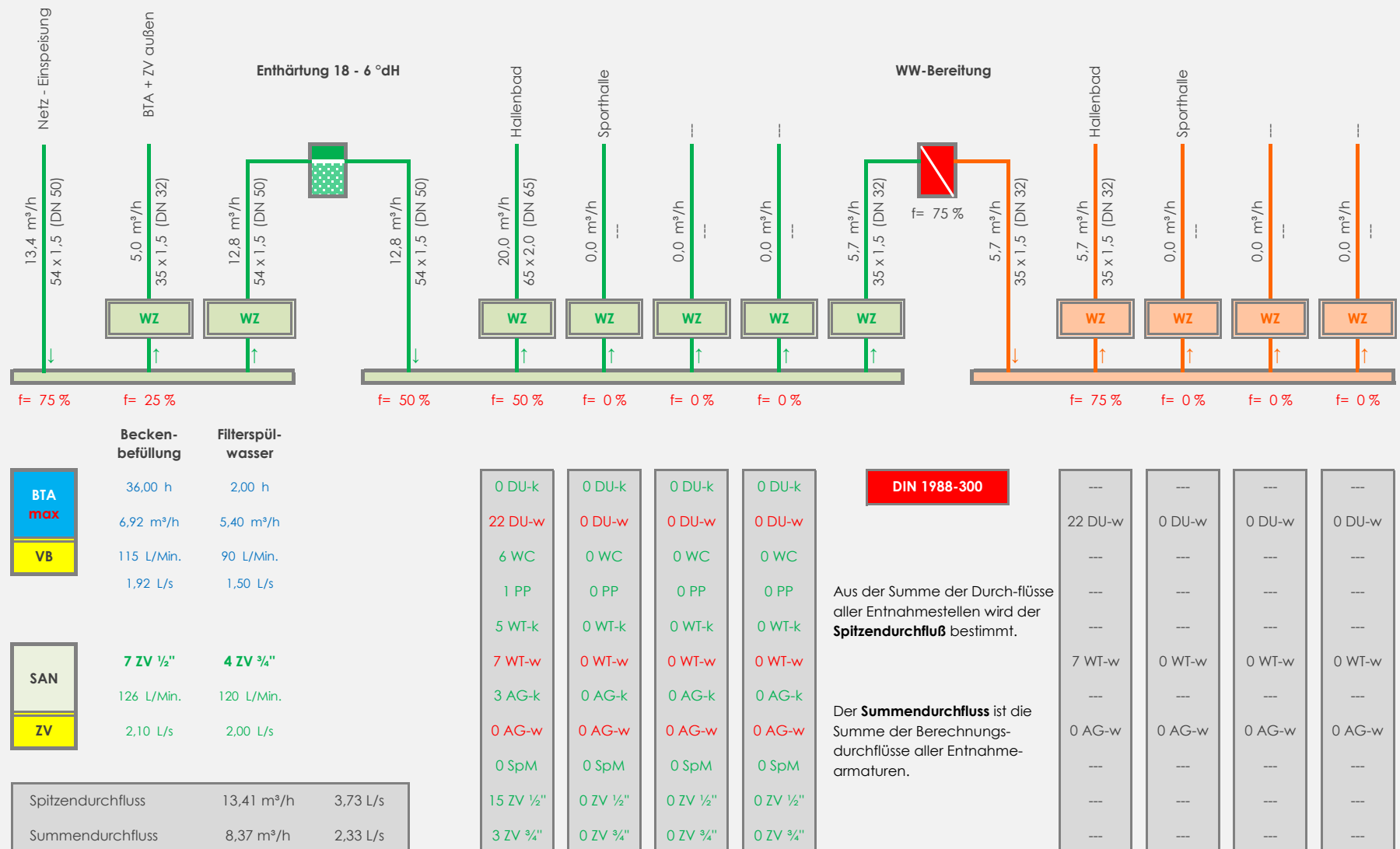


|                     |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
|---------------------|-------------------------|--------------|---------------|-------------|-------------|-----------------------------------------------|-------------------|---------------|-------------|-----------|------------------|--|
| Lehrschwimmhalle    |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
| PWC                 | System (PWC): 12 °C     | DIN 1988-300 | 22x DU        | 0x SpM      | 0x KD ½     | f = 75 %                                      | PWC               | 174 L/min.    | 2,9 L/sec.  | 10,4 m³/h | 54 x 1,5 (DN 50) |  |
| PWM                 | System (PWM): 42 °C     |              | 6x WC         | 0x IWM      | 0x SD ¾     |                                               | PWH               | 61 L/min.     | 1,0 L/sec.  | 3,7 m³/h  | 35 x 1,5 (DN 32) |  |
| System              | System (PWH): 65 °C     |              | 1x PP         | 1x AD ½     | 0x SD ø 250 |                                               |                   | 235 L/min.    | 3,9 L/sec.  | 14,1 m³/h |                  |  |
| PWH-C               | System (PWH-C): 60 °C   |              | 10x WT        | 15x ZV ½    | 0x RD ø 250 |                                               | PWH-C             | 61 L/min.     | 1,0 L/sec.  | 3,7 m³/h  | 22 x 1,0 (DN 20) |  |
|                     |                         |              | 3x AG         | 3x ZV ¾     | 0x KS ¾     |                                               |                   |               |             |           |                  |  |
|                     |                         |              | 42 Stk.       |             | 0x KE 15L   |                                               | Enthärtungsanlage | 169 L/min.    | 2,8 L/sec.  | 10,1 m³/h | → 71,8 %         |  |
| therm. Desinfektion |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
| DU ½"               | Reinigungsduischen (½") | 22 Stk.      | 9,0 L/min.    | 0,15 L/sec. | 0,54 m³/h   | gleichzeitige<br>Desinfektion<br><br>f = 75 % |                   |               |             |           |                  |  |
|                     | PWC                     |              |               |             |             |                                               |                   |               |             |           |                  |  |
|                     | PWH                     |              | 99,00 L/min.  | 1,65 L/sec. | 5,94 m³/h   |                                               | 42 x 1,5 (DN 40)  | 74,25 L/min.  | 1,24 L/sec. | 4,46 m³/h | 35 x 1,5 (DN 32) |  |
|                     | PWH-C                   |              | 99,00 L/min.  | 1,65 L/sec. | 5,94 m³/h   |                                               | 28 x 1,5 (DN 25)  | 74,25 L/min.  | 1,24 L/sec. | 4,46 m³/h | 28 x 1,5 (DN 25) |  |
| Lehrschwimmhalle    |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
| DU ½"               | Reinigungsduischen (½") | W            | 22 Stk.       | 9,0 L/min.  | 0,15 L/sec. | 0,54 m³/h                                     | f = 75 %          |               |             |           |                  |  |
|                     | PWC                     |              | 198,00 L/min. | 3,30 L/sec. | 11,88 m³/h  | 54 x 1,5 (DN 50)                              |                   | 148,50 L/min. | 2,48 L/sec. | 8,91 m³/h | 54 x 1,5 (DN 50) |  |
|                     | PWH                     |              | 99,00 L/min.  | 1,65 L/sec. | 5,94 m³/h   | 42 x 1,5 (DN 40)                              |                   | 74,25 L/min.  | 1,24 L/sec. | 4,46 m³/h | 35 x 1,5 (DN 32) |  |
