Run Smart Predictive Cruise Control

This is an optional fuel savings application that adjusts the vehicle speed predictively based on the approaching road profile. Using 3D digital map technology and GPS, Predictive Cruise Control evaluates the upcoming road grade about a mile in advance to determine the most fuel efficient vehicle speed

The PCC was developed to improve fuel economy. The basic idea is using the vehicle's inertia or momentum by going downhill or uphill by changing the drivers cruise set speed according the topology of the terrain. The Software allows the CPC (Common Powertrain Controller) to support predictive cruise control (PCC) functionality.

The PCC ECU is a unit which has road map data stored and a GPS sensor. By comparing current position with the stored map data, the PCC unit is able to "foresee" a coming hill and therefore change the driver's cruise set speed. Changing the driver's cruise set speed is done via CAN communication. The PCC unit communicates with the GPS sensor over a serial link and the rest of the vehicle over the J1939 CAN link.

PCC Set Speed Calculation
CPC will only honor a PCC desired cruise set speed when the PCC is in active state.
The cruise set speed evaluation is determined by the driver's cruise set speed plus an offset, which is calculated from the PCC requested cruise set speed. The CPC will then calculate the difference between PCC desired cruise set speed and the driver's cruise set speed, where the driver's cruise set speed is identical to the display value. The difference vehicle speed is then limited by a lower speed bound and an upper speed bound.

If PCC is switched off or if the PCC desired cruise set speed changes fast, a gradient limitation with an adjustable ramp rate, is applied to the difference vehicle speed allowing a smooth transition. The final cruise set speed is determined by the driver's cruise set speed plus the calculated offset.

Programming Requirements And Flexibility

Parameter Group	Parameter	Description	Options	Default	Access
54	PCC Eng Brake Mode	Predictive Cruise Engine Brake Activation	0=OVS with standard thresh. 1=OVS with alternate thresh	0	DDDL 7.X, DDRS, VEPS
54	PCC RSL Mode	Predictive Cruise Road Speed Limiter Mode	0=RSL limit only, PCC offset ignored 1=RSL limit and PCC offset	0	DDDL 7.X, DDRS, VEPS
15	Cruise Control Mode Selection	Regular Cruise Control/Active Cruise Control Mode	0=Normal Cruise Control, 1=Soft Cruise Enabled, 2=Predictive Cruise / Normal Cruise as backup, 3=Predictive Cruise / Soft Cruise as backup	0	DDDL 7.X, DDRS, VEPS

INSTALLATION
The following is a list of switches and CPC2+ sensors that are required for Cruise Control operation.
□ Cruise Control ON/OFF (Switch or J1939)
□ Service Brake (Switch or J1939)
□ Clutch Released for Manual Transmission (Switch or J1939)
□ Set/Coast (Switch or J1939)
□ Resume/Accel (Switch or J1939)
□ Vehicle Speed Sensor (or J1939)