Lighting Terminology: A Beginner's Guide

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Anil Parmar is the CEO and Managing Director of SunAnshul Technologies Private Limited. He began his career in 1988 with an offshore assignment at ONGC and has since worked with esteemed organizations such as Xerox, Hewlett-Packard, and Wipro.

Throughout his career, he has managed various portfolios, ranging from technical roles to techno-commercial positions. In 2016, he founded SunAnshul Technologies Private Limited, an ISO 9001:2015 certified, MSME-registered startup recognized by the Government of India.

Choosing the right lighting can sometimes feel confusing, especially with so many technical terms like lumens, lux, CRI, and CCT. But don't worry—this guide will explain these words in simple language, so you can choose the perfect lighting for home, office, or any other space.

What Are Lumens?

A lumen (lm) is a standard unit that measures the total amount of visible light emitted by a source in all directions. It tells us how much light a bulb produces, regardless of its focus or distribution. The concept of lumens is derived from the relationship between light intensity, area, and human perception of brightness. The lumen unit is adjusted to match how the human eye perceives brightness. Not all light wavelengths (colours) are seen equally by the human eye. The human eye is most sensitive to green light at a wavelength of 555 nm. This wavelength contributes the most to the perceived brightness.

The higher the lumens, the brighter the light. Think of lumens as the "amount" of light a bulb gives. So, when buying bulbs, it is better to check lumens instead of watts. Watts only tell you how much electricity the bulb uses, not how bright it is!

What Is Lux, and How Is It Different from Lumens?

While lumens measure the total amount of light a bulb produces, lux measures how much of that light actually reaches a surface. Lux is lumens per sq meter area.

- **Lumens:** The total light a bulb gives off, no matter where it goes.
- **Lux:** The amount of light hitting a specific area (like a desk or table).

Lux is useful when you are thinking about how well-lit a particular space will be, like a reading corner or a workspace. To improve lux in a space, you can use more lumens fixture or move the light source closer to the area or use the light fixture having secondary optics which focusses only desired area.

What Is CCT?

CCT stands for Correlated Colour Temperature. It tells us what colour the light will look—warm yellow, cool white, or something in between. This is measured in Kelvin (K).

Here is a simple guide:

- **Warm Light (2,700K–3,000K):** This is soft, yellowish light, like the kind from candles or older bulbs. It feels cozy and relaxing, so it's great for bedrooms or living rooms.
- **Neutral Light (3,500K–4,100K):** This is balanced light, not too yellow or too white. It works well in kitchens and bathrooms.
- **Cool Light (5,000K–6,500K):** This looks like daylight—bright and white. It is good for offices, garages, warehouses, sports or places where you need to focus.

Choosing the right CCT helps set the mood of your space. For example, warm light makes a room feel comfortable, while cool light helps you stay alert.

What Is CRI?

CRI stands for Colour Rendering Index. It measures how well a light shows the true colours of things, like how your clothes, walls, or food look under the light. CRI is scored from 0 to 100:

- **90 or Above:** The colours look very real and vibrant. This is great for art studios, kitchens, or makeup rooms.
- **70 to 89:** Colours still look good. This is fine for most homes and offices.
- **Below 70:** Colours can look dull or not quite right. These lights are usually older or cheaper options.

If you want everything to look bright and natural, go for a light with a high CRI.

How to Choose the Right Lighting?

Now that you know the terms, here are some tips to help you pick the best lighting:

1. **Think about the purpose.** For studying or working, choose bright (high-lumen) and cool light. For relaxing, go with soft (low-lumen) and warm light.
2. **Match the colour to the mood.** Use warm light to make a room cozy, neutral light for clear vision, and cool light for focus.
3. **Check the CRI.** If colours matter—like in a kitchen or dressing room—choose a bulb with a CRI of 90 or higher.
4. **Consider lux for task lighting.** If a surface feels dim, check how much light is actually reaching it and adjust the fixture's placement or brightness.

What's Next?

Understanding lumens, lux, CCT, and CRI makes lighting simple and helps you choose lights that fit your needs perfectly. In our next blog, I will talk about how lighting impacts our daily lives, including how it keeps us safe, comfortable, and productive. Stay tuned!