|                     | PWH-C                   |              | 99,00 L/min.  | 1,65 L/sec. | 5,94 m³/h   | 28 x 1,5 (DN 25)                              |                   | 74,25 L/min.  | 1,24 L/sec. | 4,46 m³/h | 28 x 1,5 (DN 25) |  |
| Lehrschwimmhalle    |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
| WC                  | Toiletten               | k            | 6 Stk.        | 7,8 L/min.  | 0,13 L/sec. | 0,47 m³/h                                     | f = 50 %          |               |             |           |                  |  |
|                     | PWC                     |              | 46,80 L/min.  | 0,78 L/sec. | 2,81 m³/h   | 28 x 1,5 (DN 25)                              |                   | 23,40 L/min.  | 0,39 L/sec. | 1,40 m³/h | 18 x 1,0 (DN 15) |  |
|                     | PWH                     |              |               |             |             |                                               |                   |               |             |           |                  |  |
|                     | PWH-C                   |              |               |             |             |                                               |                   |               |             |           |                  |  |
| Lehrschwimmhalle    |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
| PP                  | Urinal                  | k            | 1 Stk.        | 7,8 L/min.  | 0,13 L/sec. | 0,47 m³/h                                     | f = 50 %          |               |             |           |                  |  |
|                     | PWC                     |              | 7,80 L/min.   | 0,13 L/sec. | 0,47 m³/h   | 12 x 1,0 (DN 10)                              |                   | 3,90 L/min.   | 0,07 L/sec. | 0,23 m³/h | 10 x 1,0 (DN 8)  |  |
|                     | PWH                     |              |               |             |             |                                               |                   |               |             |           |                  |  |
|                     | PWH-C                   |              |               |             |             |                                               |                   |               |             |           |                  |  |
| Lehrschwimmhalle    |                         |              |               |             |             |                                               |                   |               |             |           |                  |  |
| WT                  | Waschbecken             | W            | 7 Stk.        | 4,2 L/min.  | 0,07 L/sec. | 0,25 m³/h                                     | f = 50 %          |               |             |           |                  |  |
|                     | PWC                     |              | 29,40 L/min.  | 0,49 L/sec. | 1,76 m³/h   | 22 x 1,0 (DN 20)                              |                   | 14,70 L/min.  | 0,25 L/sec. | 0,88 m³/h | 15 x 1,0 (DN 12) |  |
|                     | PWH                     |              | 14,70 L/min.  | 0,25 L/sec. | 0,88 m³/h   | 15 x 1,0 (DN 12)                              |                   | 7,35 L/min.   | 0,12 L/sec. | 0,44 m³/h | 12 x 1,0 (DN 10) |  |
|                     | PWH-C                   |              | 14,70 L/min.  | 0,25 L/sec. | 0,88 m³/h   | 15 x 1,0 (DN 12)                              |                   | 7,35 L/min.   | 0,12 L/sec. | 0,44 m³/h | 10 x 1,0 (DN 8)  |  |

