Weekly Quiz 01

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1. **How to calculate Net calorific Value (NCV) from Gross Calorific Value (GCV)?**

Answer:

- The Gross Calorific Value (GCV), also called High Heating Value (HHV)
- The Net Calorific Value (NCV), also called the Low Heating Value (LHV)
- The functional relation between NCV and GCV is:

NCV = GCV – (MASS OF WATER * 2.4425)

- Mass of water (in kg) generated by one kg of fuel during the combustion process.

$$\text{Mass of water} = \frac{9H + x\,H2O}{100}$$

H - weight percent of Hydrogen in the fuel
xH2O - weight percent of water in the fuel.

2. **Clever method to record this power quality change for further display, analysis, or documentation how bad the situation is?**

Answer:

Power quality can be analyzed with the help of simple metering arrangement as well as hourly manual logging by installing frequency meter, phase wise ammeter & voltmeter and harmonic analyzer. From these we can come to know voltage dips, supply voltage, frequency variations and supply interruption to analyse anomalies & trend.

Going for power quality monitor with a data logging facility storing and displays all variations in power parameters. This makes it an indispensable tool in the assessment and improvement of system performance. The instrument should be smart to capable of doing the following:

- Measures, stores and displays voltage and current on all three phases, frequency, power factor, real and reactive power import and export and apparent power.
- Data logging facility with non-volatile memory and date and time stamp for all recorded readings.
- Data logging of measured and computed parameters with suitable interface for downloading to user computer.
- User settable limits for maximum and minimum threshold values for current & voltage

- Event logging / fault logging when the measured parameters are outside of set limits.
- Provides alerts low power factor & high power factor.

Benefits and applications in power quality monitoring:

- Energy and demand profiling that helps in characterizing disturbances.
- Monitoring electrical distribution and networks to study the loss patterns.
- Monitoring of networks incomer as well as individual feeders for power parameters monitoring.
- Trend analysis of Power Quality parameters in order to identify opportunities for energy savings and demand reduction.
- For energy audits to increase energy efficiency.
