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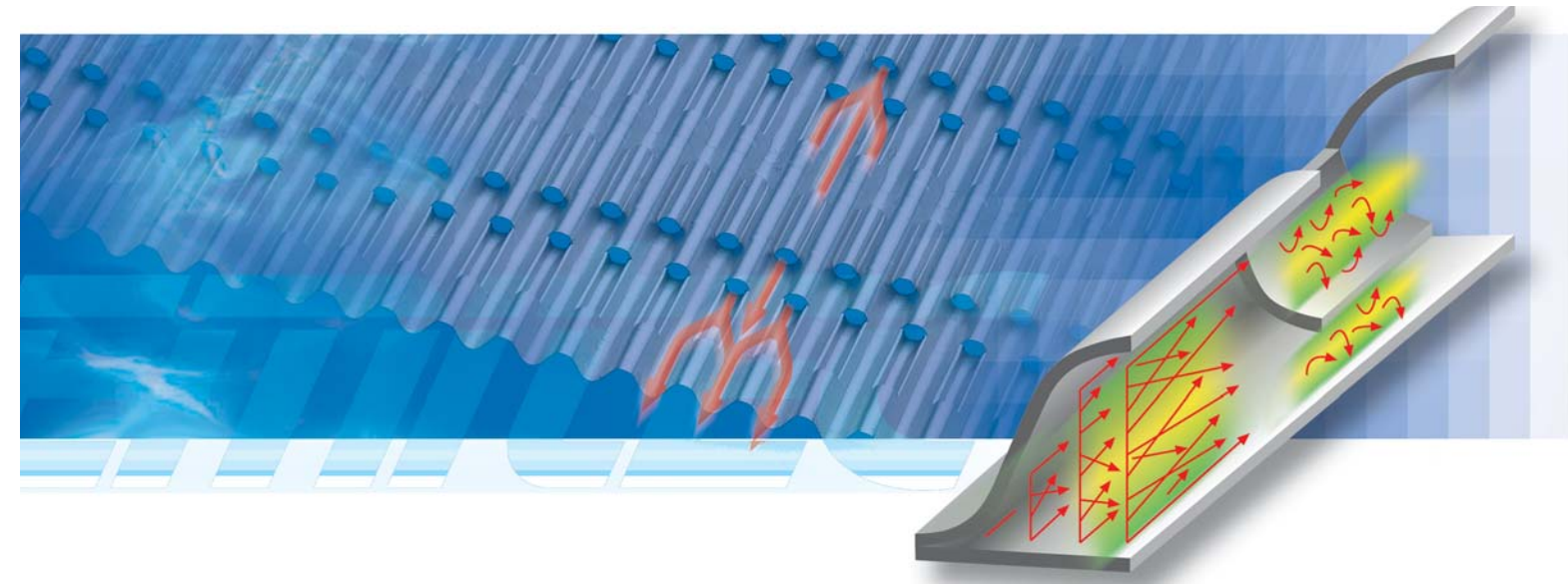
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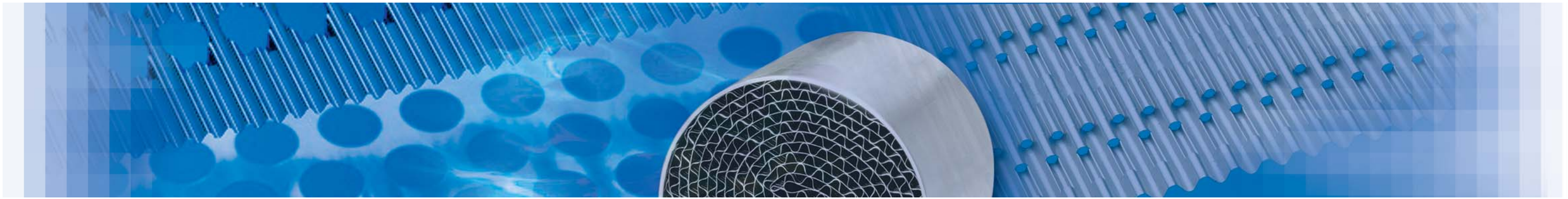
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New Foil Structures increase Efficiency



The objective of new foil developments is to make the catalyst system even more effective by improving flow distribution and mass transfer, reducing pressure loss and thermal mass, as well as reduced amount of precious metal.

