

Cleansing industrial waste water at AVR

Water is the main component which is used in all types of industries, in all different kinds of processes such as for washing, diluting and steam condensation. These kinds of processes generate heavily-polluted water. It is essentially used as an input, mass and heat transfer media. However it is not totally consumed, thus massive quantities of water from factories are wasted on a regular basis. Instead of being discharged in the local environment and polluting it, waste water can be recycled and treated to be transformed into clean water. This is one of the many processes that take place at AVR.

Firstly, as the wasted industrial water is often contaminated with toxic chemicals such as pesticides or detergents, it must be treated before being sent to AVR. The AVR rejects any type of wasted water containing chemicals dangerous to our health. It comes in massive tanks transported by either boats or trucks to the plant. There the tanks are weighed before and after being emptied so that the quantity of waste water delivered is known.

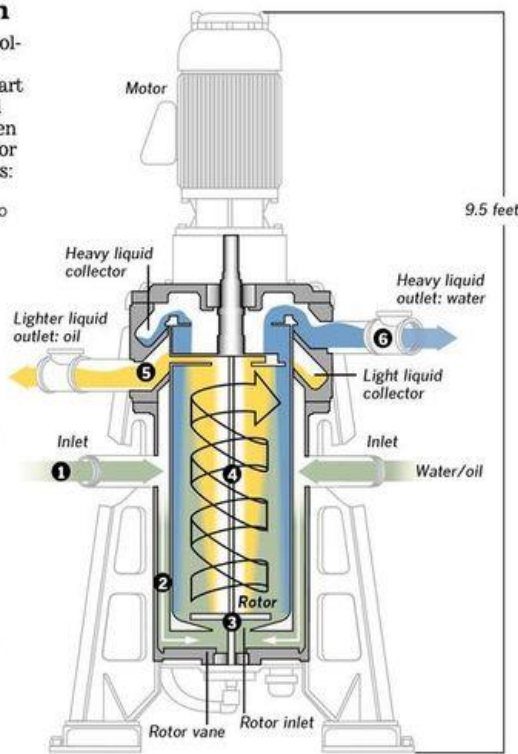
The plant where waste water contaminated by anthropogenic industrial or commercial activities is called an "Effluent Treatment Plant." The required pH level for the treated water is in between 6.5 and 8.5 in order for the water to be reused. Although several treatment processes exist, at AVR a centrifugal separator technology is used to remove oils and grease if present in the waste water.

This following diagram explains exactly how it operates.

Spinning solution

Centrifugal separator technology owned by actor Kevin Costner could prove to be part of the solution to the gulf oil spill. Costner's team has been working on the technology for about 15 years. How it works:

- 1 Water/oil mix can flow into either or both of two inlets
- 2 It is pumped or flows via gravity to the bottom of the separator.
- 3 Rotor vanes direct the oil and water into the rotor.
- 4 Spinning rotor generates centrifugal force up to 600 times the force of gravity. As mix rises, the lighter-density oil flows toward the center of the rotor; the heavier water is forced outward.
- 5 Liquids move into separate collectors
- 6 Oil and water leave the separator through different outlets to either be collected in a tank (oil) or returned to the sea (water).



Source: CINC Industries. Graphics reporting by TOM REINKEN

MARK HAPER Los Angeles Times

After having separated the water from the potential oil and grease it contained, a brine treatment method, more specifically evaporation processes allow the water to be fully treated. These processes are the most commonly used as they enable the highest purity effluent, even distillate-quality. These processes are more tolerant of organics, hydrocarbons or hardness salts.

The AVR plant comprises of four Vortex furnaces unique in Europe. The waste water is thermally treated. The capacity of these furnaces is 325 kilotons per year. The only drawback there is with evaporation processes is that the energy consumption is high. That is why AVR tries to use as much auxiliary fuels that are generated as waste in the processing industry as possible for the combustion process.

In addition, they recover rare metals so that they can be recycled in the chemical industry with the steam resulting from the combustion, they produce heat for households and companies.

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