EQUIPMENT

# KRP-5000

## Automatic fuel cleaning and treatment station for tank systems

Krampitz®
TANKSYSTEM GMBH

# The problem of the diesel pest

Because of the microbial contamination of storage depots in warm regions of the world and in indoor plants, combustion motors of machines, generators and planes are constantly being damaged. The complementation of microbes, high temperatures and condensed water within the fuel, increases the rapid growth of microbes on the bottom of the tank, which render the entire fuel useless in very little time.

Krampitz Tanksystem GmbH has developed a unit against the diesel pest that is disinfecting the fuel by physical means and only keeps the filtered condensate (in the condensation tank) low on germs by a chemical disinfectant! The micro biology is the same in small and big tanks. Also small storage tanks need a ventilation unit that absorbs or disinfects dust with microbes, humidity and insects. In order to keep the air outside clean from dust, humidity and microbes as well, we developed a tank breathing system and integrated it into the KRP.

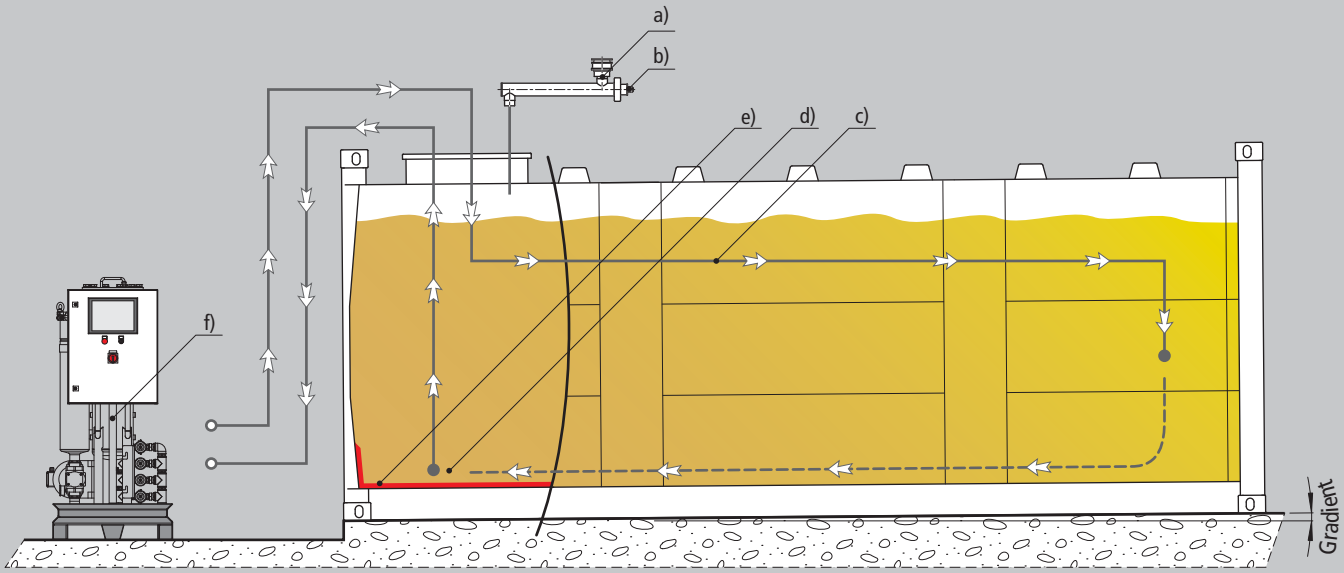
**Diesel pest? Not with the KRP-5000!**

- The KRP-5000 is circulating the fuel in short time intervals.
- The KRP-5000 is cleaning the fuel from dirt particles.
- The KRP-5000 is filtering water parts out of the fuel.
- The KRP-5000 is killing micro organisms in the fuel.
- The KRP-5000 keeps the entering air free of germs.

**The KRP-5000 improves the long term stability of the fuel.**

# Automatic fuel cleaning and treatment station for tank systems

In order to achieve a long lasting storage stability of the existing fuel, a multi step safety treatment is necessary. Storage and treatment of fuel form a complex system and have to be looked at jointly.




