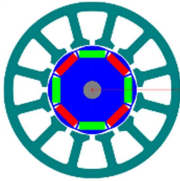


IPM OR SPM FOR WET RUNNING PUMP APPLICATIONS

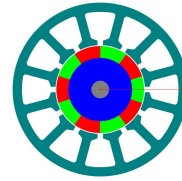
For a wet running pump application, a move from interior permanent magnet motor (IPM) with sintered neo magnet to surface mounted permanent magnet motor (SPM) is possible without increasing the motor size by using an anisotropic magnet (MQA™).

Difference between the two motors

IPM



SPM



Useful in an application where wide speed range is needed

Useful in an application where wide speed range is **not** needed

Magnet is protected from the opposing field generated by the winding

Magnet is closer to the airgap and hence provides higher airgap flux

Presence of Reluctance torque

No reluctance torque

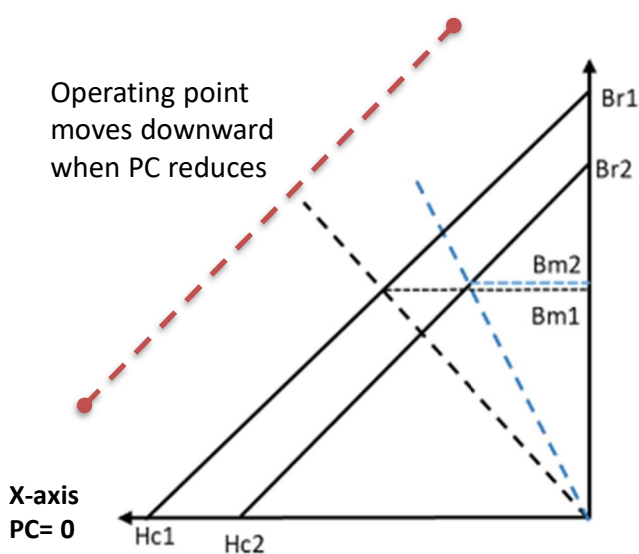
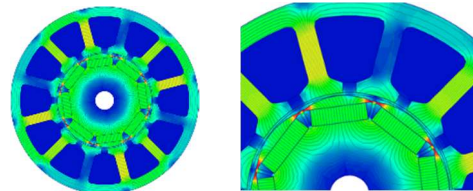
Magnet is away from the airgap

Simple control

- Needs stronger magnet to achieve higher airgap flux
- Higher flux loss in the soft magnetic part surrounding the magnet

Complex control

Motor performance of same sized IPM and SPM



- Wet running pump application, as the rotor comes in contact with the fluid, there is a need for corrosion protection on magnet
- For sintered neo plate magnet based IPM motor:
 - Presence of overmolding on rotor \Rightarrow Increase in effective airgap \Rightarrow Permeance co-efficient decrease
 - The magnet operating point is B_{m1}
- For PPS based injection molded (IM) MQA™ based SPM motor:
 - No need for a PPS overmolding on the rotor \Rightarrow Reduction in effective airgap \Rightarrow Permeance co-efficient increase
 - The magnet operating point is B_{m2}
- A SPM with IM MQA™ magnet can meet the performance of a IPM with sintered neo magnet in the same envelope size.