

## Retort Furnace Cooling Systems

### Indirect cooling (hot-wall retort furnaces)

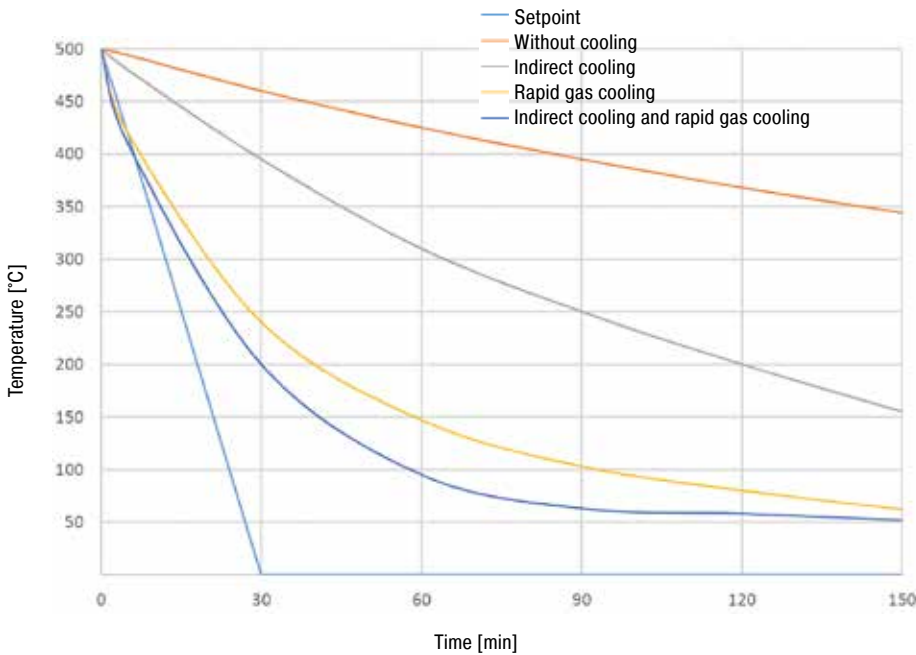
- Ambient air is blown onto the outer retorte surface to cool it down. The waste heat is removed via the exhaust air outlet of the furnace.
- The charge is cooled indirectly, which means that the atmosphere in the retort is not affected by the cooling
- The charge cannot be quenched with the cooling system

### Direct cooling (cold-wall and hot-wall retort furnaces)

- Rapid gas cooling in the retort. For this purpose, the furnace atmosphere is circulated through a heat exchanger.
- The system pressure is not increased by the cooling; there is no gas quenching at high pressure
- Not available for processes with flammable furnace atmospheres

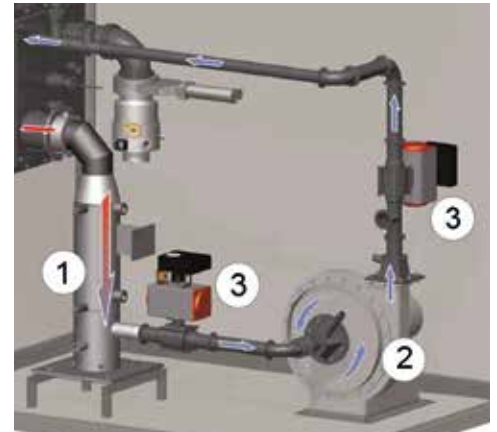
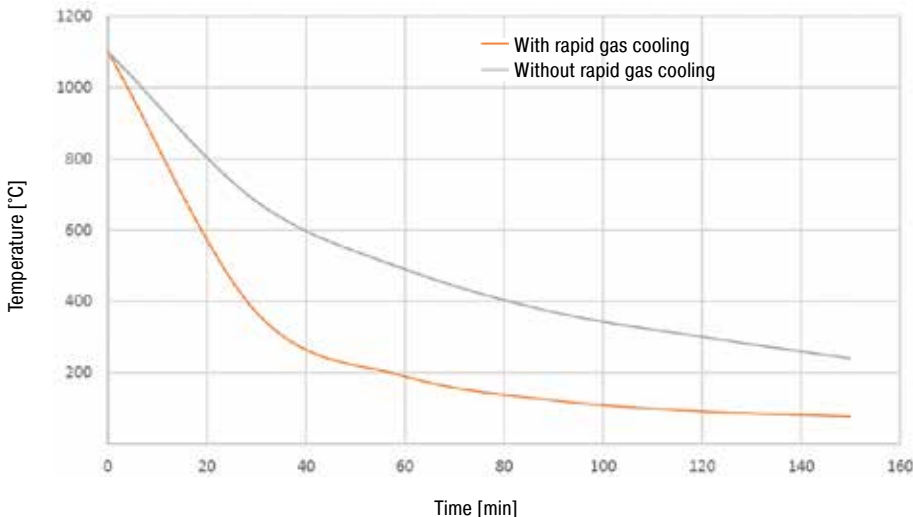
### Cooling Behavior of Hot-Wall Retort Furnace with Charge

(Example: NRA 50/09 with charge of 40 kg)



### Cooling Behavior of Cold-Wall Retort Furnace with Charge

(Example: VHT 8/06-MO with charge of 10 kg)



Schematic presentation of rapid gas cooling

- 1 Gas heat exchanger
- 2 Radial fan
- 3 Shut-off valves



Fan cooling, hot-wall retort furnace NRA 400/03



Rapid gas cooling, cold-wall retort furnace VHT 8/16-MO