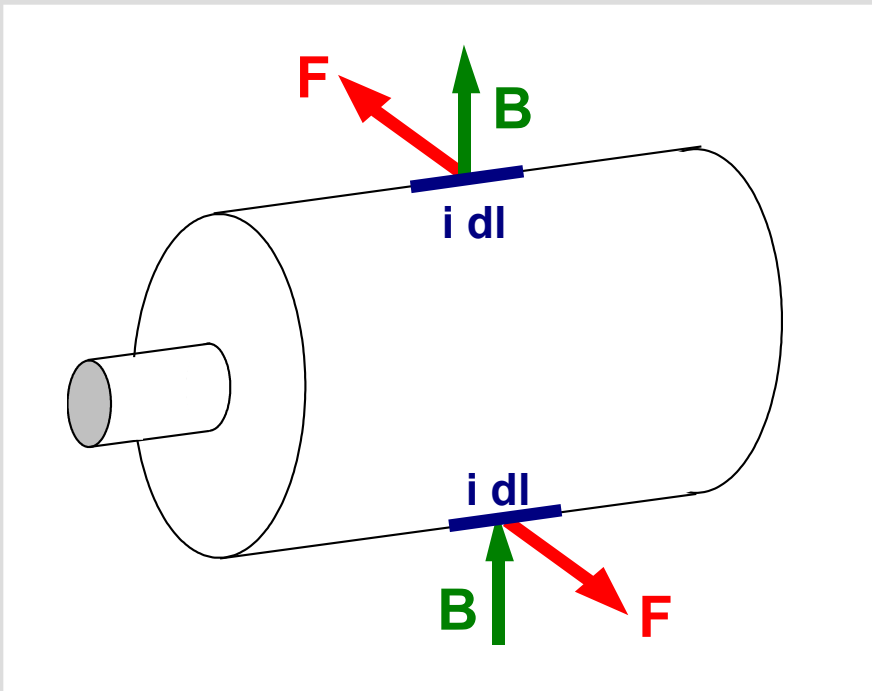


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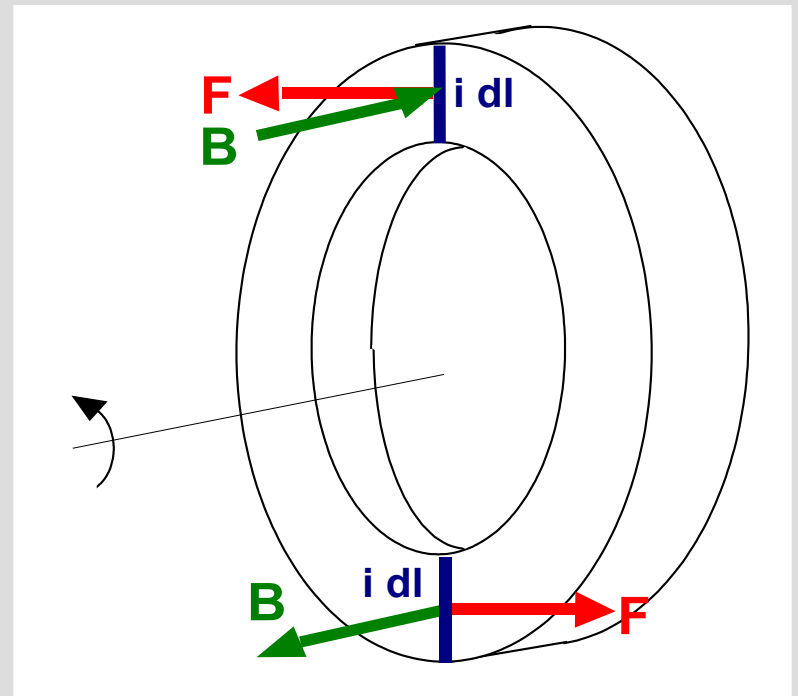
Fundamentals

