

Leaner, cleaner diesel engines

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Diesel engines are widely used in transport the world over. Regulatory and legal efforts are afoot to reduce their use in some countries because of concerns about pollution. However, they are likely to remain a mainstay of heavy goods transport for many years to come because their efficiency and power general outstrip petrol engines and electric vehicles in some contexts.

Writing in the *International Journal of Global Warming*, researchers from Turkey are investigating how the efficiency of diesel engines might be boosted by simple changes to the way the engines operate. Kubilay Bayramoglu, Semih Yilmaz, and Kerim Deniz Kaya of Dokuz Eylul University, Tinaztepe Campus, in Izmir, have carried out a numerical investigation of valve lifts effects on performance and emissions in [diesel engines](#). Their work is carried out in the context of transport being the source of approximately one-third of the carbon emissions the world over and as such plays an important part in global warming and thus climate change.

The team has specifically examined the effect of changing intake valve lift distances on combustion characteristics and so efficiency and emissions, in

a four-stroke single-cylinder diesel engine. The team's analysis of the data with the commercially available ANSYS-Forte software, using [computational fluid dynamics](#) (CFD) for combustion system analysis and ANSYS-Chemkin for reaction kinetics of combustion, showed the changes in [carbon monoxide](#) and [carbon dioxide emissions](#) as well as so-called NOx emissions (nitrogen monoxide and dioxide) and how crank angle changes these.

The analyses showed that gross indicated power, indicated main effective pressure, and combustion efficiency all increase when valve lift is extended, the team reports.

More information: Kubilay Bayramoglu et al. Numerical investigation of valve lifts effects on performance and emissions in diesel engine, *International Journal of Global Warming*, 2019 Vol.18 No.3/4, pp.287 - 303 [DOI: 10.1504/IJGW.2019.101088](#)

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