**The brief Krampitz safety concept for fuel storage and treatment:**

a) Automatically closing ventilation for minimum entrance of microbes via the air into the storage tank

b) Automatic tank ventilation, particle free, few germs, dry ventilated air in- and outside

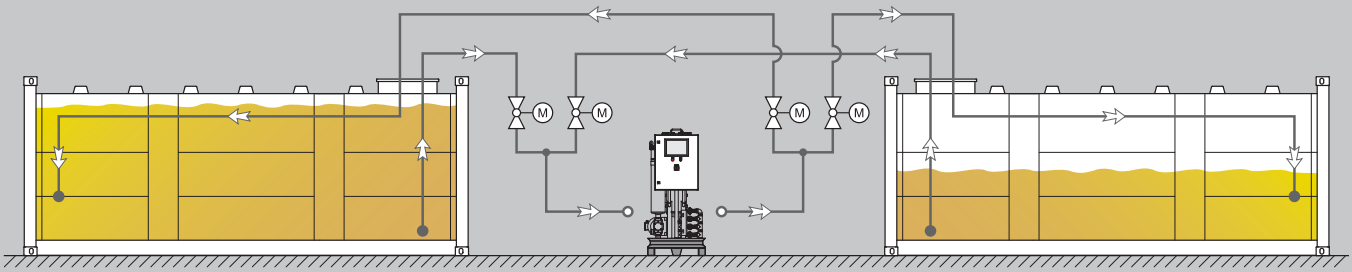
c) good circulating of fuel in the entire tank (exclusion of forming of dead zones within the tank)

d) The gradient of the bottom causes that microbes and condensed water accumulate directly at the suction pipe of the treatment unit

e) Inner coating of the bottom area

f) Filtration of the fuel and separation of the water and germ minimization by UV-ray treatment

**Example**




Circulation filtering with 2 storage tanks, circulation controlled by motorized ball valves

# Parts of the KRP-5000

KRP 5000

The automatic fuel cleaning and care unit KRP-5000 has been created for the separation of water, particles, sediments and the reducing of microbial germs in order to obtain a constant quality for stored liquids, e.g. Diesel.

The automatic fuel cleaning and care unit has been conceived to clean a volume of 40 m³ within 8 hours whilst having a flow of 5.000 liters/hour. Thanks to the current within the tank its entire content is being cleaned within 24 hours.

Storage container KCD-ST- V1-20

Storage container KCD-ST-V7-40 - stackable system

**Main characteristics of the automatic fuel cleaning and care unit**

a) Filter- / water separator as used in aviation with 10 times finer filtering performance of water and sediments from the diesel fuel than comparable standard diesel filters. Maximum flow of filter is four times higher than necessary in the KRP-5000

b) UV-disinfection unit with prolonged treatment distance

c) Automatic filtering of condensed water from filter / water separator into the waste water tank

d) High end fuel transporting device – industrial gear pump suitable for continuous use, extremely robust, German made high end product

e) automatic signaling towards control panel

Unit in compact dimensions

Filter-/ water separator and pouch filter

Industrial gear pump

Electronic liter counter

UV-ray treatment tubes

# Operating scheme

The automatic fuel cleaning and care unit is being used in the by-pass mode as circulation operating device and is subdivided into two classical treatment phases:

