

NEXT-GENERATION ADAPTIVE SIFTING SURFACES

The proposed invention concerns a new generation of adaptive screening surfaces for the separation of bulk materials, including the patented complementary solution “Screening Plate” (Pat. 247589), developed at Lublin University of Technology for applications in the agri-food, chemical, mineral, and processing industries.

The solution is based on modified spatial geometry, modular/adaptive design, and structural elements that orient flat particles toward the apertures, thereby reducing clogging, improving separation accuracy, increasing technological throughput, and enhancing operational durability without requiring major modifications to existing screening machines.

Validated through analytical studies, FEM numerical modelling, prototype testing, and experimental verification, the technology has reached TRL 5 and demonstrates strong potential for industrial implementation as a scalable alternative to conventional flat screens, offering higher efficiency, improved reliability, and better adaptation to the properties of screened materials.