

# CFD-based new developments and optimisation of filter installations

*Intensiv-Filter continued to set the course as technological leader in dedusting. From this day forward filter installations and plant-components will be optimised with the in-house CFD-program (Computational Fluid Dynamics).*

Primarily the automotive industry is using CFD-simulations for new constructions. The development of new energy efficient vehicles requires an ever increasing use of powerful CFD tools. Engineering simulations that are standard in the automotive industry are now also valid for Intensiv-Filter. The analysis of the gas flow characteristics is an indispensable instrument for the design and development of dedusting plants. CFD enables to predict the real flow behaviour and therefore the operating performance of the filter. The knowledge of the gas flow behaviour is also the key to increase the energy efficiency of the dust removal installations and components.

“Intensiv Filter is already using CFD for new developments of Jet Pulse bag filter systems and plant components, but up to now has relied on the services of external suppliers. From now on the engineers of the Intensiv-Filter development department will use the CFD-tool of a leading provider in-house.

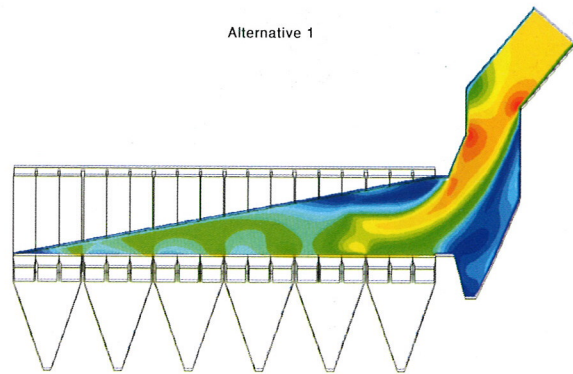
Our CFD-expert group will work closely with the design department. The software offers a direct path from 3-D CAD to the CFD-geometry. The calculations of even complex tasks with more than 1 million grid points are ensured.

Besides the simulations of fluids the CFD software also allows the thermodynamic optimisations, for example of air to air-coolers, the simulation of multiphase streams or the design of conditioning towers. Energy efficient dedusting filter systems can only be developed with the knowledge of the velocity, pressure loss and the particle trajectories. Therewith Intensiv-Filter increases their core-competence in dedusting.

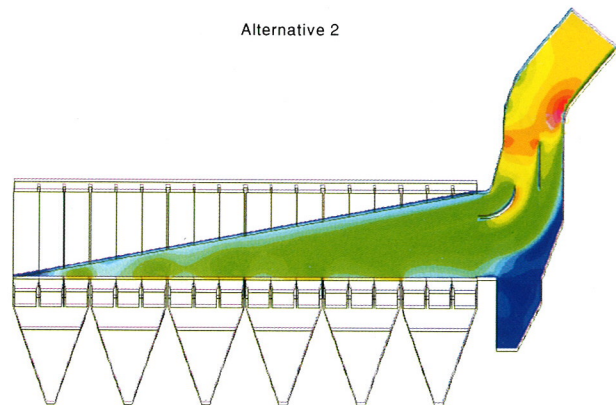
The decision to implement CFD-analysis in-house is especially a tool to improve our performance and to shorten the time requirement for customised solutions in optimising the dynamics of particle laden gas flows. With this knowledge, plant-optimisation will be possible with high accuracy from the point of emission up to the stack”, according to Dr. Gunnar-Marcel Klein, technical director.

When used professionally, the numeric fluid simulation is a valuable instrument to accelerate the development process and to optimise the product. In addition risks in development will be reduced.

Flow simulation



Using the example of the inlet stream, alternative one shows the initial situation of the dust removal installation.



Using CFD, the second alternative shows clearly which optimisations are achieved with constructive changes. After evaluating and analyzing the CFD data, baffle plates are placed at the most optimal positions. The construction of the raw gas inlet is enhanced due to the CFD-simulations.

The pressure loss is evidently minimized with a more homogenous stream. This in turn generates less energy consumption.

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