The following electrical energy questions concerning the trigonometric functions of real and reactive power were inspired from the following tutorial?

6 electronics.stackexchange.com/questions/607760/the-following-electrical-energy-questions-concerning-thetrigonometric-functions

https://www.electronics-tutorials.ws/accircuits/power-in-ac-circuits.html

- 1. If the cosine of 0° yields a power factor of positive one, then does this signify the consumption of electrical real power due to its exportation out of the realm of electricity and into the thermodynamic realm of heat?
- 2. If the sine of +90° yields a power factor of positive one, then does this signify the electrical production of reactive power by the conversion of real power into reactive power?
- 3. If the sine of -90° yields a power factor of negative one, then does this signify the electrical consumption of reactive power by the conversion of real power into reactive power?

4a. Does the simultaneous combination of the sine of $+90^{\circ}$ and the sine of -90° yield a power factor of negative one due to its mathematical equivalence of taking the sine of $+180^{\circ}$ since that's how much difference (ie, angular phase displacement) exists between -90° and $+90^{\circ}$?

4b. And does this mathematical equivalence also signify the electrical conversion of real power into reactive power if each sine function were to be considered separately from the other?

4c. And does this mathematical equivalence also signify the electrical production of real power by the conversion of real power into reactive power and immediately converted back into real power if both sine functions are considered together at the same time spawning a single composition of conversions rather than a series of multiple conversions?

The following post at Quora is what I think about these questions, but I wanted to pick your brains to see if you draw any different conclusions...

https://electricalscience.quora.com/The-Mathematics-Of-Electrical-Engineering-Has-Already-Spelled-Out-The-Theory-Of-Free-Energy

asked 1 hour ago



166 bronze badges

- Have you considered any other sources? There may be better textbooks explaining what you need... Hughes Electrical Technology may be one. <u>Solar Mike</u> 1 hour ago
- You need to tell us what you think about each of these questions. This looks too much like you have dumped your homework on us, and we need to see that you have made a substantial effort to answer these questions yourself. – <u>Elliot Alderson</u> 34 mins ago