



Turbulent combustion towards weak turbulence and slow reactions

An article in the scientific journal *Combustion Science and Technology* is published by FRIC PhD student Bima A. Putra, NTNU. It extends the widely used Eddy Dissipation Concept (EDC) for turbulent combustion to be used at weak turbulence and slow reactions.

Background

Fire development is customarily studied by Computational Fluid Dynamics (CFD). Fire in an enclosure will be agitated (high turbulence Reynolds number), although the turbulence can be damped by restrictions on the flow. Furthermore, depleting oxygen will make the reactions slower (low Damköhler number, wide reaction zone). On the other hand, the computational model for tur-

bulent combustion, EDC, was originally developed with the assumption of intense turbulence.

What is done

EDC is reformulated to capture combustion in weak turbulence. Furthermore, it is demonstrated that it also captures slow reactions. The model is tried against relevant experimental data from literature.

Links to more info

The article "Eddy Dissipation Concept (EDC) with batch reactor fine structures model for flames towards low turbulence" (Putra and Ertesvåg) is available as open access at

<https://doi.org/10.1080/00102202.2025.2505563>



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