|       |                         |   |         |               |             |            |                  |          |              |             |           |                  |
|-------|-------------------------|---|---------|---------------|-------------|------------|------------------|----------|--------------|-------------|-----------|------------------|
| WT    | Waschbecken             | k | 5 Stk.  | 4,2 L/min.    | 0,07 L/sec. | 0,25 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 21,00 L/min.  | 0,35 L/sec. | 1,26 m³/h  | 18 x 1,0 (DN 15) | f = 50 % | 10,50 L/min. | 0,18 L/sec. | 0,63 m³/h | 15 x 1,0 (DN 12) |
|       | PWH                     |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
|       | PWH-C                   |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
| AB    | Ausgussbecken           | k | 3 Stk.  | 4,2 L/min.    | 0,07 L/sec. | 0,25 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 12,60 L/min.  | 0,21 L/sec. | 0,76 m³/h  | 15 x 1,0 (DN 12) | f = 25 % | 3,15 L/min.  | 0,05 L/sec. | 0,19 m³/h | 8 x 1,0 (DN 6)   |
|       | PWH                     |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
|       | PWH-C                   |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
| SpM   | Spülmaschine            | k | 0 Stk.  | 4,2 L/min.    | 0,07 L/sec. | 0,25 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 0,00 L/min.   | 0,00 L/sec. | 0,00 m³/h  | ---              | f = 0 %  | 0,00 L/min.  | 0,00 L/sec. | 0,00 m³/h | ---              |
|       | PWH                     |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
|       | PWH-C                   |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
| IWM   | Industrie Waschmaschine | w | 0 Stk.  | 9,0 L/min.    | 0,15 L/sec. | 0,54 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 0,00 L/min.   | 0,00 L/sec. | 0,00 m³/h  | ---              | f = 0 %  | 0,00 L/min.  | 0,00 L/sec. | 0,00 m³/h | ---              |
|       | PWH                     |   |         | 0,00 L/min.   | 0,00 L/sec. | 0,00 m³/h  | ---              |          | 0,00 L/min.  | 0,00 L/sec. | 0,00 m³/h | ---              |
|       | PWH-C                   |   |         | 0,00 L/min.   | 0,00 L/sec. | 0,00 m³/h  | ---              |          | 0,00 L/min.  | 0,00 L/sec. | 0,00 m³/h | ---              |
| AD ½" | Augendusche (½"/DN15)   | k | 1 Stk.  | 7,0 L/min.    | 0,12 L/sec. | 0,42 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 7,00 L/min.   | 0,12 L/sec. | 0,42 m³/h  | 12 x 1,0 (DN 10) | f = 10 % | 0,70 L/min.  | 0,01 L/sec. | 0,04 m³/h | 6 x 1,0 (DN 5)   |
|       | PWH                     |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
|       | PWH-C                   |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
| ZV ½" | Zapfventil (½"/DN15)    | k | 15 Stk. | 18,0 L/min.   | 0,30 L/sec. | 1,08 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 270,00 L/min. | 4,50 L/sec. | 16,20 m³/h | 65 x 2,0 (DN 65) | f = 10 % | 27,00 L/min. | 0,45 L/sec. | 1,62 m³/h | 22 x 1,0 (DN 20) |
|       | PWH                     |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
|       | PWH-C                   |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
| ZV ¾" | Zapfventil (¾"/DN20)    | k | 3 Stk.  | 30,0 L/min.   | 0,50 L/sec. | 1,80 m³/h  |                  |          |              |             |           |                  |
|       | PWC                     |   |         | 90,00 L/min.  | 1,50 L/sec. | 5,40 m³/h  | 35 x 1,5 (DN 32) | f = 0 %  | 0,00 L/min.  | 0,00 L/sec. | 0,00 m³/h | ---              |
|       | PWH                     |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |
|       | PWH-C                   |   |         | ---           | ---         | ---        | ---              |          | ---          | ---         | ---       | ---              |