The innovations presented here fulfill this objective and reveal new cost-reduction potential.



PE: Perforated foils for high-performance vehicles

Extensive test programmes with PE foils reveal the positive influences of the perforation on cold start, pressure loss and emission. Within the catalyst a radial equalisation of flow allows a twin substrate cascaded system to be replaced by a one-part Metalit substrate. Cold start behaviour is improved via reduced heat capacity. Even the use of thicker metal foils is possible without cold start disadvantages, further improving the mechanical load capacity in the higher temperature ranges.

Advantages:

- Comparable or improved efficiency due to optimal utilization of the catalyst by PE structure. This advantage is realized even considering the reduced geometric surface area.
- The pressure loss reduction due to the perforation and thus improved flow distribution by radial flow.

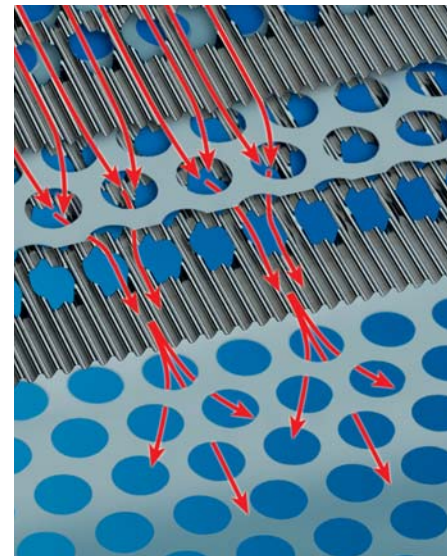
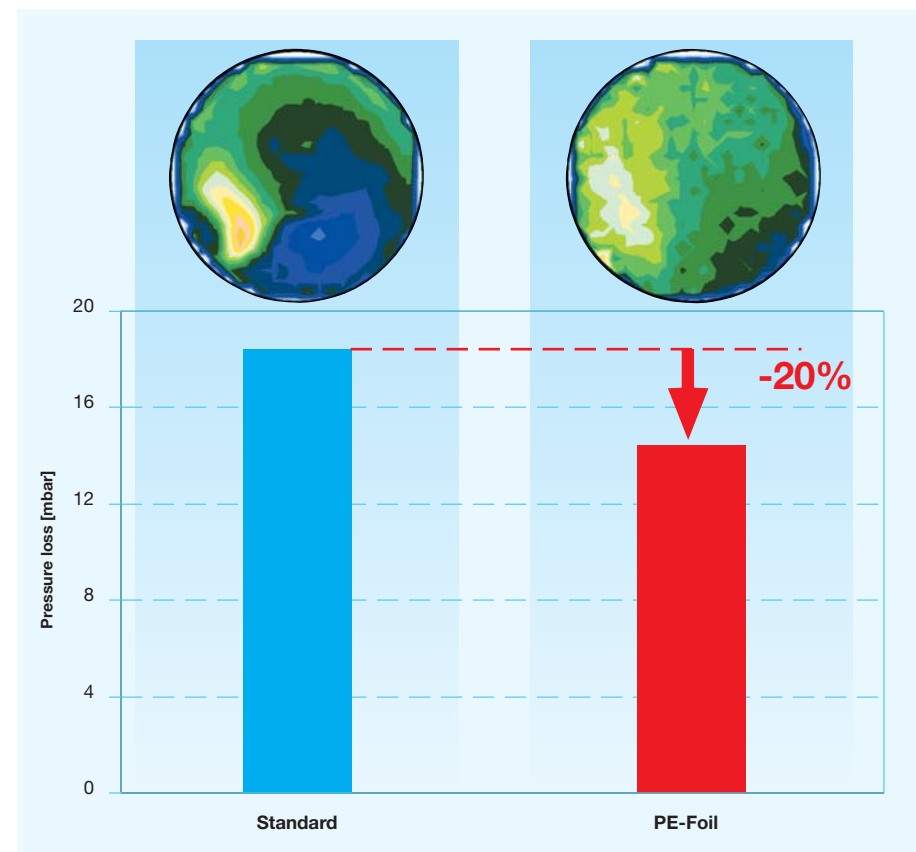


