WEEEFINER 4D SCAVENGER

WEEEFINER

WEEEFINER introduces to the market a 3D-printed, chemically functional porous filter system designed to selectively remove and recover heavy metal contaminants, such as Cu, Ni and Zn, from wastewater.

At EU level, there are alarming levels of some heavy metals in the environment that are harmful to human health and the environment. Recent policies and directives such as EU Sewage Sludge Directive or Industrial Emissions Directive are designed to lower these numbers if consequantly controlled.

WEEEFINER's 4D Scavenger® solution supports the mining, metallurgy and semiconductor industries in complying with existing and upcoming EU regulations. It provides a customisable remediation system with low energy requirements and high reaction kinetics that can be adapted to a range of applications.

Figure 1: The team of WEEEFINER, UNIFI and SMAT during the deployment of the remediation and monitoring technologies at the SMAT's wastewater treatment plant

The applicability of the 4D Scavenger® has been demonstrated at a wastewater treatment plants in Italy and Finland demonstrating the 4D Scavenger's potential to remove > 95% of the heavy metals present in the wastewater. The removed metals could be reused in the form of metal concentrates.

Figure 2: Picture of a 4D Scavenger unit designed for heavy metal removal from industrial wastewater. Picture shows the 4D Scavengers modules (8 pieces) as well as process piping and equipment.

The WEEEFINER's solution supports EU industries in adopting a closed-loop production model by reducing pollution and the need for virgin raw materials. At the same time, it generates additional revenue from the recycled materials and water. The long-term goal is to demonstrate the capabilities of 4D Scavenger in additional tests covering a range of sectors. Meanwhile, the product will be offered to selected market segments within the industrial wastewater treatment sector.

Key Benefits

- Easy scalability in moderate wastewater flows (< 250 m^3/h)
- Low chemical consumption compared to conventional approaches
- High metal recovery rate (>95%)
- Selective recovery of target elements

Funded by the European Union

Funded by the European Union under grant agreement No. 101112824. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

PART OF THE EU MISSIONS RESTORE OUR OCEAN & WATERS