



WASTE WATER TREATMENT TREATMENT AND DECONTAMINATION OF INDUSTRIAL WASTE WATER

Eisenmann develops and builds made-to-measure plants for the physical/chemical treatment of industrial waste water.

These include:

- Decontamination/oxidation
- Precipitation, flocculation, sedimentation
- Flotation

We provide planning, design and installation services for physical/chemical treatment plants, turnkey solutions, and BOT models in line with your specific needs.



Decontamination/oxidation

Industrial waste water is frequently contaminated with inorganic substances (above all cyanide, chromate, arsenic and nitrite). To remove them from the effluent a variety of decontamination methods can be employed.

Eisenmann uses the patented FENTOX® process for this purpose. This oxidizes toxic organic compounds with a solution of hydrogen peroxide and a ferrous iron catalyst (Fenton's reagent).

This method is not only advantageous from an engineering point of view, it also requires less hydrogen peroxide. Our UV FENTOX® method is suitable for very high COD loads. With this method, less Fe(II) is required and the sludge quantity can be significantly reduced.

Precipitation, flocculation, sedimentation

Precipitation, followed by flocculation and sedimentation, is a long-established and proven physical/chemical process for treating industrial waste water. It is mainly employed for the removal of heavy metals, fluorides and phosphates.

During the precipitation stage, neutralizers (acid/lye) and special precipitation agents are added, and insoluble compounds are formed at specific pH values. Precipitation is followed by flocculation aided by flocculants. This enables the effective removal of harmful substances from the waste water. The sludge produced in the previous process steps is separated from the waste water by means of sedimentation.

Flotation

Flotation is used to treat industrial waste water that contains substances that tend to float to the surface. These include paint, oils, grease and carbohydrates. Flotation is facilitated by the addition of chemical agents and the injection of air (dissolved air flotation). The dirt particles adhere to the air bubbles and rise with them to the surface, where the floating matter can be skimmed off. The sludge produced by flotation is further dewatered in dewatering containers, chamber filter presses or decanters.

Membrane processes in the treatment of industrial waste water

Eisenmann develops and builds made-to-measure facilities for the treatment of industrial waste water by means of membrane processes. These are used for splitting emulsions, removing paint pigments or tensides, and for desalination.



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Eisenmann employs membrane processes in a wide variety of applications. In the automotive and metal industries, for example, ultrafiltration is mainly used for emulsion splitting. Waste water produced by surface degreasing contains greases and oils that may be easily removed from water by means of membrane processes.

Biological processes for industrial waste water

Biological processes used for the treatment of industrial waste water are either aerobic (in the presence of oxygen) or

anaerobic (in the absence of oxygen). Anaerobic processes entail fermentation of organic content by microorganisms, producing energy-rich biogas. No energy is required for the air supply, and also very little excess sludge is produced. However, not all organic compounds can be treated anaerobically, which is why there is often a subsequent aerobic process.

Eisenmann offers customers a truly end-to-end solution for treating biological waste water, including the Pyrobustor® for the thermal treatment of sewage sludge.

Industrial waste water recycling

Prevention and reutilization are preferable to disposal. Against this background, recycling technologies have top priority when it comes to treating industrial waste water. From the planning and design stages, Eisenmann focuses on exploiting every opportunity to conserve and recycle water.

In many industries, a combination of resource recovery and waste water treatment can deliver a rapid return on investment (e.g. for environmental technology plants). For example, deploying an evaporator can eliminate waste water from a pre-treatment system. The waste water is evaporated and the distillate recycled, i.e. reused in the pretreatment process. That means a number of regulatory requirements and inspections no longer apply.

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