MPC == > Model predictive control

The models used in MPC are generally intended to represent the behavior of complex dynamical systems.

MPC uses the current plant measurements, the current dynamic state of the process, the MPC models, and the process variable targets and limits to calculate future changes in the dependent variables. These changes are calculated to hold the dependent variables close to target while honoring constraints on both independent and dependent variables. The MPC typically sends out only the first change in each independent variable to be implemented, and repeats the calculation when the next change is required.

State vector :

x,y: Car position

psi: Car heading direction

v: Velocity

cte: cross track error

epsi: error orientation

The model combines the state and actuations from the previous timestep to calculate the state for the current timestep based on the equations below:

