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## CFD analysis of an automobile catalytic converter to obtain flow uniformity and to minimize pressure drop across the monolith (Article)

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### Abstract

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The catalytic converter is a device which converts harmful exhaust gases from internal combustion engine into harmless gases. Global warming and air pollution are a buzz in today's scenario. Greenhouse gasses are responsible for global warming. Carbon dioxide, which contributes to being the single most significant greenhouse gasses emission, comes from the exhaust of an automobile. Catalytic converter plays a vital role in the reduction of such greenhouse gasses. The objective of the present study is to examine an automobile catalytic converter to present a detail and comprehensive report on the key parameters affecting the flow uniformity inside the converter and thus attempting to achieve minimum pressure drop across the converter to reduce the backpressure. The catalytic converter geometry is modified to increase the conversion efficiency of the converter. The results reported in the latter part of this paper gives a good insight about the recirculation zones created in the base and also velocity and pressure plots to find a solution for uniform flow within the monolith and also achieved a reduction in pressure drop of 3.7 Pa. © 2020 PENERBIT AKADEMIA BARU-All rights reserved.

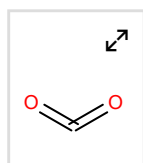
### SciVal Topic Prominence ⓘ

Topic: Base Pressure | Mach Number | Convergent-divergent Nozzles

Prominence percentile: 85.885 ⓘ

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Catalytic converter   Engine back pressure   Flow uniformity   Recirculation zones

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