

GOVERNOR

There are Three Types of Governors

1. **Electro Hydraulic Governor**
2. **Woodward Governor**
3. **Microcontroller Based Governor (MCBG)**

The main function of governor in a locomotive is to govern the fuel supply to the engine block according to the different condition, like starting or shut down of locomotive, speed regulation of engine.

The functions of Governor:

1. It enables the normal shutdown of the diesel engine.
2. For start the diesel engine and bring it to ideal speed.
3. It regulates the engine speed according to the operators demand.
4. It maintains the engine speed for a particular notch irrespective of load.
5. It protects the diesel engine from lack of lubrication, cooling and protects the engine and its components from extensive use.
6. For the safe operation of train, brings the engine speed to ideal speed during the earth faults, hot engine, and train parting and during emergency break application.

An MCBG electronic governor consist of two main components

1. **Control Unit**
2. **Actuator Unit**

Some important facts about MCBG

1. Governor starts working as soon as Governor Breaker switched on.
2. A green Colored Dry run push button given in the control unit to ensure the free operation of fuel rack.
3. Governor senses **FOP** (Fuel Oil Pressure), **LOP** (Lube Oil Pressure), **BAP** (Booster Air Pressure), **Notch**, **LCP** and displays it in the control unit display.
4. Governor Brings the engine shut down when engine RPM exceeds the rated setting (Normally **1190-1200 RPM**).
5. The operation of governor achieved through a servomotor.
6. It receives the input signal (electrical references) from the tachometer (generator), engine speed sensor and controls the fuel supply through fuel rack.

Advantages of MCBG

1. Engine RPM is controlled without hunting.
2. Effective control for complete combustion of fuel, thus improving fuel efficiency and reducing pollution.
3. Continuous display of engine status parameters.
4. Online fault diagnostics and fault messages display.
5. Zero running maintenance up to 5 years due to no oil and moving parts.

6. No schedule maintenance up to 48 months against 24 months of conventional governor.
7. Easy breakdown maintenance without unloading.
8. Low engine cranking time 5 to 10 sec as against 25 to 30 sec thus saves battery life.
9. Precise control of fuel rack through stepper motor against Hydraulic/electrohydraulic operated governor.



Micro Controller Based Governor (MCBG)

The MCBG has been divided in to two parts

- Actuator Unit
- Control Unit

CONTROL UNIT

ACTUATOR UNIT

- Hook
- Acknowledgement button
- OST Key
- Toggle Switch bypassed in low hauling power
- Dry Run Push Button for free operation of fuel rack

The image shows two industrial control units. The Control Unit is a light blue metal cabinet with a control panel on the front. The Actuator Unit is a larger, grey metal cabinet with a top-mounted terminal block. The background is a blurred image of a modern building with large windows.