



# SNS COLLEGE OF TECHNOLOGY



(An Autonomous Institution)

COIMBATORE-35

Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## UNIT III: SPEED GOVERNING AND AUTOMATIC GENERATION

TOPIC: **BASICS OF SPEED GOVERNING MECHANISM AND MODELING**





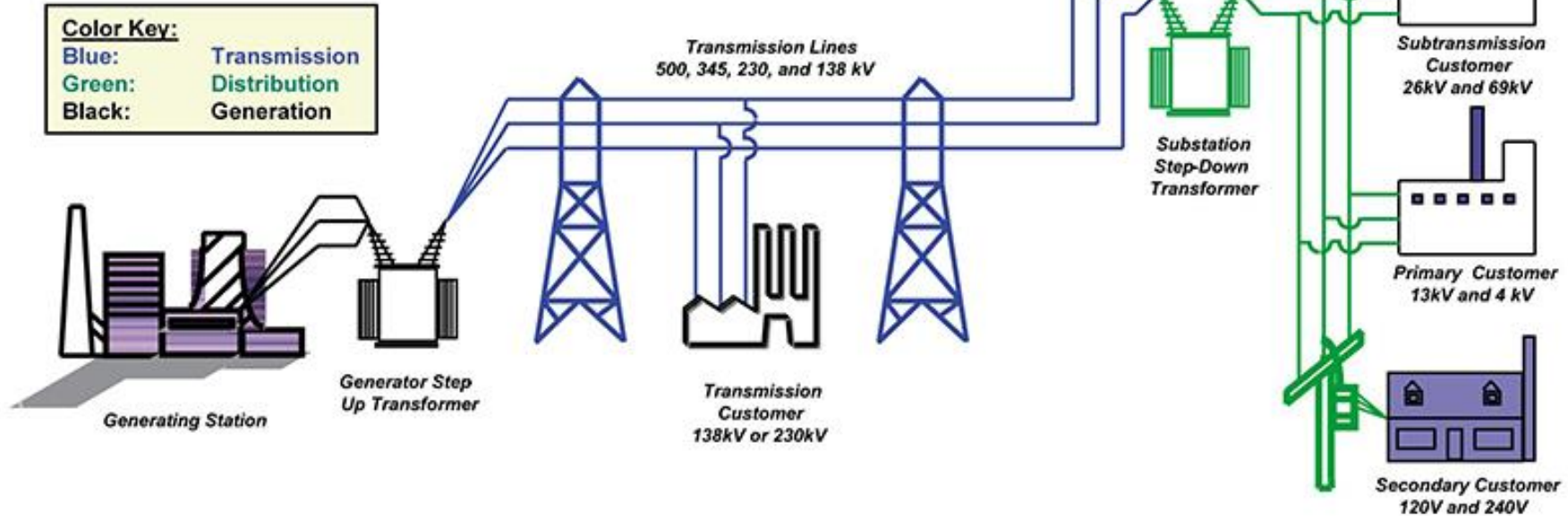
# TOPIC OUTLINE



- INTRODUCTION
- BASIC STRUCTURE OF ELECTRICAL SYSTEM
- LOAD FREQUENCY CONTROL
- AUTOMATIC LOAD FREQUENCY CONTROL
- SPEED GOVERNING SYSTEM

