

2.5 ERROR COEFFICIENTS

There are two different types of error coefficient representation namely,

- a) Static error constants
- b) Generalized error coefficients

STATIC ERROR CONSTANTS

$$\text{Positional error constant, } K_p = \lim_{s \rightarrow 0} G(s)H(s)$$

$$\text{Velocity error constant, } K_v = \lim_{s \rightarrow 0} sG(s)H(s)$$

$$\text{Acceleration error constant, } K_a = \lim_{s \rightarrow 0} s^2G(s)H(s)$$

GENERALIZED ERROR COEFFICIENTS

$$C_0 = \lim_{s \rightarrow 0} F(s)$$

$$C_1 = \lim_{s \rightarrow 0} \frac{dF(s)}{ds}$$

$$C_2 = \lim_{s \rightarrow 0} \frac{d^2F(s)}{ds^2}$$

$$\text{where, } F(s) = \frac{1}{1+G(s)H(s)}$$

Relation between static error constants and generalized error coefficients

$$C_0 = \frac{1}{1 + K_p}$$

$$C_1 = \frac{1}{K_v}$$

$$C_2 = \frac{1}{K_a}$$