



'Ask Hanip'

I would like to understand more about the technology that goes into Toyota's current range of engines, especially the term VVT-i which I keep hearing so much. I was hoping that you could shed some light on how does VVT-i work and what it does for Toyota's cars, thanks! - Kim

Good question Kim, VVT-i, or Variable Valve Timing with intelligence is an automobile variable valve timing technology developed by Toyota. The Toyota VVT-i system replaces the Toyota VVT offered starting in 1991 on the 4A-GE 20-Valve engine.



The VVT system is a 2-stage hydraulically controlled cam phasing system.

VVT-i, introduced in 1996, varies the timing of the intake valves by adjusting the relationship between the camshaft drive (belt, scissor-gear or chain) and intake camshaft. Engine oil pressure is applied to an actuator to adjust the camshaft position. In 1998, "Dual" VVT-i (adjusts both intake and exhaust camshafts) was first introduced in the RS200 Altezza's 3S-GE engine.

Other Dual VVT-i engines include the upcoming 1.8L 2ZR-FE I4, which will see implementation in Toyota's next generation of compact vehicles. By adjusting the valve timing, engine start and stop occur virtually unnoticeable at minimum compression, and fast heating of the catalytic converter to its light-off temperature is possible, thereby reducing HC emissions considerably.

