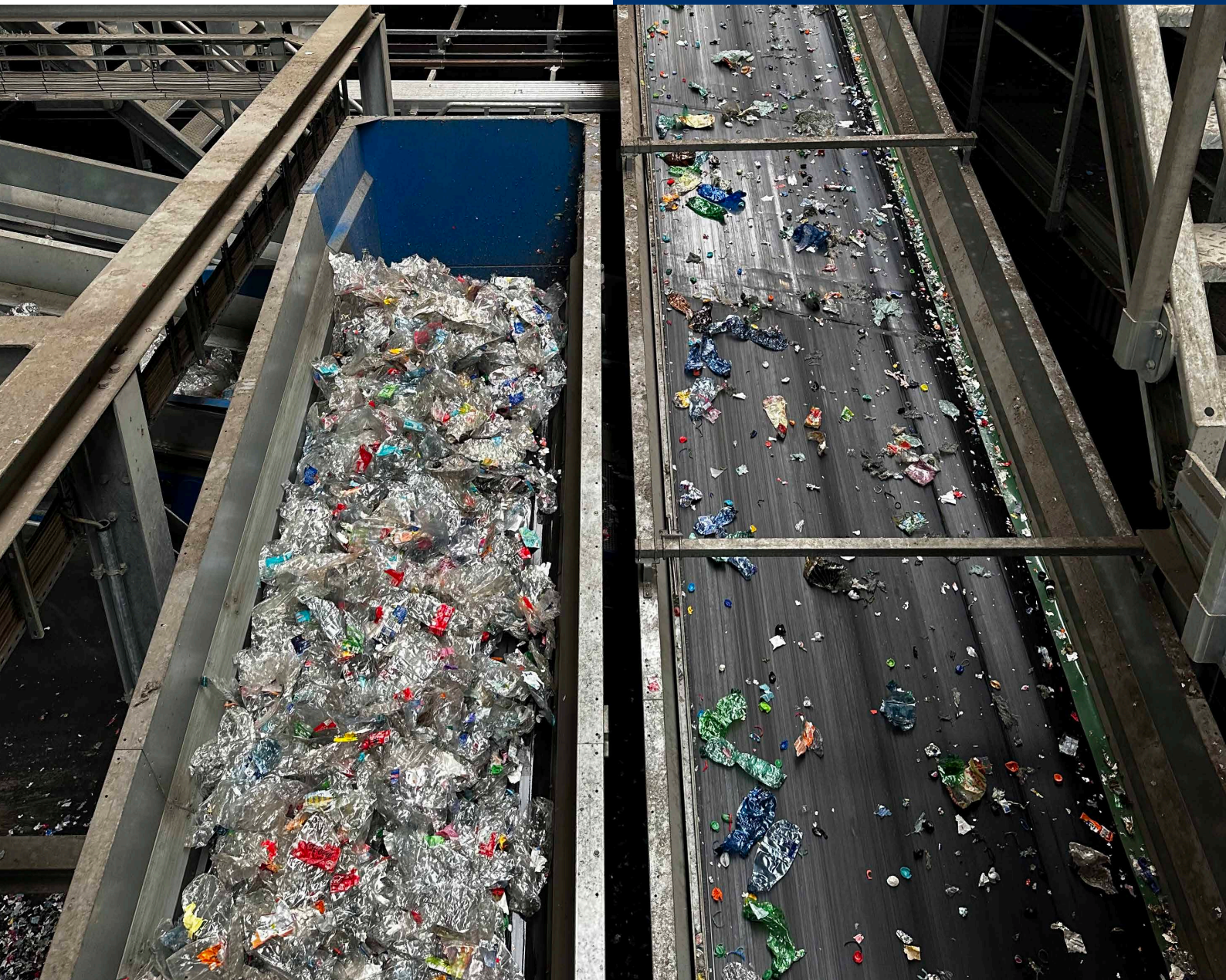


Plastic Recycling

Wastewater treatment solutions
for the plastics recycling industry

clearfox.de



Wastewater Treatment in Plastic Recycling

Plastic recycling processes generate complex wastewater streams with demanding treatment requirements. Printing inks, adhesives, organic contaminants, microplastics, and chemical residues must be reliably removed to enable safe water reuse or compliant discharge. At the same time, the composition and pollutant load of the wastewater can vary significantly depending on the recycling process.

