EFFECT OF MOTOR DESIGN PARAMETERS ON COGGING TORQUE – PART 2

Reduction of cogging torque helps in reducing the motor noise generated due to electromagnetic causes.

**Shape of Magnet**

- Magnet shaping will change the airgap flux profile and hence the harmonics.
- Elimination or reduction of certain harmonics will lead to lower cogging torque.

![Uniform ring magnet vs Shaped ring magnet](image)

**Size of Slot Opening**

- Smaller slot opening offers lower change in magnetic circuit reluctance and hence reduce the cogging torque.

![Slot opening comparison](image)

**Number of Pseudo Slots**

- Pseudo slots increase the effective number of teeth as seen by airgap flux.
- Number of pseudo slots per tooth resulting in fractional slot/pole system help to lower the cogging torque.
- Mechanical stability and production feasibility need to be considered while deciding the number of pseudo slots and its dimensions.

![Cogging torque comparison](image)