lute pressure sinks downstream of the throttle valve and the cylinders draw in less air per stroke, i.e. the cylinder charge is reduced. As a result, less fuel is needed for combustion and the duration of the pulse $T_p$ is correspondingly shorter. If the engine output and thereby the amount of air drawn in per minute increase and providing the speed remains constant, then the cylinder charge will improve and more fuel will be required: the pulse duration $T_p$ of the DSM is longer (Figs. 15 and 16).
During normal driving, engine speed and output usually change at the same time, whereby the DSM continually calculates the basic injection duration $T_p$. At a high speed, the engine output is normally high (full load) and this results ultimately in a longer pulse duration $T_p$ and, therefore, more fuel per injection cycle.
The basic injection duration is extended by the signals from the sensors depending on the operating mode of the engine.

Adaptation of the basic injection duration to the various operating conditions is carried out by the multiplying stage in the ECU. This stage is controlled by the DSM with the pulses of duration $T_p$. In addition, the multiplying stage gathers information on various operating modes of the engine, such as cold start, warm-up, full-load operation etc. From this information, the correction factor $k$ is calculated. This is multiplied by the basic injection duration $T_p$ calculated by the division control multivibrator. The resulting time is designated $T_m$. $T_m$ is added to the basic injection duration $T_p$, i.e. the injection duration is extended and the air-fuel mixture becomes richer. $T_m$ is therefore a measure of fuel enrichment, expressed by a factor which can be designated "enrichment factor". When it is very cold, for example, the valves inject two to three times the amount of fuel at the beginning of the warm-up period (Figures 13 and 15).

***Fig. 16: Signals and controlled variables at the ECU***
*$Q_L$ Intake air quantity, $\vartheta_L$ Air temperature, $n$ Engine speed, $P$ Engine load range, $\vartheta_M$ Engine temperature, $V_E$ Injection quantity, $Q_{LZ}$ Auxiliary air, $V_{ES}$ Excess fuel for starting, $U_B$ Vehicle-system voltage.*