Joint FINAL EVENT

# GPF modeling supported by size resolved filtration efficiency measurements

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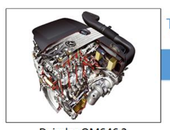
## Experimental setup for size-resolved filtration efficiency & pressure drop measurements


2.2 l Diesel engine (Daimler OM646)

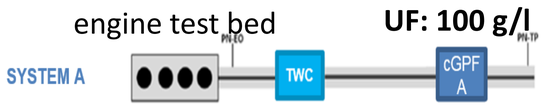




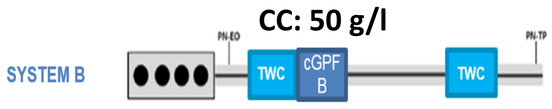


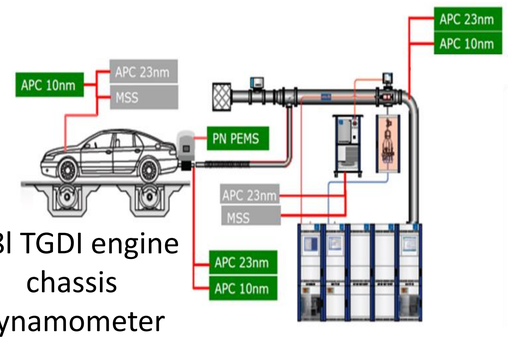
2.0 l TGDI engine test bed

**UF: 100 g/l**




**CC: 50 g/l**



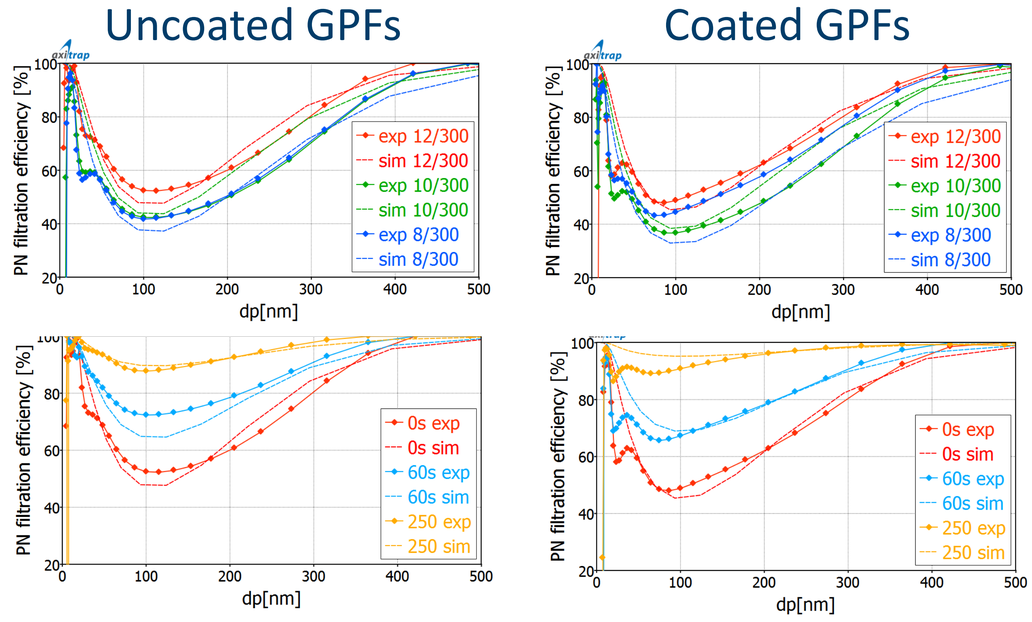

1.8l TGDI engine chassis dynamometer

Large Mean Pore Size (MPS) and high Porosity GPF filters of different washcoat loading were tested

