

RECOOLING UNITS

EMA Indutec produces **three kinds of recooling units:**

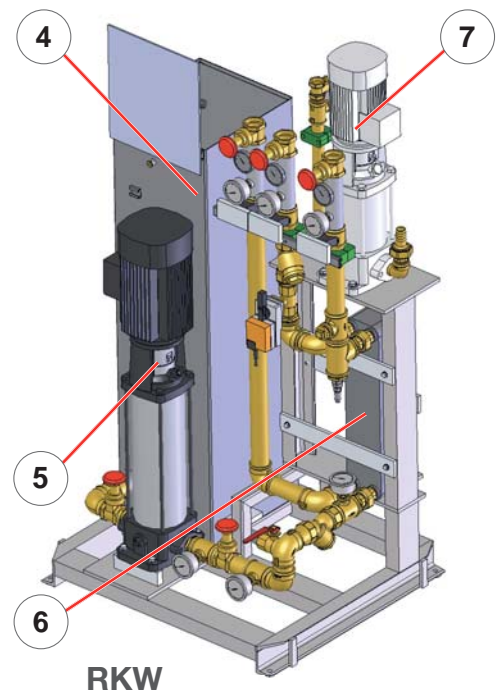
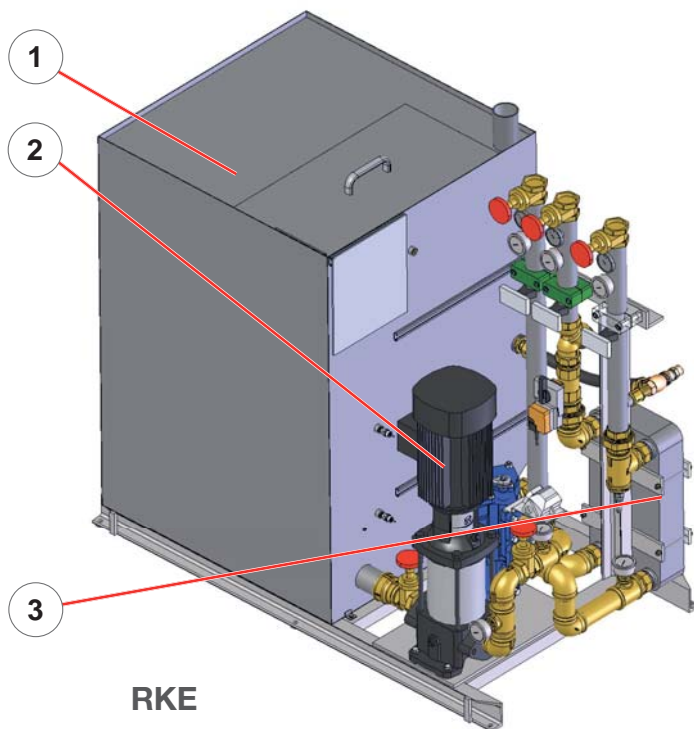
- Recooling units for quench media (internal abbreviation RKE)
- Recooling units for cooling water (internal abbreviation RKW)
- Combined recooling units for quench media and cooling water (internal abbreviation RKK)

