Imagine TF TECH BRIEF

Catalytic Converter Technology

Applying microfluidics to catalytic converters

Less use of precious metals, quicker light-off, improved conversion, lower pressure drop, smaller and lighter

Enabling the Future

Applying a conical pleated micro porous architecture to catalytic converters

Reduced Precious Metal Usage

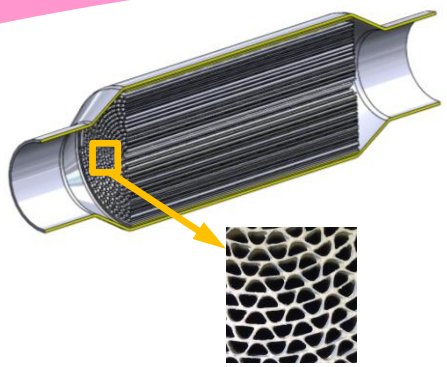
The fluidic architecture results in more efficient use and less precious metals

Light-Off

At least an order of magnitude reduction in light-off time due to the reduced mass

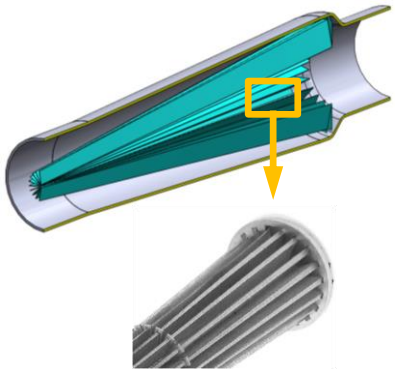
Proven Low-Cost Production Techniques

Proven manufacturing processes are applied to catalytic converters



Current technology

Hundreds of long cells (pores)
High velocity and shear stress through the cells



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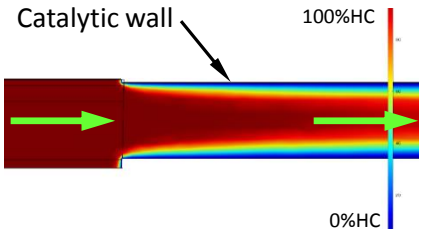
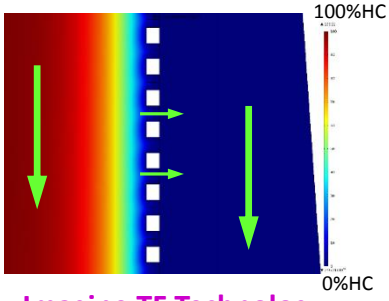
Millions of small short pores
Low velocity and stress through the pores



Current technology, one cell cross section

1. Harmful gases in the center must diffuse to the walls (red=high concentration, blue=low).
2. High shear stress creates high pressure
3. High velocity through the cell



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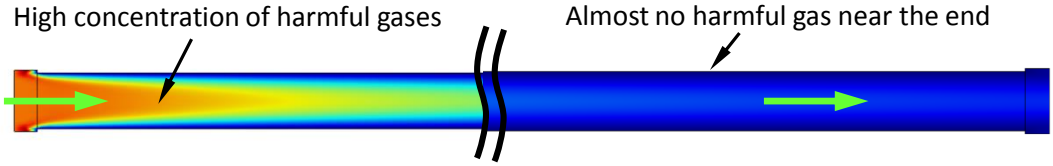
1. Short diffusion path
2. Almost no shear stress
3. Low velocity through the pores

Motorcycles

Automotive

Trucks

Power generation



Inlet section, high conversion efficiency

Outlet section, low conversion efficiency

Current technology, Inefficient Use of Precious Group Metals

At the inlet section harmful gas concentration is high. The PGMs are operating at high efficiency. At the outlet section harmful gas concentration is low. PGMs are inefficiently utilized.

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