Injection control for radiated heat

General
Injection circuits must be compensated on the primary and secondary side, because
- Excess pressure builds on the connection points for the given heating group, which must be reduced to the required connecting pressure $\Delta p_A$ and
- The complete plant generally operates at a pump pressure that is higher than was originally planned.

Incorrect circulation

Procedure
- Fully open throttles D1 and D2
- Bring heat generator to the maximum operating temperature
1. Flow temperature:
1.1 Manually, fully open actuating element (peak load operation) and wait for a stable consumer return temperature.

Procedure
As a rule, compensation takes place with a fully opened control valve.

For a compensated injection circuit, primary pump P1 supplies as much water to the heating group, as its pump P2 is capable of assuming. Then

$$\Delta p_A = \Delta p_{P2}$$

No heating water circulates in the bypass as well as in the short circuit and

$$t_1 \degree C = t_2 \degree C$$
$$t_3 \degree C = t_4 \degree C$$

The consumer limits the volume flow using throttle D1 and thus sets the temperature difference between flow and return. Throttle D2 is used to compensate the injection, so that the desired consumer flow temperature is not exceeded when the valve is fully open.

Incorrect circulation for non-compensated injection circuit

1.2 Close throttle D2 a bit when the flow temperature exceeds the maximum desired value. Close throttle D1 accordingly when the flow temperature is too low.

2. Temperature difference:
2.1 The consumer flow temperature has the maximum permissible temperature (see flow temperature) when the valve is fully opened.
2.2 Wait for stable consumer return temperature.
2.3 Throttle D1 is closed, lowering the flow, until the desired temperature difference is set, when the temperature difference between the flow and return is less than the planned value.
2.4 Check consumer flow temperature and eventually change using throttle D2. Then check items 2, 3 and 4 and correct as required.

3.1 Changeover control valve to automatic.
3.2 Check after 72 hours of control, in particular, when multiple groups are connected to one distributor.