

INFLUENCE OF FILTER CLOTH, BACKWASHING PRESSURE AND FILTER CAKE THICKNESS DURING BACKWASHING TREATMENT INTO GAS PHASE

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In industrial solid/liquid separation, the removal of fine particles occurs in a wide array of industrial production applications and can be found in nearly every process plant. Especially the cake filtration is emphasised as advantageous principle for separation of suspension with a low solids content (0.01-1 v/v %). To maintain the separation performance, it is required to replace or regenerate the used filter cloth. The latter one can occur through backwashing treatment into liquid or gas phase whereby the gas discharge required an upstream drying process. The main task of that regeneration procedure is a most complete filter cake discharge to reduce the flow resistance of the filter for the subsequent filtration step. Recommendations for advantaged process variables doesn't exist and should be evaluate during this investigation.

Investigations regarding to the regeneration procedure has shown, that the cake discharge into gas phase has significant differences to the discharge into liquid phase. Whereas the discharge into gas phase is created through an impulse, the liquid discharge can be interpreted as a slide on the filter cloth surface. Moreover, the backwashing variables are highly different (influence of backwashing pressure, filter cake thickness) between the different backwashing environments as a result of the characteristic surface forces.

This presentation shows the influence of selected process conditions during backwash filtration in gas phase. Main attention is given to the particle system (particle size and filter cake thickness), the different weave types, assembly of the filter cloth and, of course, the backwashing pressure. During the presentation, different types of cake discharge will be described and their effect on the quality of regeneration.