

### EXAMPLE: Cooling with dehumidification

A steady-flow cooling and dehumidification process with a reheat section delivers moist air at a dry-bulb temperature of 25°C and a relative humidity of  $\phi = 50\%$ . Air enters the cooling section at a dry bulb temperature of 40°C and  $\phi = 40\%$  with a flow rate of 75 m<sup>3</sup>/min.

- Draw the process on a psychrometric chart.
- Determine the mass flow rate of the dry air in kg/min.
- Determine the amount of liquid water extracted in the process, in kg/min.
- Determine the rate of heat transfer out of the air in the cooling section.
- Determine the rate of heat transfer into the air in the reheat section.



