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Study of fuel economy improvements available via valvetrain optimisation of a SOHC engine with fully independent inlet and exhaust cam timing control

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Abstract

This work looks at the solutions available to develop the valvetrain of single overhead camshaft engines to optimise part-load fuel economy, wide-open throttle performance and idle stability. Strategies are assessed, using a correlated 1-D cycle simulation model, for the operation of an existing production SOHC engine, modified to incorporate a CamInCam® system. The CamInCam® system enables fully variable independent inlet and exhaust cam timing to be achieved in an engine with only a single camshaft. In addition to fuel consumption, consideration is given to the impact on full-load performance of the engine. Finally, the potential in-vehicle performance of the engine is assessed, both in terms of acceleration and drive-cycle fuel economy.