# DESIGN CONSIDERATIONS IN WOVEN WIRE MESH COMBINATION

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The effect of different gradient structures on the load-dependent fractional separation efficiency and its dirt hold capacity have been subject of design considerations in single and multi-layered woven wire mesh combinations in solid-liquid separation.
In cooperation with the Institute of Mechanical Process Engineering in Stuttgart (IMVT) different gradient structures of wire mesh filtration media were investigated as to their influence on the load-dependent fractional separation efficiency (FAG) as well as their dirt holding capacity. In addition, different offline measurement techniques and particle systems and their influence on the result of the FAG and the dirt hold capacity were investigated and evaluated.

The influence of different substance- and measuring systems (Arizona Test Dust A2 and A4) on the fractional separation efficiency (FAG) is represented.

Square mesh fabric with opening sizes between 38 µm to 60 µm as well as filter fabric in twilled and plain weave in the pore size range between 35 µm to 45 µm and their combinations in sintered and unsintered condition have been described.

The substance system (particles and fluid) as well as the evaluation method is represented.
It was confirmed that by means of a specifically selected gradient structure and layer orientation, the load-dependent fractional separation efficiency as well as the dirt holding capacity are favorably influenced. This in turn has positive effects on the service life and efficiency of multi-layered metal wire mesh combinations. Blocking tendency is significantly reduced. The throughput characteristics are optimized.

Keywords:
Fractional separation efficiency, dirt hold capacity, gradient structures, layer orientation of metal wire mesh combinations, solid-liquid separation