

# Difference between salient pole and cylindrical pole: distinct bold variability

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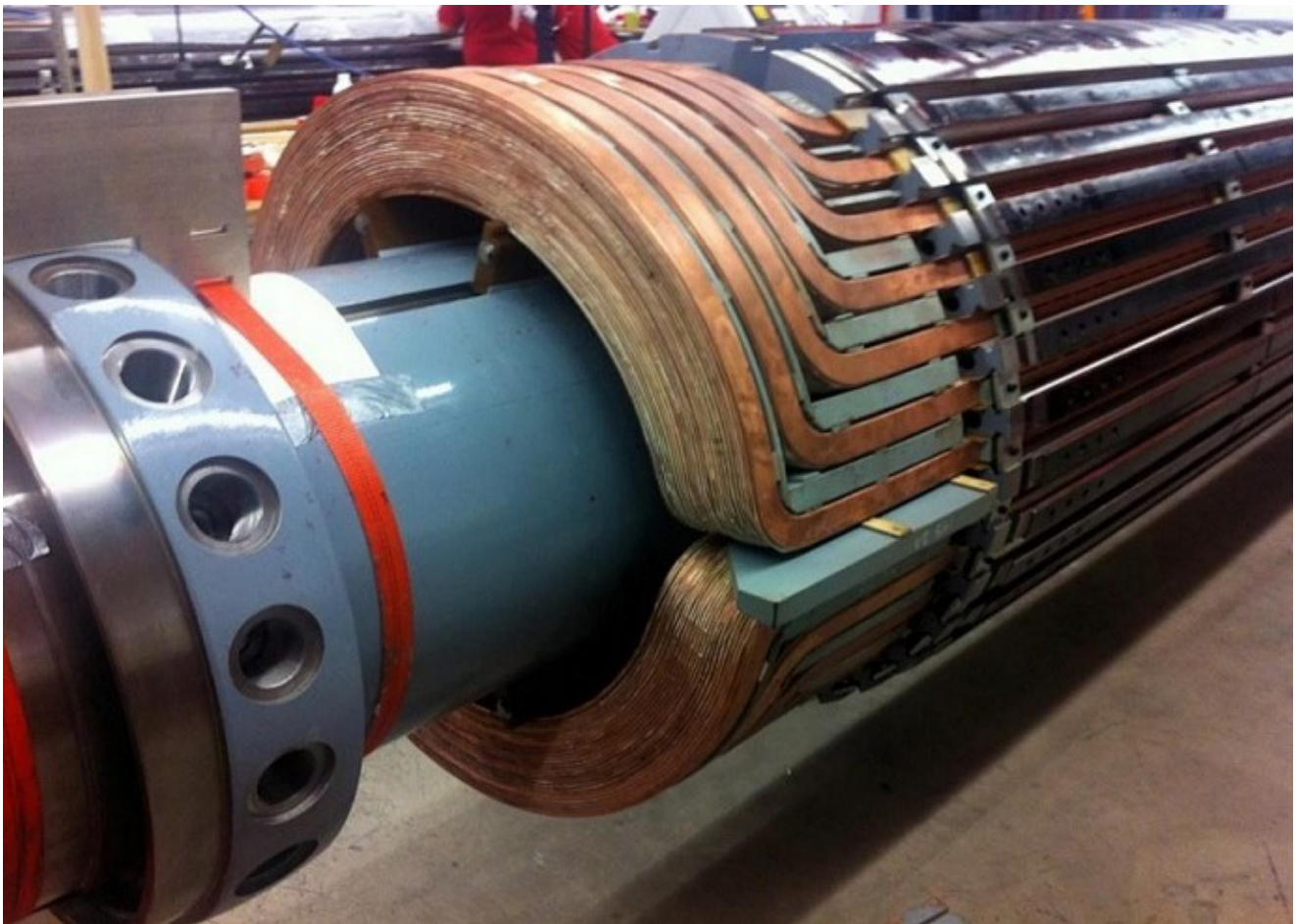
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The difference between salient pole and cylindrical pole lies in their speed, winding, and other features. Salient pole and cylindrical pole, the two types of the rotor in a synchronous generator also differ in their specific benefits. Follow this article at Linquip and find what the difference between salient pole and cylindrical.

## What are Salient Pole rotors?

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Salient pole rotors are large in diameter and shorter in length. They are typically used in lower speed electrical machines (100 RPM to 1500 RPM). Salient pole rotors normally require damper windings to avoid oscillations of rotors during operation. They are mostly used in hydropower plants.



