entity_id: switch.shellyplus2pm_zu
- delay:
 - seconds: 2
- service: switch.turn_off
 - target:
 - entity_id: switch.shellyplus2pm_zu