Power amplifier transformer with large capacitor

Can a capacitor be used for a tube amp?
Capacitors work finein this application but one can also use transformers. TCdriver is correct that amp outputs need to limit DC current in the output to prevent heating in the speaker drivers. Tube amps do this with an output transformer. Big capacitors do it (as in the Marantz 1030 and 1060,the Sony STR-6120,amongst others.)

Do amplifier gain stages need a transformer?
Amplifier gain stages for audio frequencies need isolation between output and input. Capacitors work fine in this application but one can also use transformers. TCdriver is correct that amp outputs need to limit DC current in the output to prevent heating in the speaker drivers. Tube amps do this with an output transformer.

Why does a tube preamp use a capacitor?
The tube preamp uses a smaller value coupling capacitor because the expected load is the input of the power amplifier,with a much higher input resistance. Amplifier gain stages for audio frequencies need isolation between output and input. Capacitors work fine in this application but one can also use transformers.

Do amplifiers need a transformer?
Since most amplifiers are intended to reproduce music and speech, with high peak-to-average power ratios, they will operate satisfactorily with transformers rated to supply only 70% of the current required for extended sine-wave operation, and in a competitive market the cost savings are significant.

What is a power supply in an amplifier?
When looking inside an amplifier the power supply is easy to recognise. The majority of power supplies in amplifiers are described as a 'Capacitor Input' supply. The description below is an overview. 1 Large mains tranny Toroidal or EI. The mains tranny has a primary winding and two isolated secondary windings.

How efficient is a 'capacitor input' power supply?
Because the power supply is only charging the capacitors at the peak of each cycle for only 1/10 of the time means the overall efficiency of a 'Capacitor Input' power supply is approx 70%. This also means that a mains tranny rated as 200VA (200 Watt) will only be able to provide approx 0.707 of its rated value.

As a (very) general rule, for most loudspeakers, lots of capacitors trumps power transformers. For more difficult to drive speakers, then the size of the transformer assumes ...

In this video, there are two main rows of capacitors on a Class D audio amplifier. I understand the power supplies need power filter capacitors, and that output stages need DC decoupling capacitors. What I don"t ...

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Yes, the capacitor C5 is required to block DC from the amplifier. There is DC because it is a single-supply amplifier, so the amplifier input and output are biased to half-supply voltage. If the supply is 20V, the amplifier ...

2.3 Power Amp Coupling Caps. The days of single supply amplifiers with large electrolytic coupling capacitors are now almost over, although there are still a few small low power amps that are built that way. ... While it would be nice to have the luxury of using the same ratio for speaker coupling caps, this makes the capacitor overly large and ...

Big capacitors worsen power factor considerably. This invites ground loop induced hum (from the huge peak currents) and reduces power available from a given transformer or line circuit. ... capacitor will cause more resistive losses than a "correctly" sized capacitor. In a pre-amp / CD player this hardly matters, and CRC filtering can be used ...

This paper presents a dual-band fully integrated high linearity CMOS power amplifier (PA). The PA employs a reconfigurable transformer in the input matching network to achieve low reflection coefficient across both bands, demonstrating significant flexibility in the design of dual-band power amplifiers with high output powers. Additionally, a detailed design ...

This arrangement also permits impedance matching. In a power amplifier circuit shown in Fig. 17.11, R 1 and R 2 provide potential divider biasing and emitter resistor R E is meant for bias ...

Car power amps use switching power supplies at 25kHz up, and mains-powered amps have 100/120Hz ripple frequency- a huge difference! Car amps don"t need as big filter capacitors. Instead, I find adding capacitance to the 12VDC feed to the (car) power amp helps the most. I use 100,000-250,000uF with thick wiring. I would try that first.

Seems that too big a capacitor puts more of a load on the transformer on startup. The transformer is one part that is not possible to replace other than a used one on ebay. The 22,000uf measures about 18,800uf whereas I seem to recall the originals measured around 8,000uf out of the 10,000uf they were supposed to be.

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This paper presents an all-digital class-G quadrature switched-capacitor power amplifier (Q-SCPA) implemented in 65 nm CMOS. It combines in-phase (I) and quadrature (Q) signals on a shared capacitor array. The I/Q signals are digitally weighted and combined in the charge domain. Quadrature summation results in a 3 dB signal loss; Hence the Q-SCPA utilizes a class-G dual ...

Quadrature Switched/Floated Capacitor Power Amplifier With Reconfigurable Self-Coupling Canceling

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Transformer for Deep Back-Off Efficiency Enhancement September 2021 IEEE Journal of Solid-State ...

A stereo single-supply amp needs 3 big caps. A stereo bipolar supply amp needs 2 big caps. Yes there are differences in cost because value and voltage. The cost may be like 3/4 rather than 2/3. Depending also on bass expectations. The Dynaco Stereo 80 had smaller caps than the ST120, and marginally lesser bass specs. Many many exceptions. The ...

This paper presents a W-band three-stage amplifier using 0.13-um SiGe BiCMOS process, which is implemented with transformers for inter-stage matching and single-to-differential transformation. However, for balun operation, conventional transformer exhibits imbalance characteristic resulting from the complex parasitic effects arising in the millimeter ...

When a large power amplifier or some other appliance with either a big transformer or a large filter capacitor (or both) is switched on, the initial current drawn from the mains can be many times ...

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