## Lehrschwimm- und Sporthalle



|                           |              |                  |             |           |                               |                      |
|---------------------------|--------------|------------------|-------------|-----------|-------------------------------|----------------------|
| Verbraucher               | 22           | DU               | (15)        | 0         | DU                            | DVGW/VDI 2089        |
| Entnahme i.M.             | 3,0 Min.     |                  |             | 0,0 Min.  |                               | (x) = eff. DU Anzahl |
| Leistung                  | 9 L/Min.     | OK               |             | 0 L/Min.  | OK                            |                      |
| Zapf Temperatur           | 38 °C        |                  |             | 38 °C     |                               |                      |
| $Q_{100\%}$               | 11,88 m³/h   |                  |             | 0,00 m³/h |                               |                      |
| Systemtemperatur (PWC)    | 12 °C        | 5,0 K Rückkühler |             |           |                               |                      |
| Systemtemperatur (PWH)    | 45 °C        |                  |             |           |                               |                      |
| Heizungsvorlauftemperatur | 45 °C        | 20 K             | HVL falsch  |           |                               |                      |
| Nutzung je Einheit        | ✗ n = 15 1/h | 8,91 m³/h        | ✗ n = 9 1/h | 0,00 m³/h | Funktionsbereich-1: 20 fach/h |                      |
| Gleichzeitigkeit          | ✗ f = 100 %  | 8,91 m³/h        | ✗ f = 50 %  | 0,00 m³/h |                               |                      |
| $Q_{\text{reduziert}}$    | 8,91 m³/h    |                  | 0,00 m³/h   |           |                               |                      |

|                      |            |                  |             |           |             |
|----------------------|------------|------------------|-------------|-----------|-------------|
| Spitzenleistung (SL) | 11,88 m³/h | 54 x 1,5 (DN 50) |             |           |             |
| PWH                  | 9,36 m³/h  | 54 x 1,5 (DN 50) |             |           |             |
| PWC                  | 2,52 m³/h  | 28 x 1,5 (DN 25) |             |           |             |
| WT                   | 310 kW     | 13,44 m³/h       | 13.355 kg/h | 3,71 kg/s | DN 65 (2½“) |
| Dauerleistung (DL)   | 8,91 m³/h  |                  |             |           |             |
| PWH                  | 7,02 m³/h  | 42 x 1,5 (DN 40) |             |           |             |
| PWC                  | 1,89 m³/h  | 22 x 1,0 (DN 20) |             |           |             |
| WT                   | 230 kW     | 9,97 m³/h        | 9.909 kg/h  | 2,75 kg/s | DN 65 (2½“) |

Spitzenleistung

Gegenstrom

45 °C

→

45 °C

→

9,36 m³/h

← TWZ 40 °C

← TWK 17 °C

←

25 °C

←

13,44 m³/h

310 kW

Heizung

Sanitär

## Spitzenlast