Particularly in the plastics recycling industry, expectations regarding sustainability, circular economy principles, and resource efficiency continue to grow. Advanced wastewater treatment technology has therefore become an essential component of modern recycling operations. It reduces water consumption, disposal costs, and environmental impact while creating the foundation for safe, automated, and future-ready plant operation.



Typical Wastewater Contaminants

- High COD and TOC levels
- Printing inks and pigments
- Plastic particles and suspended solids
- Oils and fats
- Surfactants and chemicals
- Fluctuating pH values
- High peak loads
- Plastic additives
- Residual solvents
- Foam formation
- Traces of heavy metals from inks or additives

Challenges for Plant Operators

Compliance with regulatory discharge limits

High disposal costs

Fluctuating wastewater composition

Limited installation space

Staff shortages and increasing demand for automation

Need for water reuse solutions

Modular Containerized Wastewater Treatment Systems for the Plastics Recycling Industry

The ClearFox® containerized wastewater treatment plant is a compact, customer-specific solution delivered in ISO containers according to the plug-and-play principle. Thanks to its modular design, the systems can be easily transported worldwide by truck or ship and require only minimal on-site installation work. Virtually all treatment technologies can be integrated into the container concept, including filtration, oxidation, biological treatment, flotation, and separation. Both standalone modules and turnkey multi-stage solutions are available.

Designed specifically for the plastics recycling industry,

the modular configuration allows flexible adaptation to highly variable process wastewater streams. Whether for deinking processes, washing stages, or closed-loop water circuits, each system is individually engineered to match the specific requirements of the recycling operation. Suspended solids, color pigments, microplastics, organic contaminants, and chemical residues can all be removed reliably and efficiently.

The systems support both compliant direct discharge and the reuse of process water, making a significant contribution to reducing water consumption, disposal costs, and environmental impact.



ClearFox® Products

Efficient technologies for process water treatment



ClearFox® DAF

The ClearFox® DAF is a high-performance dissolved air flotation system designed for the physico-chemical pre-treatment of industrial wastewater. It reliably removes fats, oils, suspended solids, and organic pollutants (COD), significantly reducing the load on downstream biological treatment stages.

Thanks to its modular design, the system can be installed either as a containerized solution or as a standalone unit, with easy scalability when required. Corrosion-resistant materials, fully automatic operation, and the absence of mechanical scraping components ensure reliable performance with minimal maintenance. The ClearFox® DAF is particularly well suited for demanding wastewater streams from the plastics recycling industry.



ClearFox® Fixed Bed Biological Reactor

The ClearFox® FBR is a biological fixed-bed process designed for the treatment of municipal and industrial wastewater. Special cascade and aeration sequences ensure the efficient removal of organic pollutants.

Compared to conventional activated sludge systems, the process operates with exceptional robustness and stability, even under fluctuating load conditions. At the same time, it produces less excess sludge, reducing both operating and disposal costs.

Its compact design also allows seamless integration into containerized wastewater treatment systems.

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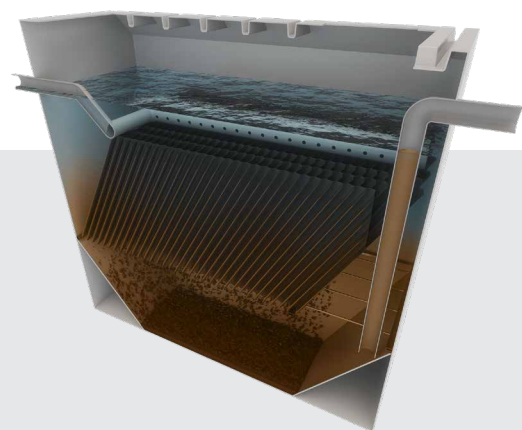
ClearFox® Sludge Screw Press

The ClearFox® sludge screw press mechanically dewateres biological and industrial sludges, significantly reducing sludge volume. Continuous thickening substantially lowers disposal and transportation costs.

