

INDUSTRIAL ELECTRICAL APPLICATIONS

LIFTS, ESCALATORS, AIR CONDITIONERS, LIGHTING IN BUILDING ARE POWERED BY ELECTRICITY.

THE FOLLOWING IS CALCULATION METHOD FOR BUILDING POWER CONSUMPTION

$$\text{WATT PER LIGHT} \times \text{NO OF LIGHTS} \times \text{TOTAL NO. OF ROOMS} = W_1$$

$$\text{WATT PER POWER POINT} \times \text{TOTAL NUMBER OF POWER POINTS} \times \text{TOTAL NO. OF ROOMS} = W_2$$

$$\text{WATT PER LIFT} \times \text{TOTAL NUMBER OF LIFTS} = W_3$$

$$\text{WATT PER AIRCONDITIONER} \times \text{TOTAL NUMBER OF AIRCON} = W_4$$

$$\text{TOTAL POWER OF BUILDING} = W_1 + W_2 + W_3 + W_4$$

SENSORS IN BUILDING SERVICE

SENSORS ARE UTILIZED IN BUILDING SYSTEM

- TO CONTROL ROOM AIR TEMPERATURE AND OPERATION OF AIR CONDITIONERS
- TO CONTROL BUILDING LIGHTING SYSTEM
- TO SENSE THE SMOKE AND OPERATE THE FIRE ALARM SYSTEM.

SENSOR	OPERATING PRINCIPLE	APPLICATION
ACCELEROMETER	PIEZO ELECTRICITY	MEASURING VARIATION IN MOTION
PRESSURE SENSOR	PIEZO ELECTRICITY	MEASURING PRESSURE VARIATION
THERMO COUPLE	THERMO ELECTRICITY	MEASURING TEMPERATURE VARIATION
PRESSURE SWITCH	PRESSURE ON MECHANISM	DETECTING PRESSURE CHANGE
LIMIT SWITCH	FORCE ON MECHANISM	DETECTING MACHINE POSITION
LOAD CELL	ELECTRICAL RESISTANCE	MEASURING FORCE VARIATION

SENSOR	OPERATING PRINCIPLE	APPLICATION
PROXIMITY DETECTOR	ELECTRICAL CAPACITANCE ELECTRICAL INDUCTANCE	MEASURING POSITION
DISPLACEMENT TRANSDUCER	ELECTRICAL INDUCTANCE ELECTRICAL RESISTANCE	

AMPLIFIER & SIGNAL PROCESSING

AN AMPLIFIER IS A DEVICE THAT TAKES IN A SMALL SIGNAL AND OUTPUTS A COPY OF THIS SIGNAL AT A MUCH HIGHER VOLTAGE LEVEL. THE DEGREE OF AMPLIFICATION IS CALLED GAIN.

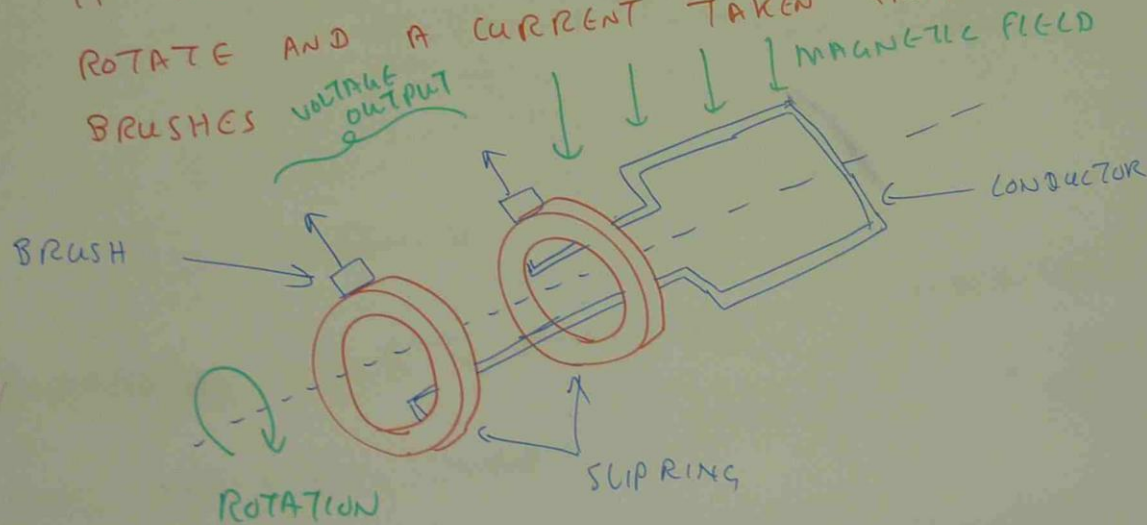
THE AMPLIFIER NEEDS TO BE FREE FROM INTERFERENCES AND NOISE. SIGNAL PROCESSOR (OR) SIGNAL CONDITIONERS PROVIDE THAT FUNCTION.

BASIC PRINCIPLE OF POWER GENERATION

AC POWER GENERATION

IF AN ELECTRICAL CONDUCTOR (A WIRE) IS MOVED THROUGH A MAGNETIC FIELD, AN ELECTRIC CURRENT IS PRODUCED IN THE WIRE. IF INSTEAD OF A SINGLE WIRE, A LOOP OF WIRE IS USED, THEN THE LOOP MAY BE ROTATED PAST THE MAGNET.

IF THE LOOP IS CONNECTED AS SHOWN IN THE DIAGRAM, IT CAN ROTATE AND A CURRENT TAKEN FROM THE LOOP VIA THE BRUSHES



PART DESCRIPTION	PART NAME
STATIONARY PART	STATOR
ROTATING PARTS	ROTOR
PARTS THAT TRANSFERS POWER FROM ROTATING PARTS TO STATIONARY PART	BRUSHES & SLIP RINGS