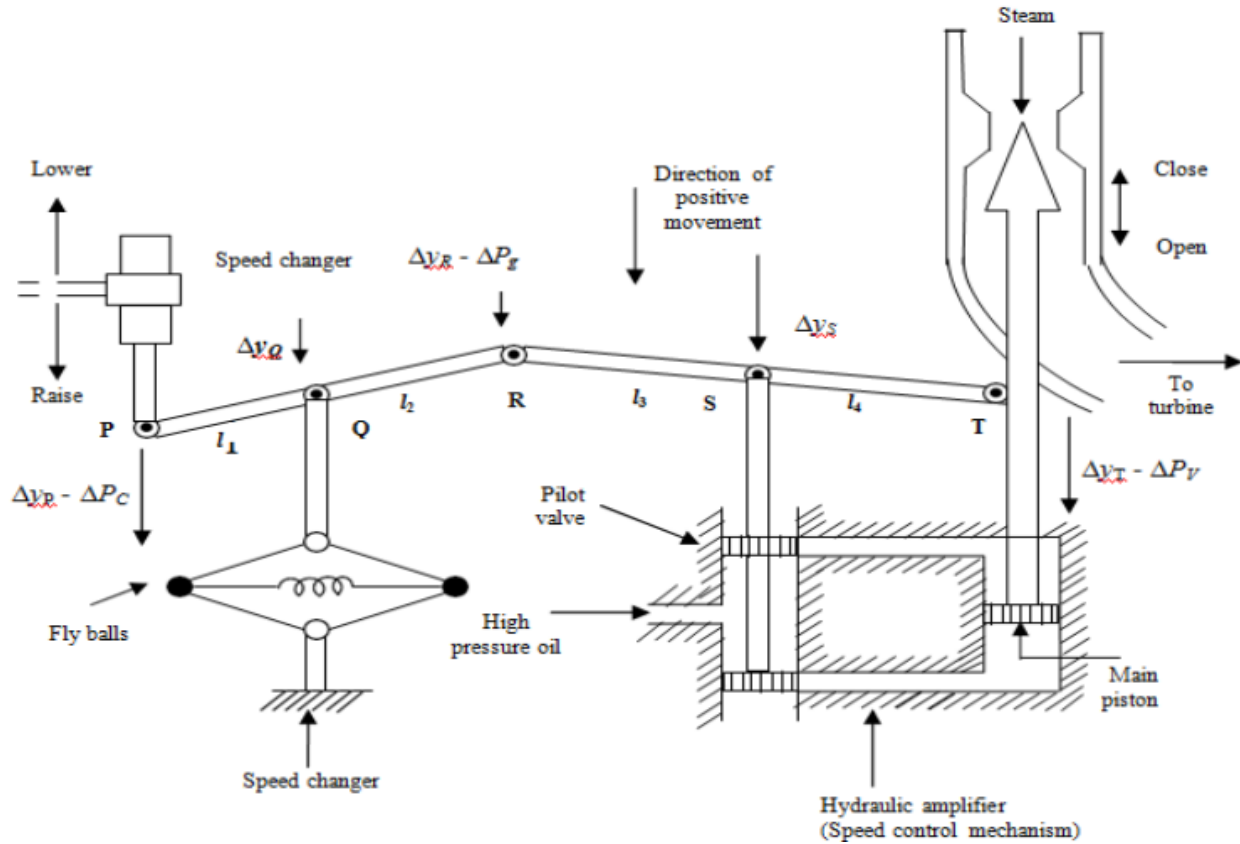


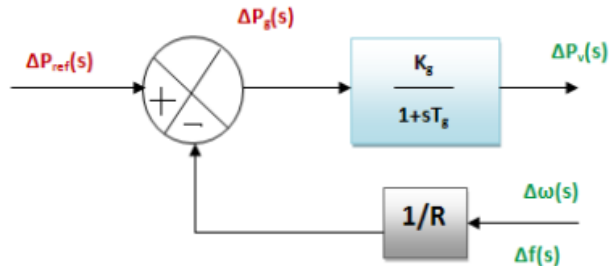
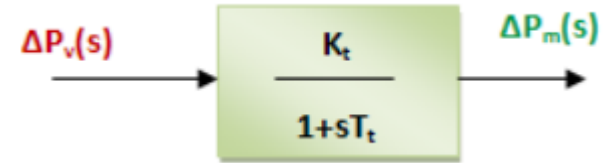
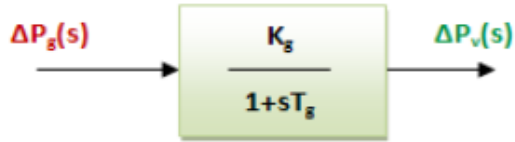
## Basic Structure of the Electric System





- The main objective of power system operation and control is to maintain continuous supply of power with an acceptable quality, to all the consumers in the system.
- The system will be in equilibrium, when there is a balance between the power demand and the power generated. As the power in AC form has real and reactive components: the real power balance; as well as the reactive power balance is to be achieved.
- There are two basic control mechanisms used to achieve reactive power balance (acceptable voltage profile) and real power balance (acceptable frequency values).
- The former is called the automatic voltage regulator (AVR) and the latter is called the automatic load frequency control (ALFC) or automatic generation control (AGC).