**Fuel treatment system**

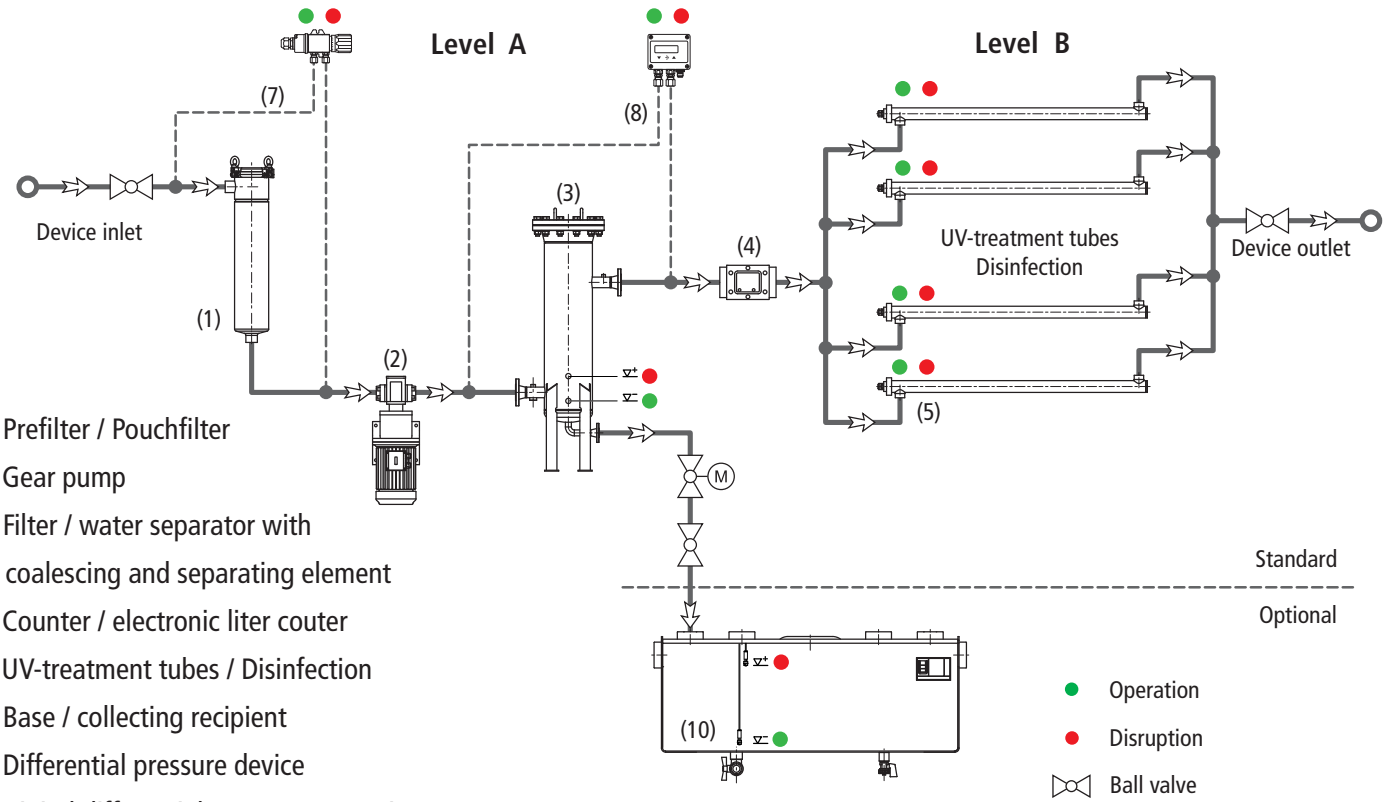
**Level A - Pre- or pouch filter and filter- / water separator**

Filtration is being achieved by a classical pre- or pouch filter and a filter / water separator from the aviation industry.

**Fuel treatment system**

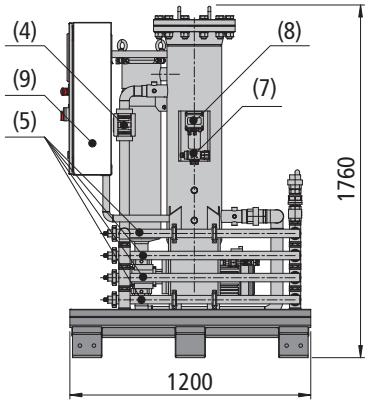
**Level B - the physical microbial treatment / disinfection**

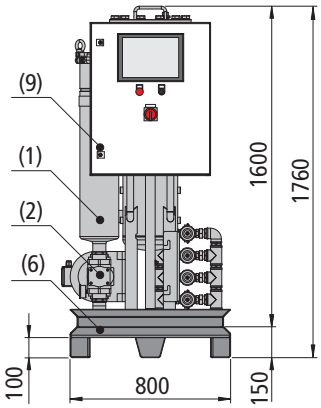
The physical microbial treatment of the flowing fuel is taking place by ultraviolet rays (UV-rays) in special treatment tubes.

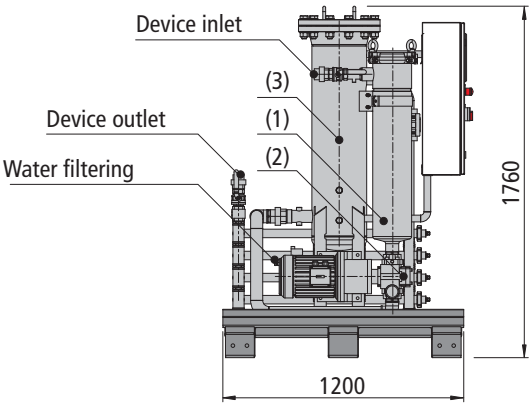



(1) - Prefilter / Pouchfilter
(2) - Gear pump
(3) - Filter / water separator with coalescing and separating element
(4) - Counter / electronic liter couter
(5) - UV-treatment tubes / Disinfection
(6) - Base / collecting recipient
(7) - Differential pressure device
(8) - Digital differential pressure transmitter
(9) - Control
(10) - Waste water recipient

| Type | Cleaning flow performance | Fineness of the filter pre-filter / separator | Connection cleaning circulation | Performance | Tension | Current |
|---|---|---|---|---|---|---|
| KRP-5000 | aprox. 100 l/min. | 25 µm / 5 µm | NW 40 | aprox. 3,0 kW | Y 400 / Δ 230 V | 3,9 / 6,8 A |



