The role of the matching vacuum capacitor

Can a vacuum variable capacitor (VVC) impedance matching circuit reduce capacitance variable time?
Abstract: This article introduces a novel method of reducing the capacitance variable time of a vacuum variable capacitor (VVC) impedance matching circuit of 320 V/1 kW/13.56 MHz common to radio frequency (RF) plasma systems.

How can a vacuum variable capacitor reduce development and design time?
You can reduce development and design time of the motor partas we provide the vacuum variable capacitor with a motor. - The motion of the stepping motor is regularly monitored by adopting an optical encoder. The unexpected step-out of the motor is detected,and it can be automatically recovered.

Why is a vacuum capacitor better than other variable capacitors?
When compared to other variable capacitors,vacuum variables tend to be more precise and more stable. This is due to the vacuum itself. Because of the sealed chamber,the dielectric constant remains the same over a wider range of operating conditions.

Why is VC capacitor a small and high withstand voltage capacitor?
It becomes a small and high withstand voltage capacitor by keeping vacuum insulation. The cur-rent capacity of VCs is therefore,more than 100Arms,and the withstand voltage of VCs is a one-tenth than the atmosphere distance by the vac-uum insulation,so a large current can be supplied in a compact size.

What is a vacuum capacitor used for?
The main applications today are RF plasmas of 2 to 160 MHz where the vacuum capacitor is used as the impedance variation part in an automatic matching networkin the fabrication of chips and flat panel displays.

What is a vacuum variable capacitor module?
It supports a high precision capacitance control. It is ideal for the customers who use a vacuum variable capacitor for the first time or would like to shorten the development period. We made a module design to integrate all the control systems necessary for the capacitance control of the vacuum variable capacitor.

The Variable Vacuum Capacitor (VVC) is an electrical component that can adjust the static capacitance. This is done by adjusting the rotating position of the tuning screw. The major usage of this component is for the control of a Radio Frequency (RF) matching network. Nowadays, the VVC is widely used for the High Frequency (HF) plasma

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A vacuum variable capacitor is a variable capacitor which uses a high vacuum as the dielectric instead of air or other insulating material. This allows for a higher voltage rating than an air dielectric [1] using a smaller total volume.

Signal input and output . 3. Coupling: as a connection between two circuits, AC signals are allowed to pass and transmitted to the next stage of the circuit.. Coupling capacitor circuit model. Capacitor as coupling ...

We realized complicated impedance matching control by using just simple serial commands. It is ideal for such semiconductor manufacturing system applications such as a high frequency plasma matching circuit or RF power supply circuits. - The capacitance of the vacuum variable capacitor can be easily set by serial communication (RS485). You can ...

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125 Years of Vacuum Capacitor Technology September 01, 2021. When Nikola Tesla filed the first patent for a vacuum capacitor on September 15, 1896 - 125 years ago - little did he know the impact this invention would have on today"s modern world. Becoming the father of electricity thanks to his cat. Born in 1856 in a part of Austrian Empire that is now Croatia, ...

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Take, for example, the need to predict the lifetime of the vacuum capacitors employed in many of today"s impedance matching networks. Thanks to AE"s proprietary algorithm and years of experience, customers can accurately predict when their vacuum capacitors need refurbishment, allowing them to reduce unplanned downtime by as much as 80 percent. ...

To achieve this, RF Matching Networks (also known as "Match boxes") adjust the dynamic RF impedance of a plasma chamber to match the impedance of the RF system. This way we can ...

Abstract: This paper describes the properties, characteristics, and uses of the vacuum capacitor. The constructional details of two General Electric vacuum capacitors, the GL-1L38 and the GL-1L22, are discussed. Design considerations are discussed from the viewpoint of both the designer and the manufacturer. Capacitance formulas are given, and ...

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The role of dc self-bias potential in the control of rf sputtering ... It is shown that an important source of such losses is seemingly insignificant amounts of series inductance between the matching network and the powered electrode. Deposition rate cannot then, in general, be related reproducibly to the power delivered by the generator. Data are presented ...

A capacitor is an electrical component that stores energy in an electric field. It is a passive device that consists of two conductors separated by an insulating material known as a dielectric. When a voltage is applied across ...

For impedance matching in a Radio Frequency (RF) power source circuit needed for a membrane process using RF plasma, a Variable Vacuum Capacitor (VVC) is mainly used.

That is why one farad capacitors aren"t made very often and when they are, they are never made with a vacuum dielectric and a one millimeter spacing. Industry does "make vacuum ...

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