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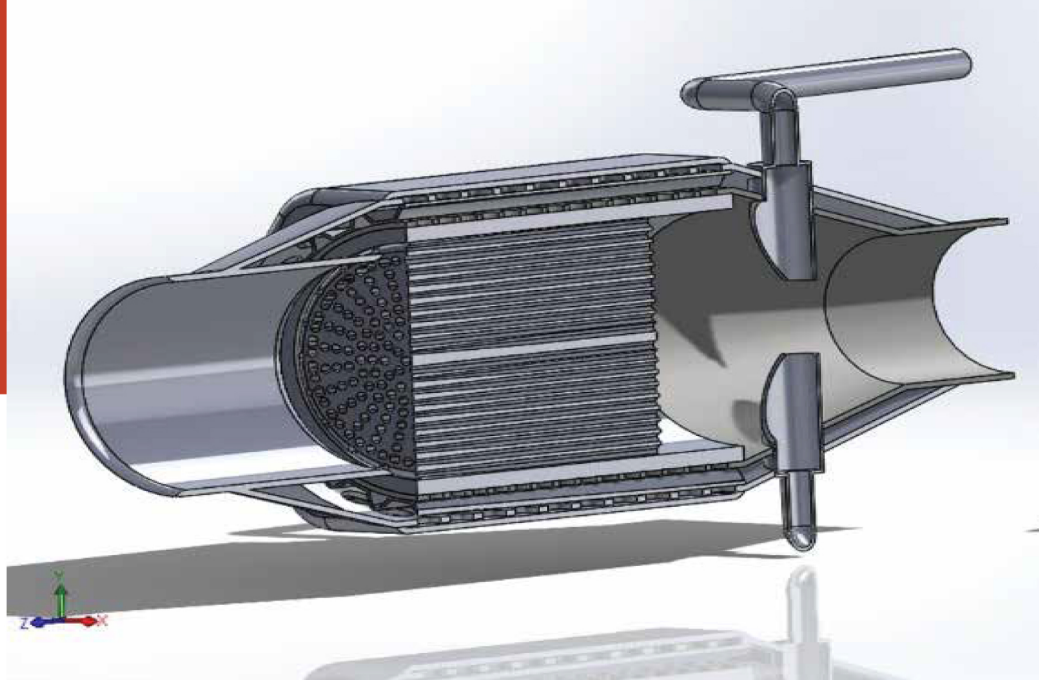
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# 23 PROJECT

## ARTIFICIAL INTELLIGENCE BASED DESIGN OF SMART EXHAUST SYSTEM IN AUTOMOTIVE SYSTEMS



With the increasing demand for greener mobility solutions and eco-friendly and sustainable transportation solutions, it becomes our responsibility as engineers to ensure that this is made possible in the easiest, most effective way possible. With this in mind, this Project was envisioned. The objective of the Project is reduction of exhaust emissions, real time and predictive analysis of Emission Data using Machine Learning, substantial real time exhaust gas analysis and monitoring, robust and sustainable modular product and cutting down carbon footprint.

Features:

- The Project involves an exhaust system of porous cordierite ceramics ( $2\text{MgO}\cdot 2\text{Al}_2\text{O}_3\cdot 5\text{SiO}_2$ ). The ceramic is made rather fire-resistant, to maintain a temperature up to  $800\text{-}850^\circ\text{C}$ . The exhaust gases from the vehicle pass through the sensor bay. The sensor bay detects the respective constituents of the exhaust gases. The collected data is then sent to the Arduino Uno microcontroller, for further processing.
- Using the Machine Learning model, we retrieve the emission data that has previously been stored, to be used for the Emission analysis and building the predictive model, which also shows us the real time performance of the Exhaust system.
- The emission results of the Machine Learning model are represented or displayed in a readable digital format. All details pertaining to the Vehicle Emission are displayed.