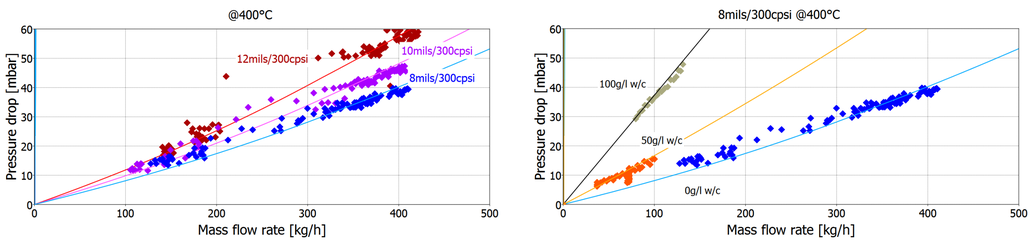
## Uncoated GPFs

## Coated GPFs

Indicative filtration efficiency results

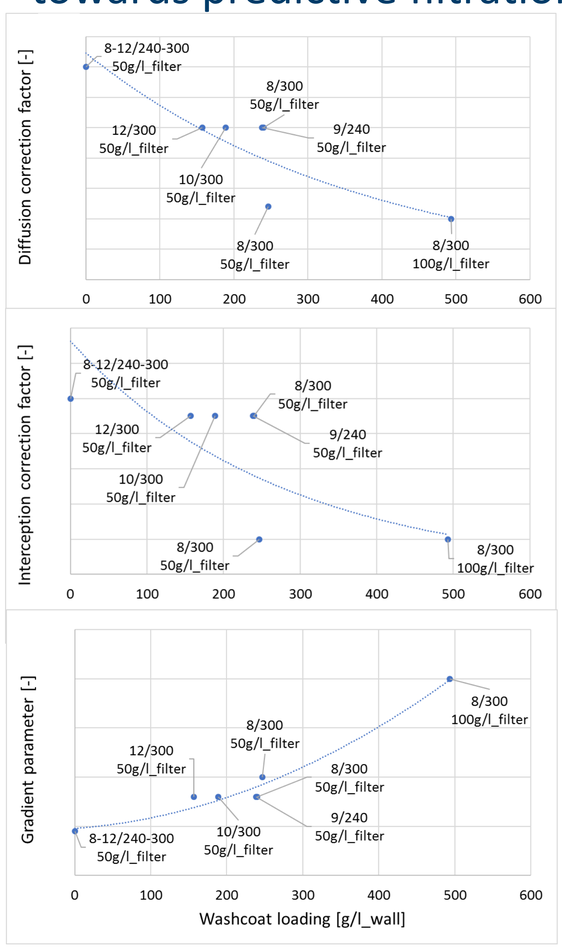


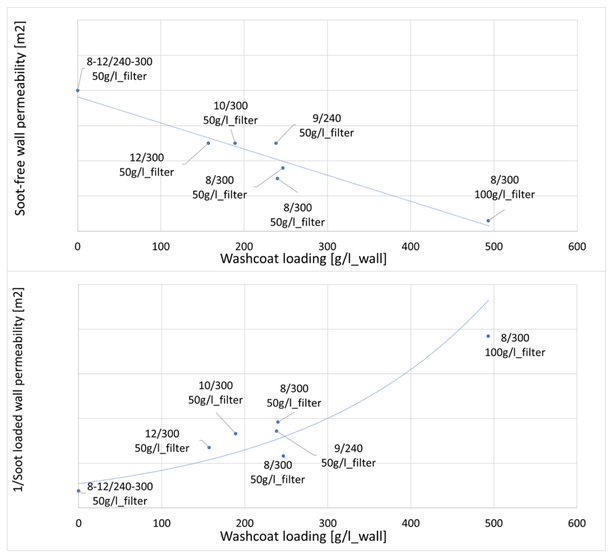

Indicative pressure drop results




Once the wall permeability is tuned for a certain micro-structure (wall porosity and mean pore size), the model is predictive with respect to changes in wall thickness and cell density.

## Filtration and pressure drop parameter correlations towards predictive filtration and pressure drop modeling



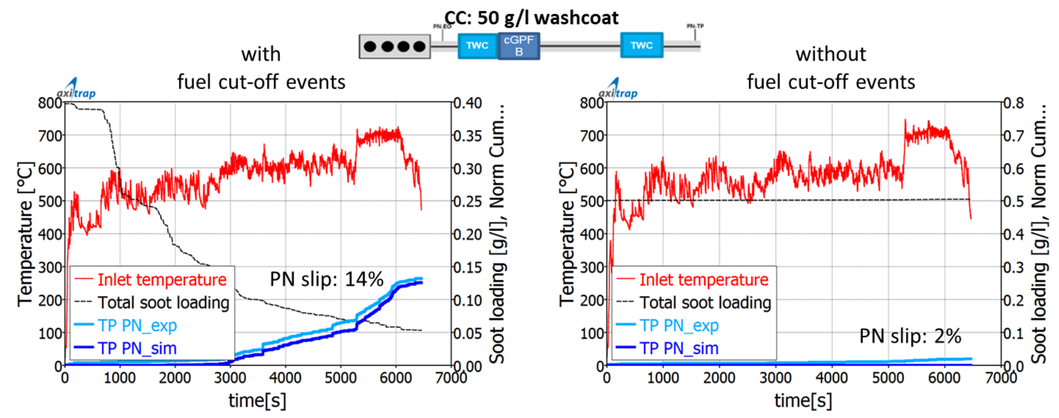




Based on a small database of calibrated models, correlation functions were developed to support permeability and filtration modeling for various washcoat loadings, cell- and wall micro-structures.

## Model application in RDE cycle conditions

Loss of filtration efficiency due to wall cleaning

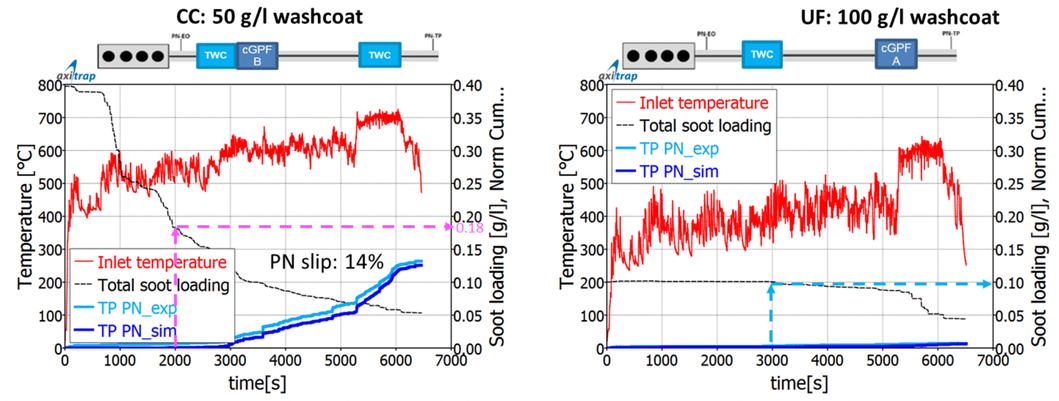
**CC: 50 g/l washcoat**




Deactivation of fuel-cut off mode drastically reduces the PN slip.

Underfloor vs close-coupled positioning

**CC: 50 g/l washcoat** **UF: 100 g/l washcoat**




It is important to maintain sufficient soot amount in the filter to reduce the risk of PN slip.

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