# Operating description

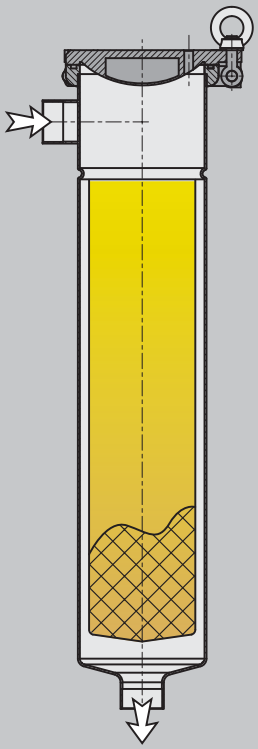
**Prefilter / pouchfilter - operating description**

After filtration by the pouch filter the filtered medium is being led from the side entrance to the filter pouch inside the supporting basket, whereby dirt and solid particles are being kept. The filtered medium is leaving the body through the exit in the bottom.

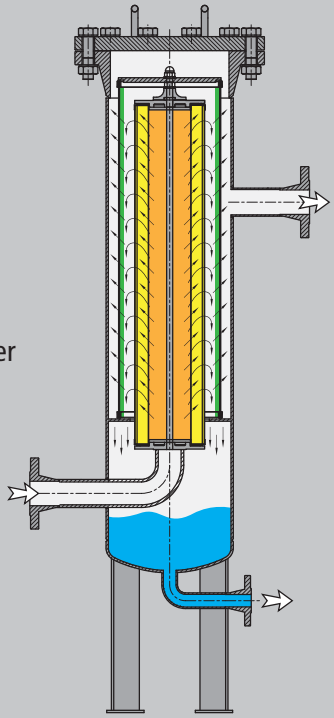
**Filter- / water separator - operating description**

The separator is being made from a pressure resisting body of steel.

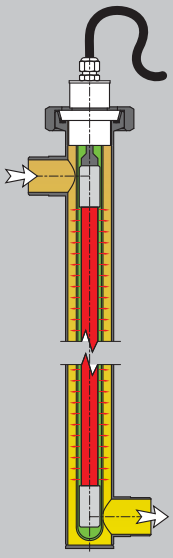
During the coalescence level, solid particles up to 5 µm of the filtered medium are being kept inside the paper layers, which are folded in the form of a star. Simultaneously the separation of emulsion is taking place in the paper layers. There after the fuel-water mix is passing through the coalescence part. Its water rejecting (hydrophobic) and water moistening (hydrophilic) qualities are joining together the tiniest and finest drops of water by slowing down, accelerating or redirecting the liquid flow. These tiny drops are coalescing into bigger ones and then sink because of their higher specific weight into the water collecting point of the pressurized recipient.



Cut of
pre filter / pouch filter



Cut of
filter / water separator



**The way uv-rays work - Method of disinfection**

The fuel to be treated is flowing through a ring gap of the treatment tube and is being directed alongside the quartz pipe, where the low pressure quicksilver lamp is mounted.
The thin fuel film layer (distance between the quartz pipe surface and the body inside wall) guarantees an optimal penetration of the medium by the UV-light.
The UV-light is provoking a photochemical reaction that causes an interruption in the genetic information flow and metabolism, necessary for the cell reproduction. This way the microorganisms are being deactivated and made harmless.

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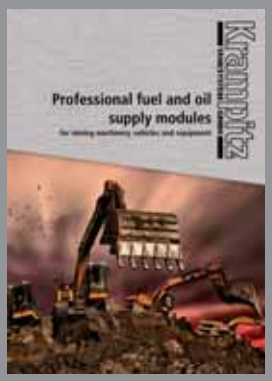
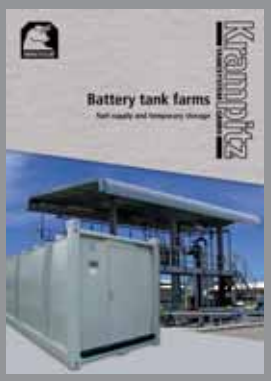


Professional fuel and oil supply modules

Storage tank containers



Battery tank farms

Mining gas station containers

Airfield gas station

Office container

Mobile service module for on-site employment in mining

Mobile maintenance module for on-site employment in mining

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TRITON® Tasty fresh-keeping drinking-water system




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