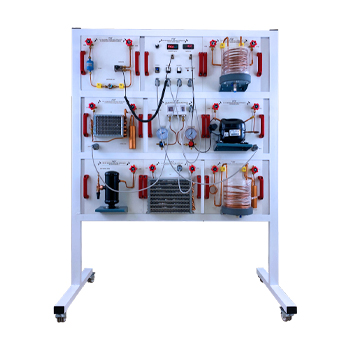
**CS-102**

**MODÜLER SOĞUTMA EĞİTİM SETİ**

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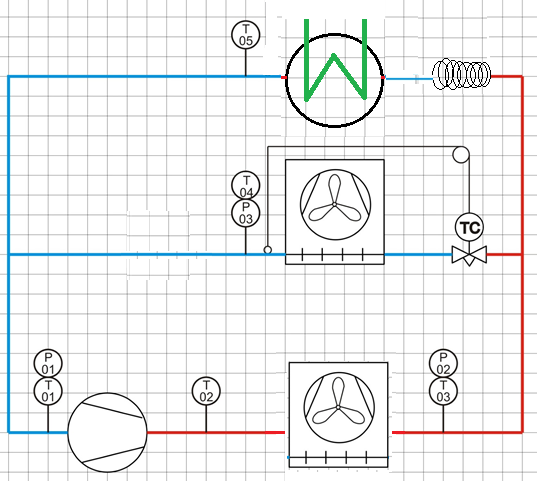
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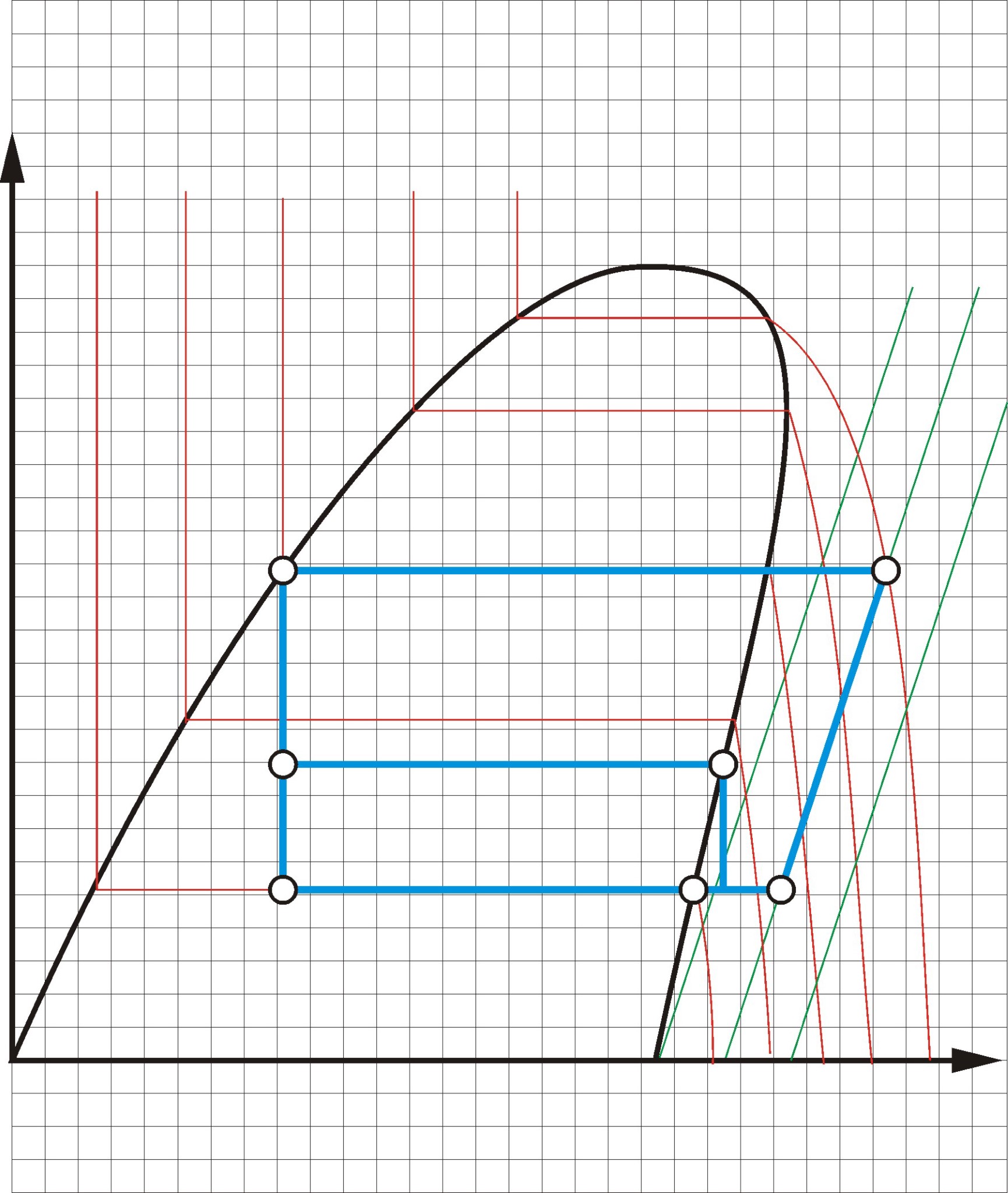
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|  |  |
| --- | --- |
| **Symbols** | **Meaning** |
|  | Compressor |
|  | Expansion Valve |
|  | Condenser |
|  | Evaporator (Air) |
|  | Evaporator (Water) |