Designation of the units e.g. RKE5025.75.120.01

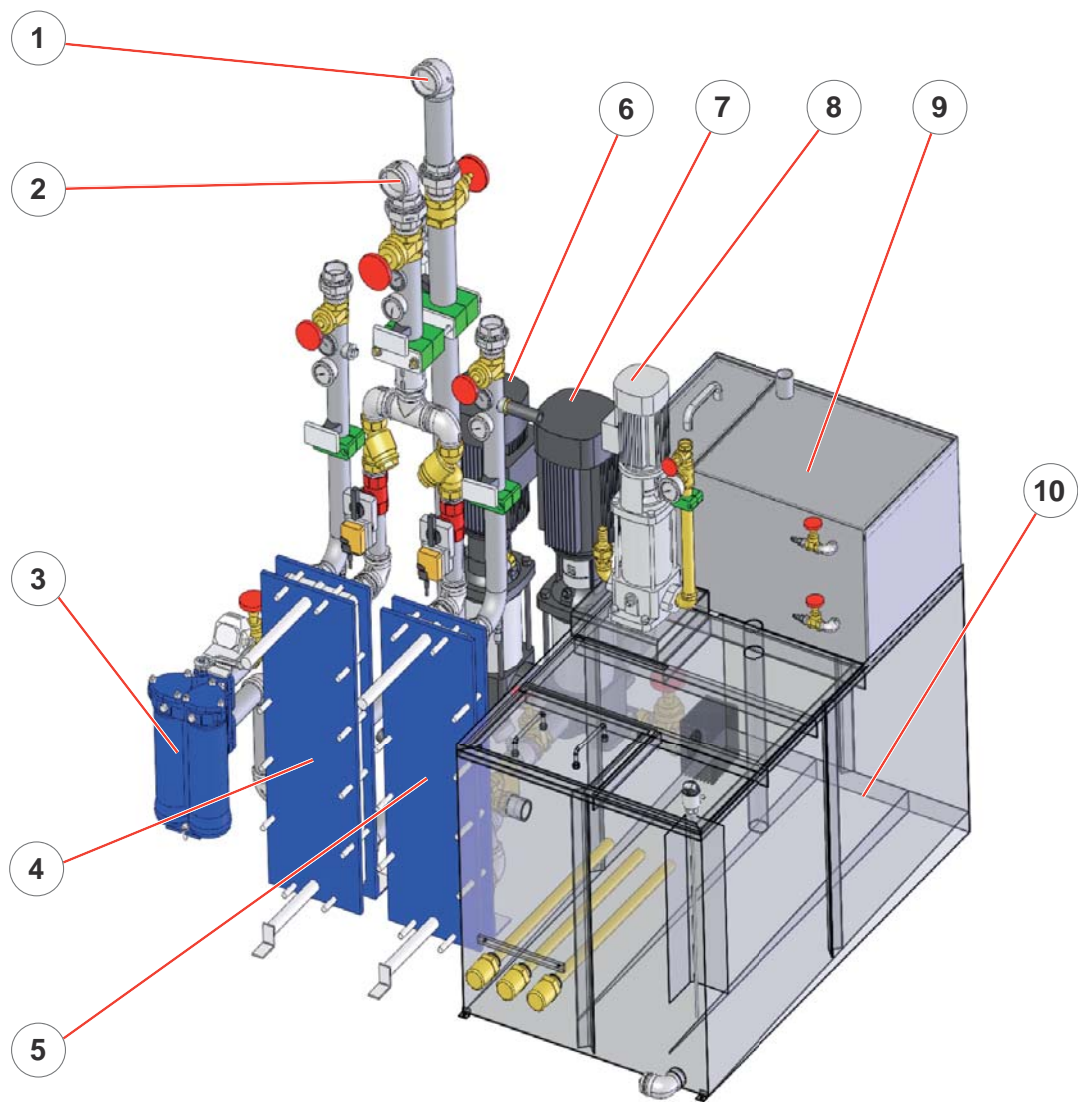
- The first number (here the 50) indicates the nominal diameter connection of the domestic water.
- The second number (here the 25) indicates the nominal diameter connection of the mains water.
- The third number (here the 75) indicates the maximum cooling capacity in kW.
- The fourth number (here 120) indicates the maximum pump flow rate in $\text{m}^3 / \text{h} \times \text{factor } 10$.
- The fifth number (here the 01) indicates the number of the variant.

For combined recooling units, the abbreviation RKK is followed only by a number for the total capacity and a consecutive number separated by a dot, e.g. RKK200.01.

Exemplary structure of the systems



Item	Description
1	Tank for the quench medium (1,000 l) with integrated heating
2	Pump to bring the quench medium to the machine
3	Plate heat exchanger (quench medium / water)
4	Tank for the cooling water (120 l) for the electrical components
5	Pump to bring the cooling water to the electrical components of the system
6	Plate heat exchanger (water / water)
7	Booster pump



