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## **Computational Models for Two Stroke Engine Brake Simulations**

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Thermodynamic model (1-D) of a heavy duty diesel engine with fully parametric valve lift profiles (Compression Release lift, Brake Gas Recirculation lift, Rebreather lift) enabling optimization of advanced 2-stroke engine brake for maximum braking performance while keeping constraining factors within the limit. The constraining factors include: exhaust valve opening pressure in the cylinder (compression release), pressure drop on the exhaust valve, pressure drop on the intake valve, average temperature upstream of the VGT turbine, turbocharger speed, compressor surge line, piston-valve collision, maximum crank angle distance between valve lifts. The mechanical models simulate kinematics and dynamics of the OHC valve train used for 2-stroke engine brake. Models contains actuation of both exhaust valve lifts (compression release and brake gas recirculation valve lifts) and intake valve lifts (braking intake lifts). Models are used for verification of the cam shapes, designed from the thermodynamic model outputs, from a dynamic behavior point of view. Those simulations complete the process of designing the both intake and exhaust cam lobes before manufacturing the prototype.

### **Vlastník**

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