

2.7 COMMUTATION AND INTER POLES

In larger machines the commutation process would involve too much sparking, which causes brush wear, noxious gases (ozone) that promote corrosion, etc. In these cases it is common to use separate commutation inter poles. These are separate, usually narrow or seemingly vestigial pole pieces which carry armature current. They are arranged in such a way that the flux from the inter pole drives current in the commutated coil in the proper direction

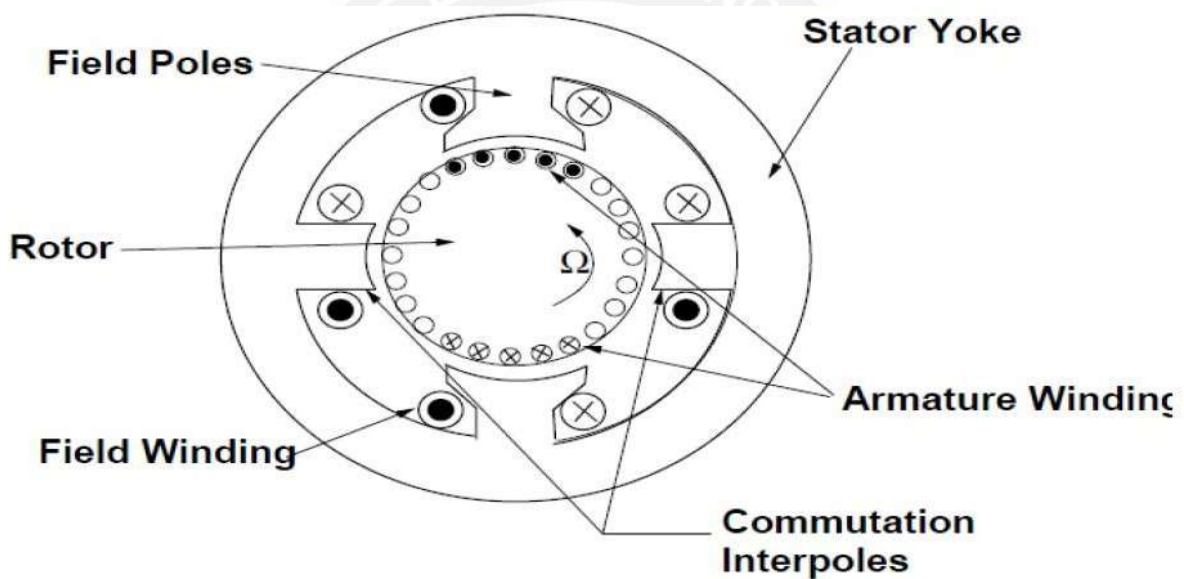


Figure 2.7.1 Inter poles

[Source: “Electric Machinery Fundamentals” by Stephen J. Chapman, Page: 341]

Remember that the coil being commutated is located physically between the active poles and the inter pole is therefore in the right spot to influence commutation. The inter pole is wound with armature current (it is in series with the main brushes). It is easy to see that the inter pole must have a flux density proportional to the current to be commutated. Since the speed with which the coil must be commutated is proportional to rotational velocity and so is the voltage induced by the inter pole, if the right numbers of turns are put around the inter pole, commutation can be made to be quite accurate.