The system operates efficiently within a compact footprint and is particularly well suited for flotation sludge and excess sludge generated in industrial wastewater treatment plants.



4



ClearFox® Lamella Clarifier

The ClearFox® lamella clarifier efficiently separates suspended solids and sludge from wastewater using a physical sedimentation process. Inclined lamella plates increase the effective settling area and accelerate clarification, enabling high treatment capacities within a compact footprint.

This results in reliable solids removal while requiring only minimal installation space.



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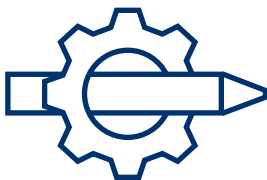
From Initial Inquiry to Completed Project and Beyond

The PPU Service



Comprehensive Wastewater Analysis

If required, we analyze your wastewater to determine the most suitable solution for your application. We also provide ongoing analytical support after project completion to ensure reliable documentation of achieved effluent quality standards.



Tailored Engineering

Depending on the size and complexity of your project, a customized system design is essential. We provide in-house engineering and dimensioning services, keeping you regularly informed throughout every stage of the process.



Installation and Commissioning

Our systems are available for both purchase and rental. Rental periods can be tailored individually to your specific requirements. At the end of the rental term, a purchase option is available—allowing you to thoroughly evaluate the system before making a long-term investment.



Maintenance and Monitoring

Even after project completion, we remain by your side—as a reliable partner for maintenance, monitoring, and technical support. This ensures your solution continues to operate reliably, safely, and with long-term sustainability.



Flexible Financing Options

Our systems are available for both purchase and rental. Rental periods are tailored to your specific needs, and a purchase option is available at the end of the term—allowing you to thoroughly evaluate the system before making a long-term investment.



Seamless Tendering Process

With our experience and sustainable technologies, we are a reliable partner for tendering processes. Our efficient solutions offer low life-cycle costs while meeting both technical and environmental requirements.



Containerized Waste-water Treatment Plant for the British Plastics Recycling Company

ReCover

Project Overview

Coveris, a British specialist in food, coffee, pet food, and shrink-film packaging, is firmly committed to sustainability and the principles of the circular economy. Through its subsidiary ReCover, the company processes approximately 5,000 tonnes of plastic annually, sourced both from its own production and from external suppliers.

The recycling of printed shrink films generates contaminated process water that previously could only be partially reused. In collaboration with PPU Umwelttechnik GmbH, Coveris therefore developed a modern, highly automated wastewater treatment plant for the complete treatment of the process water.

The process begins with a drum screen removing coarse solids, followed by pH adjustment and the dosing of coagulants and flocculants. A ClearFox® DAF dissolved air flotation system then removes color pigments and suspended solids, significantly reducing COD levels. The resulting sludge is efficiently dewatered using a sludge screw press, minimizing waste volume.

Since July 2024, the plant has been operating reliably and now enables the near-complete reuse of process water within the recycling process.

Influent
COD 7,500 mg/l
pH 12

Effluent
COD <2,800 mg/l
pH 7

Project
ClearFox® DAF Treats Wastewater for the Coveris Group

Sector
Industrial Wastewater Treatment

Size
114 m³/day

Modules

- ClearFox® Drum Screen
- ClearFox® DAF
- ClearFox® Sludge Screw Press

Location
England

Finished
2024

**Do you have any questions?
We are happy to advise you!**
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info@clearfox.com



Further information on
our ClearFox® products
can be found here



Innovation made in Germany

PPU Umwelttechnik GmbH provides wastewater treatment to the private, municipal, industrial and decentralised sectors. Under the brand name ClearFox®, the company sells wastewater treatment plants produced in Bayreuth all over the world. The focus is on biological, chemical-physical and oxidising processes for wastewater treatment. PPU Umwelttechnik GmbH offers selected processes in ISO sea containers. This makes them compact, mobile, modular and available anywhere in the world within a very short time. Each containerised wastewater treatment plant is tailored to individual requirements, making each project unique.

As a general contractor, PPU takes on the planning, production and commissioning of each individual wastewater treatment plant. Every customer can count on reliable co-operation with PPU Umwelttechnik GmbH.

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