Diagram 2: Flow distribution within the PE-structure

Diagram 1: Pressure loss in a standard and in a PE-substrate; coated

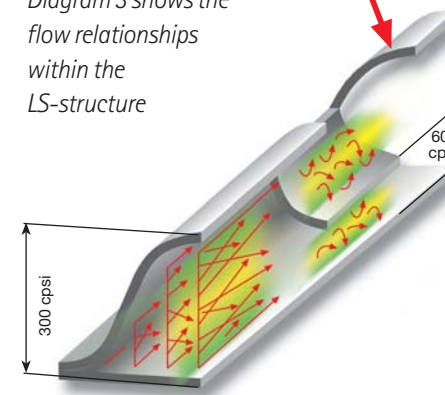


More engine performance:
Radial flow equalisation
within the catalyst means
lower pressure loss.

LS: Structured foils for Metalit substrates



Diagram 3 shows the flow relationships within the LS-structure



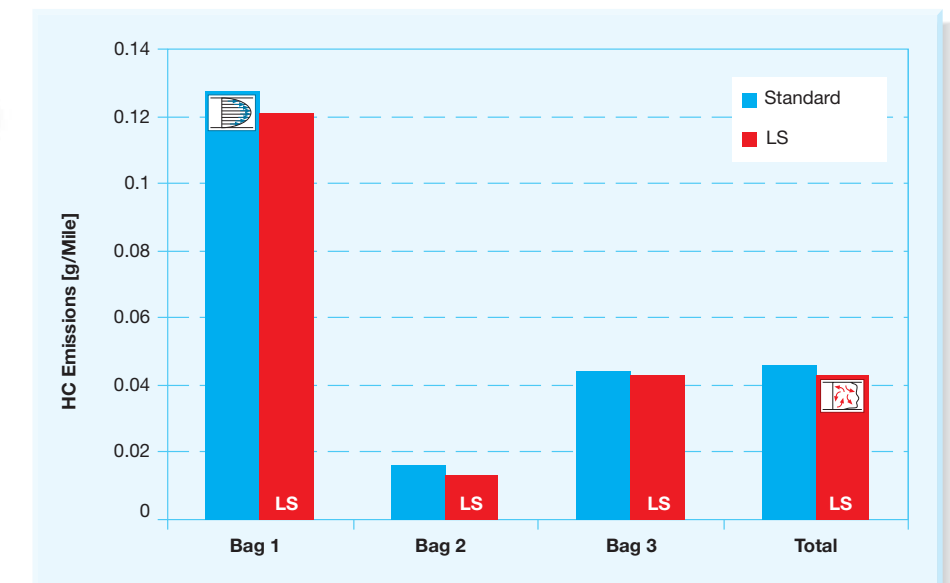
Foils with LS-structure

Foils with LS-structure produce turbulence-like flows that lead to increased efficiency. Through reduced basic cell densities (for example 300 cpsi - cells per inch) alternating with 600 cpsi structures we have produced the 300/600 LS METALIT® (see Diagram 3). Because of the reduced heat capacity, cold start behaviour is improved - even when using thicker foils.

Advantages:

- Increases in efficiency were evident due to the LS-structure.
- Because of increased conversion performance the substrate volume can be reduced.
- The simultaneous use of a PE-foil increases catalyst utilisation and thus efficiency.
- Through less use of materials both weight and costs are reduced.

Diagram 4: HC-Emissions in the FTP Test



For further information contact **EMITEC**.