1. Log p-h diagram of the cycle:



***p***

***2***

***p***

***3***

***p***

***1***

***t***

***3***

***t***

***4***

***t***

***5***

***t***

***1***

***t***

***2***

*P1*

En düşük basınç (Derin dondurucu)

***h***

***log p***

İkinci en düşük basınç (Standart evaporatör)

En yüksek basınç (Kondenser)

*P3*

*P2*

**1. Condenser experiment**

* Perform the temperature and pressure measurements
* Compute the rate of heat transfer from the condenser to air
* Repeat the identical procedure for the condenser with water cooler.

**1.1. Experiment**

• Turn on the system.

• Turn on the fan of the evaporator.

* Fill in the working fluid of the condenser.

• Turn on the compressor.

• Wait till the system reaches steady flow conditions. (Stable pressure is seen at the compressor inlet).

* Measure and note all the necessary system properties (temperature and pressure at the condenser inlet and outlet, mass flow rate of the refrigerant).

NOTE: Manometers do not indicate absolute pressures. Hence, add the atmospheric pressure to the manometer pressure.

**1.2 Measurement**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Temperature | Measured temperature (oC) | Pressure | Measured pressure (bar) | Volume flow rate (m3/s) (lt/h) | Mass flow rate (kg/s) | Enthalpy (kJ/kg) |
| T1 |  | P1 |  |  |  |  |
| T2 |  | P2 |  |  |  |  |
| T3 |  | P3 |  |  |  |  |
| T4 |  | P4 |  |  |  |  |

**2.** **Evaporator experiment**

Repeat the identical procedure for the evaporator.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Temperature | Measured temperature (oC) | Pressure | Measured pressure (bar) | Volume flow rate (m3/s) (lt/h) | Mass flow rate (kg/s) | Enthalpy (kJ/kg) |
| T1 |  | P1 |  |  |  |  |
| T2 |  | P2 |  |  |  |  |
| T3 |  | P3 |  |  |  |  |
| T4 |  | P4 |  |  |  |  |

**3.** **Compressor experiment**

* Compute the power consumption of the compressor using the rate of heat transfer for the condenser and the evaporator.
* Measure the pressure and the temperature at the inlet and the outlet of the compressor.
* Compute the isentropic efficiency of the compressor.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Temperature | Measured temperature (oC) | Pressure | Measured pressure (bar) | Enthalpy (kJ/kg) |
| T1 |  | P1 |  |  |
| T2 |  | P2 |  |  |
| Isentropic case |  |  |  |  |
| T3 |  | P3 |  |  |
| T4 |  | P4 |  |  |
| Isentropic case |  |  |  |  |