

ROTATING PACKED BED RPB FOR CHEMICAL ABSORPTION AS A WAY TO INTENSIFY „POST-COMBUSTION” CARBON CAPTURE AND REDUCE CAPEX AND OPEX IN THE PROCESS

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There are a number of ways to capture CO₂ in the "Post-combustion" process. Among them, chemical absorption technology stands out, which today is considered the most "mature" for use in industrial applications. Standard static columns are often of gigantic dimensions, because they are limited by gravity, which is responsible for the formation of contact between the flue gas and the chemical absorbent. As an advanced solution, a rotating absorber (Rotating Packed Bed) is being used, which uses large centrifugal forces and can significantly intensify the entire process and reduce the size of the equipment, as well as capital and operating costs. Although the RPB patent dates back to 1981, there are still a lot of unknowns regarding solvent dispersion inside a rotating packing and on its outer surface. It is precisely the dispersion that subsequently determines the size of the surface of the interphase interface, on which absorption takes place. In the contribution, we will focus on the research of solvent dispersion, the knowledge of which, the ability to predict its parameters and subsequently optimize in terms of the type of packing (wire mesh, metal foam, zigzag, etc.) is crucial in the design of RPB. We will show the possibilities and capabilities of numerical simulations and how they can be validated, for example, using a high speed camera.