

Experiences from the commissioning of a bioleaching plant for the recovery of gold from printed circuit boards

Markowski, J.*, Lohse, A.**, Lapushynska, A.**, Abendroth, C.*

*Brandenburg University of Technology Cottbus-Senftenberg, Germany

**m&k gmbh, Germany

Abstract:

Production waste from the manufacture of PCB often contains gold-containing contact-strips, whereby the gold content is < 1 %. Recycling of these gold coatings with conventional melting processes is technically hardly, since the carrier materials often contain mechanical reinforcements and flame retardants in addition to thermosetting plastics. With mechanical recycling, gold losses of 50% are possible.

Therefore, a bioleaching plant for the recovery of gold and copper as preliminary stage for the smelting process has been in operation on m&k's site since May 2022. The bioleaching is realized with iron and sulfur oxidizing bacteria, e.g. *Leptospirillum ferrooxidans*. The apparatus consists of a 400 litres-leaching bioreactor and peripheral equipment (fermenter, cementation, filters).

The plant can process up to 10 kg of gold-containing PCB waste per batch, while simultaneously regenerating a second batch of bioleaching fluid. The process can recover up to 450 mg goldtinsel and 25 g copperpowder per Kilogramm input.