

# POWER AND PA SYSTEMS - TOP TIPS

One of the most confusing aspects of buying a PA system is often how powerful it needs to be, what exactly all the various power ratings mean in real terms, and what power level is needed from an amp for speakers of any given rating.

Hopefully our quick guide to power and PA will clear up some of your questions!

- Underpowered amps are probably the most common cause of speaker failure, this is because more heating is caused by clipped and distorted signals than by clean signals.
- Speaker 'power' refers only to how much power the speaker can take without burning out. It says nothing about how 'loud' a speaker is.
- The most meaningful measure of this is 'RMS' watts. The speaker will survive a continuous, broadband input of clean signal at this power.
- A speaker will withstand its RMS power rating continuously, twice this amount for short periods, and up to 4 times this amount for very short peaks.
- Amplifier 'power' refers to how much power the amp can deliver. This is usually higher into a lower impedance (but do not go below minimum impedance).
- Most speaker failures are caused by coils overheating and burning out. It is safer to use greater amplifier power than the speakers capacity, than to use less.
- If an amp is overdriven, it produces a 'clipped' signal which is very damaging to speakers. A good guide is to use at least twice the amount of amplifier power that your speakers can take, preferably 4 x (i.e. a 250W cab should be driven by a 1000W amp). Turn the amp output level control all the way up, use the input stages of your mixer, the clip lights and your ears to ensure the signal is entirely clean. The sound will be louder, clearer with more punch and dynamics.  
A reasonable rule of thumb for power is 3-5W of speakers per person the venue can hold. i.e. 500 person venue =1500 - 2500W of speakers

If you need further information on this topic or are looking for personalised information and quotes on PA systems, [click here to contact the professor](#)