## What is Cylindrical (non-salient) pole?

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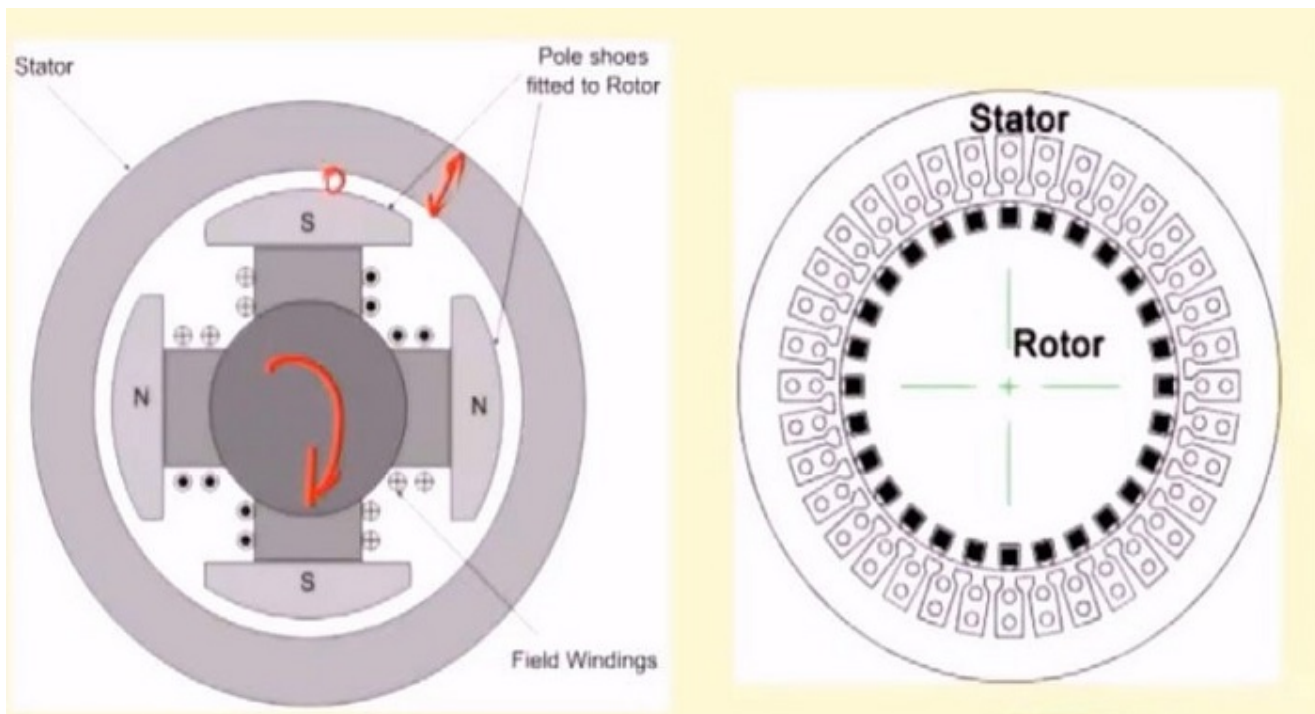
A simple brief definition and explanation. The main story is on the way: salient pole vs cylindrical pole. Cylindrical (non-salient) pole or round-rotor or a drum rotor usually can be found in higher speed higher power applications, such as turbogenerators. A solid rotor is distributed over the edge of the rotor in the rotor with cylindrical poles. However, each slot has different turns, so that sinusoidal flux is created when excited. Though projections from a solid cylinder rotor with the winding are located in the salient pole. Cylindrical pole spins at 3600 or 1800 with 2 or 4 poles.

## What is the Difference between salient pole & cylindrical pole (non-salient)?

As mechanical energy is converted into electrical energy, a synchronous generator has a stator and a rotor. The stator consists of stationary windings of the armature and the rotor consists of the winding of the ground. There are two types of rotor:

1. **Salient Pole type**
2. **Cylindrical pole**

So, the question now is: what is the difference between salient pole and cylindrical pole? First, as it is said before, cylindrical pole (non-salient) machinery tends to rotate rapidly, but salient pole machines break down due to mechanical stress. Another difference between salient pole and cylindrical pole is that salient pole is more stable than the cylindrical pole (non-salient). But why? Saliency promotes reticence that enhances stability. Due to the size and lower speed of the rotor, they are more stable due to large inherent inertia.



The third difference between salient pole and cylindrical pole is that the cylindrical pole (non-salient) design is much more durable and has a much lower winding loss than a salient pole unit. Next, its diameter is smaller but the axial length is longer. Also, both winding and noise are less than salient polar rotors. In cylindrical pole rotors, damper windings are not required. Flux is sinusoidal and thus makes the waveform better. non-salient pole rotors are used in nuclear, gas, and thermal power plants.

The last difference between salient pole and cylindrical pole is that the rotor of the cylindrical pole can run at a higher rotational speed, provided that the rotor is easily balanceable and the centrifugal force can be equally distributed.

By reading this article, you learned about the distinguishing features of salient poles and cylindrical poles. However, there might be some questions left in your mind. So, please sign up and leave your questions in the comments. We are for sure to answer all the items regarding the difference between salient pole and cylindrical pole at Linqip.

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