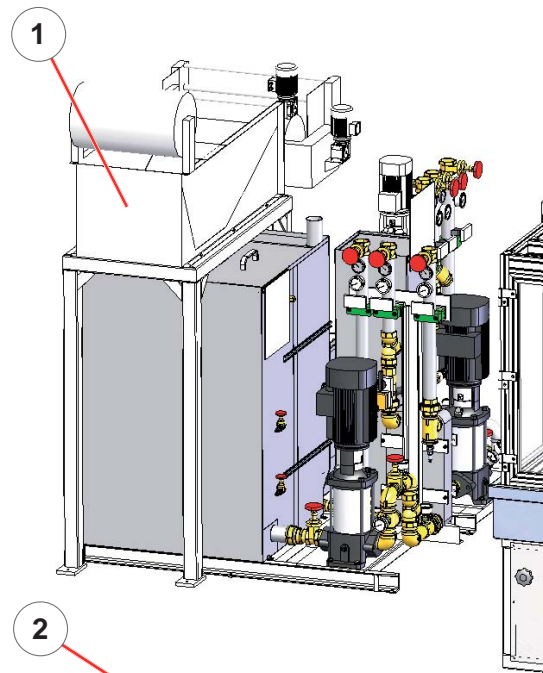
RKK

Item	Description
1	Mains water – return
2	Mains water – inflow
3	Double filter
4	Plate heat exchanger (quench medium / water)
5	Plate heat exchanger (water / water)
6	Pump to bring the quench medium to the machine
7	Pump to bring the cooling water to the electrical components of the system
8	Booster pump
9	Tank for the cooling water (120 l) for the electrical components
10	Tank for the quench medium (1,000 l) with integrated heating

RECOOLING UNITS

EMA Indutec will supply the heat exchanger for the quench media with an **inclined bed filter (1)** upon request. This removes contamination from the used quench medium.

It is also possible to fit a **magnetic separator (2)** for preliminary cleaning of the quenchant.



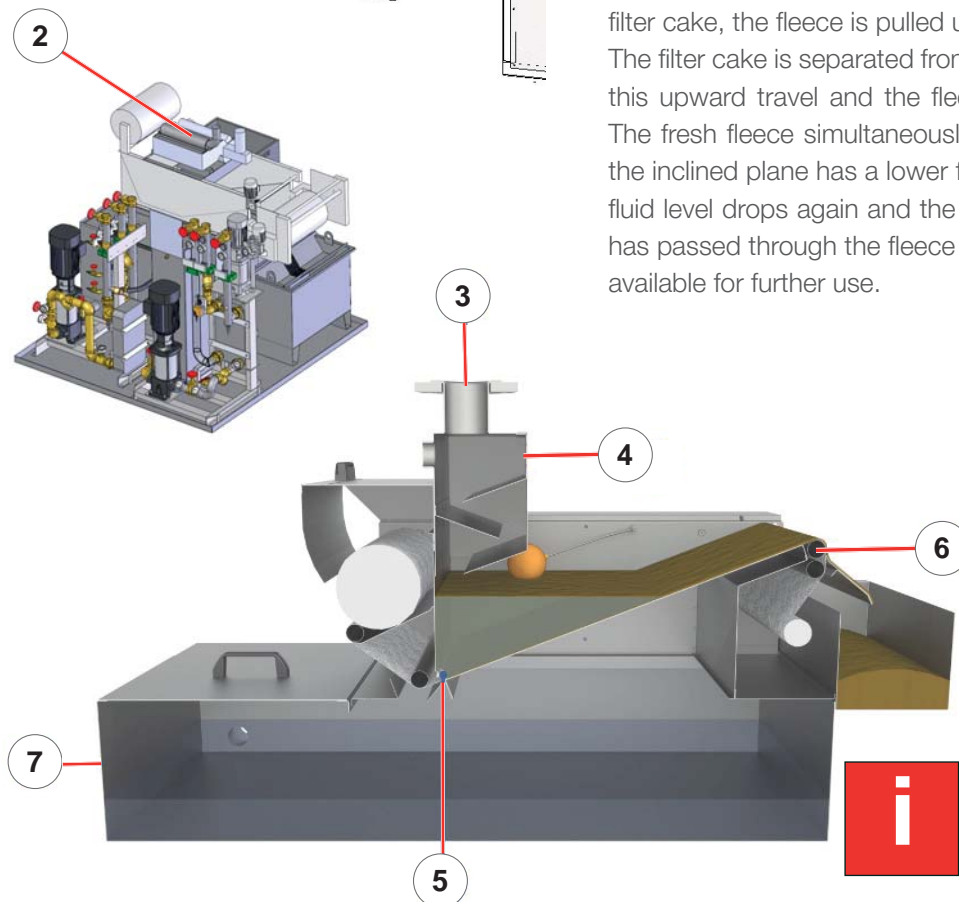
How the inclined bed filter works

The inclined filter is a hydrostatic fleece belt filter used for the filtration of industrial fluids. Both filterable and floating solids can be separated with the inclined filter.

