

## APPLICATIONS

SEMICONDUCTOR

SOLAR

PHARMA

POWER GENERATION

FOOD & BEVERAGE

**PULP AND PAPER**

**CHEMICAL**

**OIL AND GAS**

MINING

AEROSPACE AND TRANSPORT



# BIOFIT<sup>®</sup>.Oxyd<sup>2</sup>

Advanced Oxidation Process to remove  
poorly biodegradable contaminants





BIOFIT®.Oxyd<sup>2</sup> – AOP process to reduce hard COD

## Reduced ozone input reduces operating costs

*With BIOFIT®.Oxyd<sup>2</sup>, H+E introduces a new yet already proven method to reliably remove residues in wastewater from industrial production processes that are difficult or impossible to remove using conventional biological processes.*

This new treatment method can be used in the Pulp & Paper, Oil & Gas and chemical industries. BIOFIT®.Oxyd<sup>2</sup> provides an excellent solution where regulations for discharge of pollutants are particularly strict while, at the same time, optimised production processes with minimised water consumption generate higher concentrations of pollutants. With BIOFIT®.Oxyd<sup>2</sup> the wastewater undergoes a multistage

low-pressure process that breaks down the originally non-biodegradable substances using an advanced oxidation process (AOP).

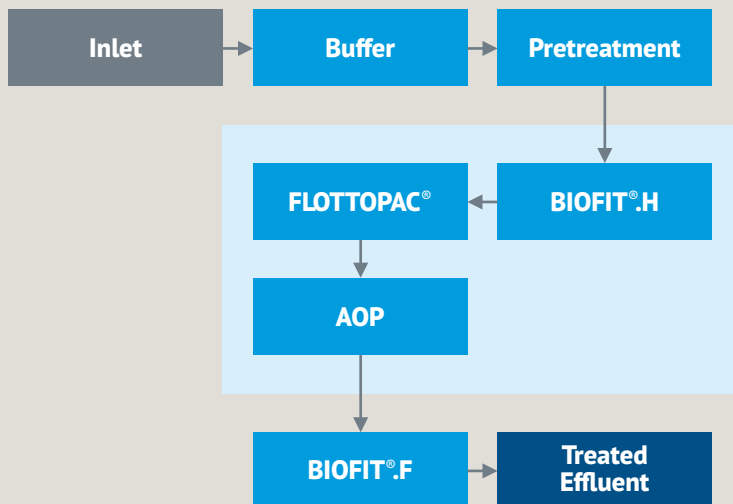
BIOFIT®.Oxyd<sup>2</sup> breaks down the polluting substances to the point where the microorganisms will accept them as food, thereby taking over the remaining part of the degradation process. A key difference to conventional methods is the specific ozonation process that

H+E has optimised. Here, the use of ultrasound increases the ozonation efficiency, thus reducing operating costs while, at the same time, improving environmental friendliness. The result of this innovative combination of chemical and biological processes is a highly efficient and also cost-effective process to reduce COD level and remove colour. The process enables direct discharge of treated wastewater without any problems.



If BIOFIT®.F biological filtration is used following BIOFIT®.Oxyd<sup>2</sup>, the two processes provide the most efficient treatment combination.

## Process technology BIOFIT®.Oxyd<sup>2</sup>



Unlike other suppliers who rely on the total chemical oxidation treatment of this type of wastewater, H+E can provide a less expensive and thus more favourable combination of partial chemical oxidation and subsequent

biodegradation of problematic contaminants. These substances typically owe their extraordinary stability to molecular rings or double bonds that, for a process to be successful, first need to be “opened”

and converted into short-chain molecules. H+E uses a combination of ozone and hydrogen peroxide that, at low pressure, cracks the resistant bonds. This is known as partial oxidation. The quantity and residence time of the added ozone is precisely controlled, depending on the presence of other oxidants, such as hydrogen peroxide. In addition, the use of ultrasound specifically increases the effectiveness of the ozone.

This results in fragmentation of the refractory contaminants to the point where they can be treated and removed by a simple and cost-effective biological stage and filtration like BIOFIT®.F from H+E. The separated biomass can be disposed by combustion. The end products of the overall process are harmless carbon dioxide and water.

# Benefits

BIOFIT®.Oxyd<sup>2</sup> replaces the expensive conventional total chemical oxidation AOP technologies with a far more cost-effective combination of chemical and biological process steps.

H+E's new process technology opens up a previously un-used energy potential that can be integrated into the overall treatment process. This ultimately leads to a reduction in the ozone demand and thus to further cost savings.

H+E's BIOFIT®.Oxyd<sup>2</sup> process is the result of more than 20 years' experience in the application of AOP in various wastewater treatment projects.



High load floating bed process BIOFIT®.H used in the BIOFIT®.Oxyd<sup>2</sup> process

## Further available process technologies

### BIOFIT®.F

Due to its extraordinary adaptability in a wide variety the BIOFIT®.F biofiltration is the ideal successor stage to BIOFIT®.Oxyd<sup>2</sup>.



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