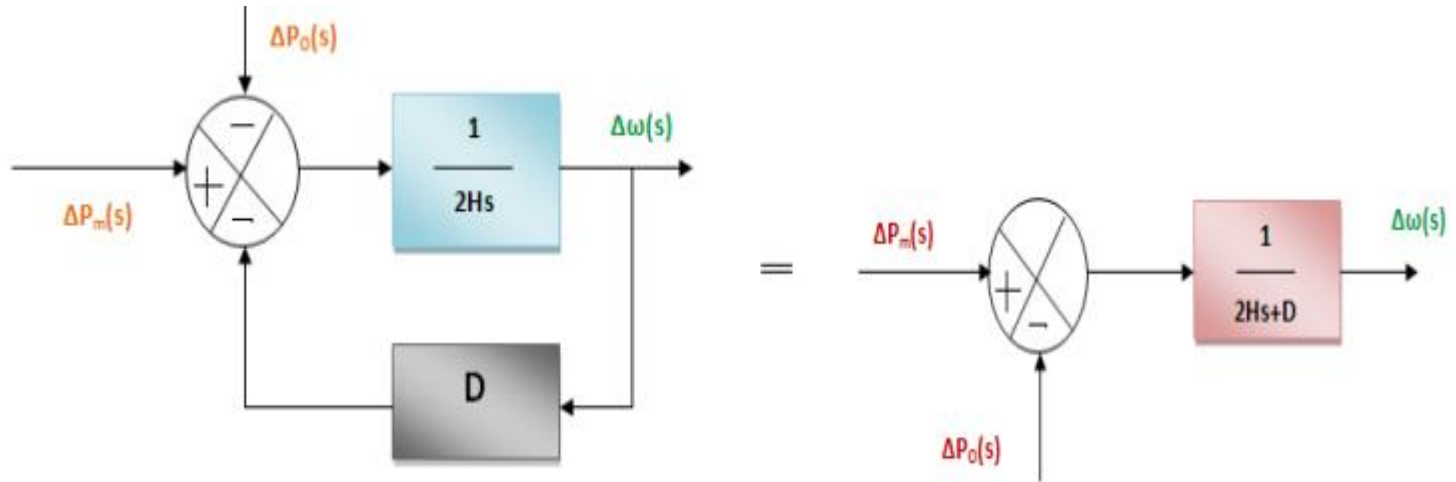




$$G_t(s) = \frac{\Delta P_m(s)}{\Delta P_v(s)} = \frac{K_t}{1 + sT_t}$$

**The Turbine model**

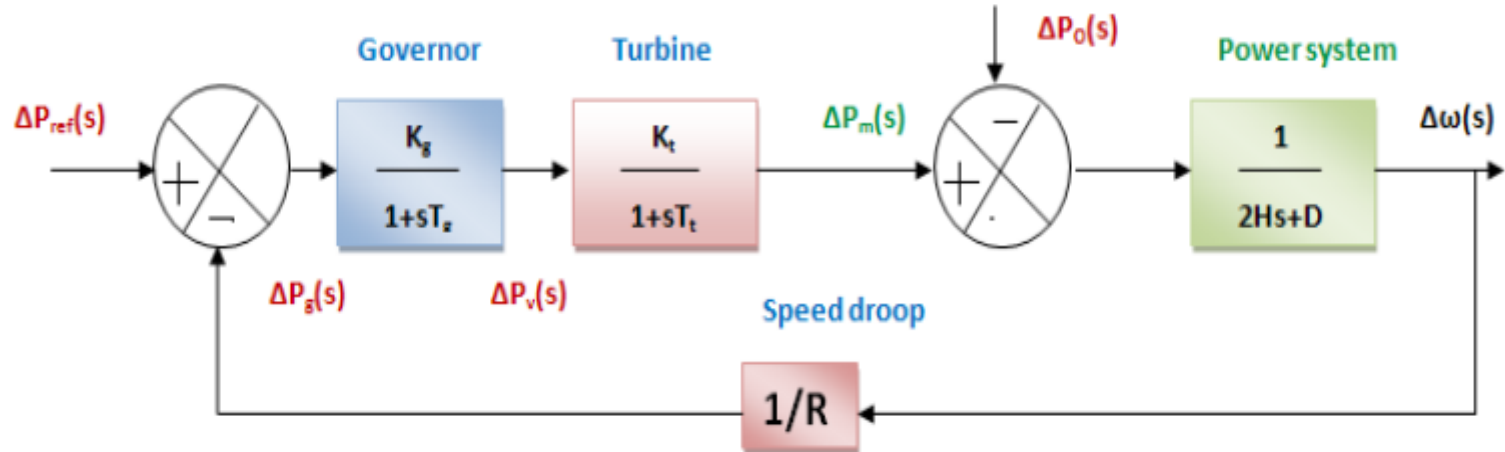
**The block diagram representation of the Governor**



**The block diagram representation of the Generator and load**



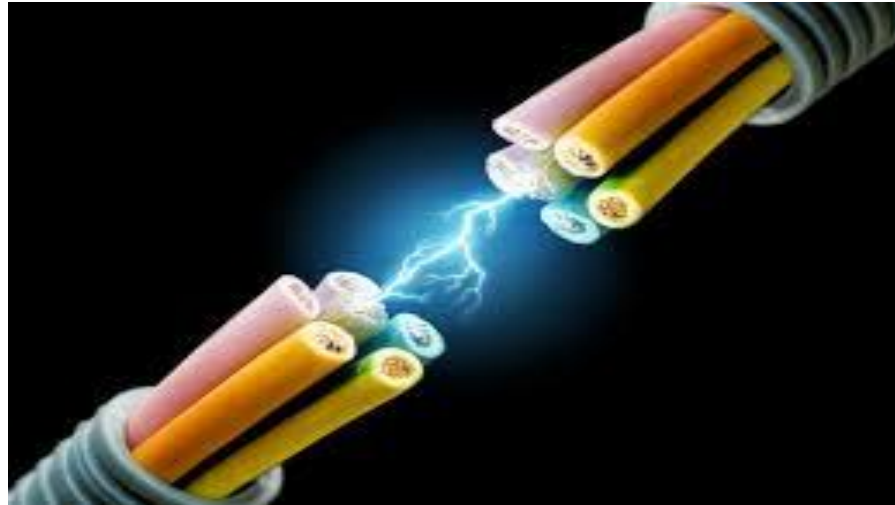
## The block diagram representation of the ALFC







# RECAP...



# ...THANK YOU