The filter fleeces are selected to suit the application, with different materials and levels of fineness from around 50 to 100 µm available*. Depending on the sediment load and the viscosity of the fluid, flow rates of over 50 m³/h per filter can be achieved.

The soiled fluid is fed into the filter from above (3) and evenly distributed across the entire width of the fleece by a cascade box (4). The filter fleece is lowered into the water space from below (5). Filtration then takes place in the lower section of the inclined plane and the filter cake is subsequently dewatered further up. As soon as a certain fluid level is reached above the filter cake, the fleece is pulled upwards by a motor.

The filter cake is separated from the fleece by a wiper (6) during this upward travel and the fleece is rolled up by a reel shaft. The fresh fleece simultaneously pulled out at the lower end of the inclined plane has a lower flow resistance, which is why the fluid level drops again and the belt drive stops. The filtrate that has passed through the fleece runs into a filtrate tank (7) and is available for further use.



i *: EMA Indutec recommends standard finenesses from 50 to 100 µm.

SUCTION AND FILTER TECHNOLOGY

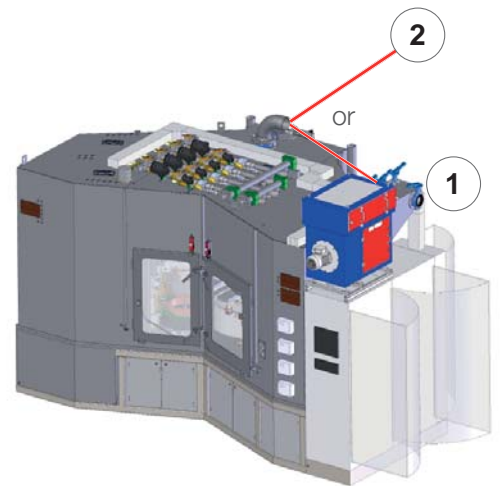
Heating of work pieces always generates smoke, vapors, gases and/or dust. Upon request by the customer, the machine can therefore be expanded with appropriate **suction and filter systems**.

These can be fitted in various positions, e.g. on the hardening system, on the control cabinet **(1)** or as a separate unit.

The machine can also be connected to the customer's existing suction system **(2)**.

As the extracted air contains moisture from the quench medium, we recommend mechanical air filter devices.

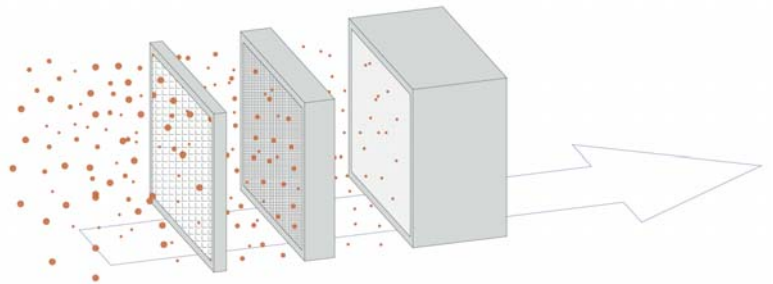
Centrifugal separators or other devices can also be used upon customer request.



Mechanical air filter devices*

These devices work with several filter elements arranged in sequence. The filter elements have calibrated degrees of separation that ensure the high overall separation efficiency.

The filter elements can normally be reused after cleaning.



from VDMA, Kühlschmierstoffe – Ein Leitfaden für die Praxis

Centrifugal separators

Centrifugal separators, sometimes also called cyclones, cyclone separators, cyclone filters or agitators, serve as inertia force separators in technical plants for separating solid or liquid particles contained in gases.

In a centrifugal separator, the gas flowing through the device is set into a rotational motion. The drops of liquid contained in the gas undergo very fast acceleration as a result of the centrifugal force and are separated at the walls of the centrifugal separator.

The gas contaminated with particulates can be fed into the rotationally symmetrical separation chamber tangentially or axially.

Filter classes

In accordance with EN 1822-1:2009, particulate air filters are categorized into different filter classes depending on their separation efficiency:

- ULPA = Ultra Low Penetration Air filter: U17 to U15
- HEPA = High Efficiency Particulate Air filter: H14 to H13
- EPA = Efficient Particulate Air filter: E12 to E10



*: **EMA Indutec recommends mechanical air filter devices of filter class H13 as standard. These HEPA filters have a separation degree of > 99.95 %.**