Radial-Flux Machine



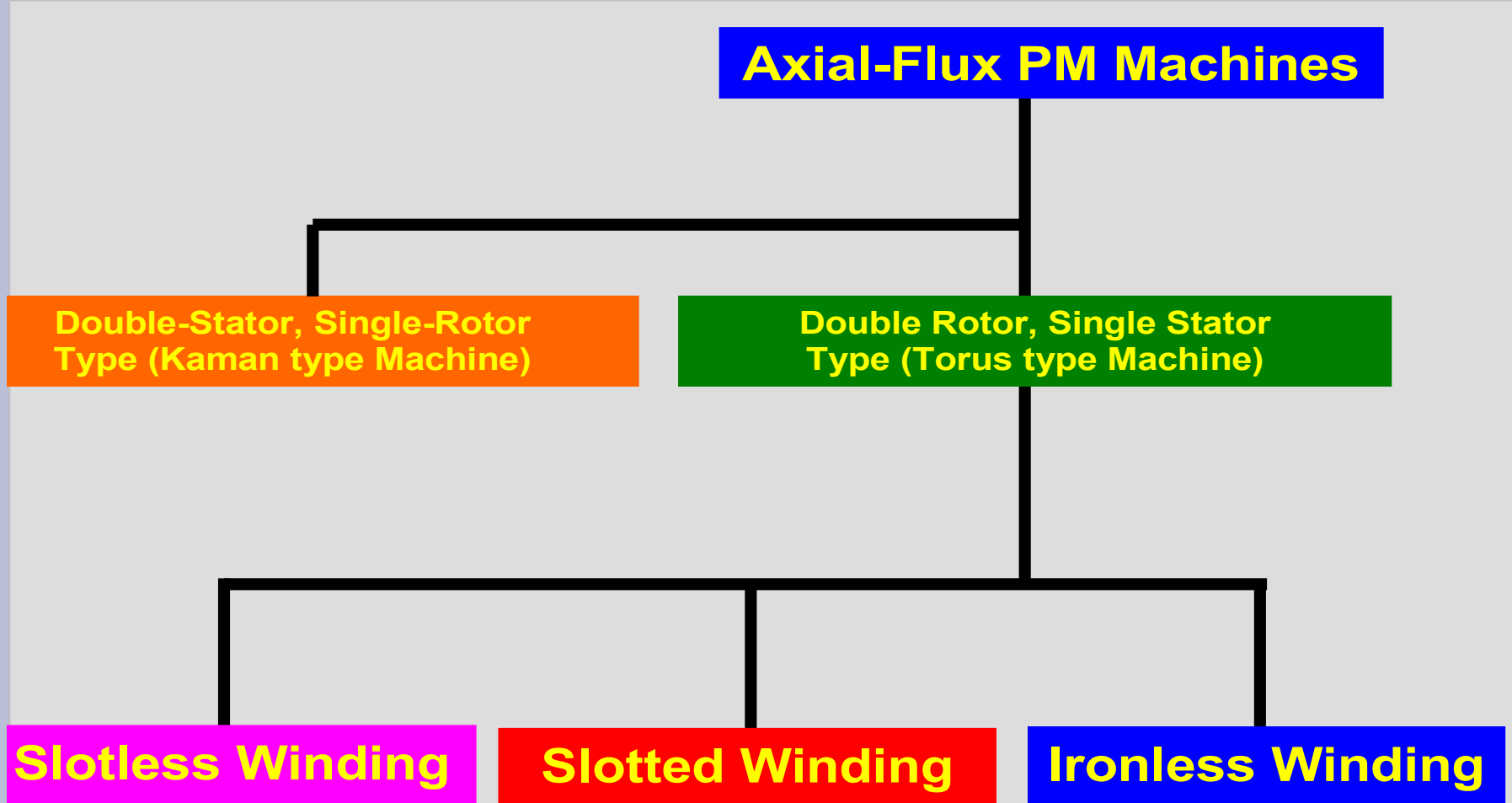
$$T = k_{rf} D^2 L$$

Axial-Flux Machine

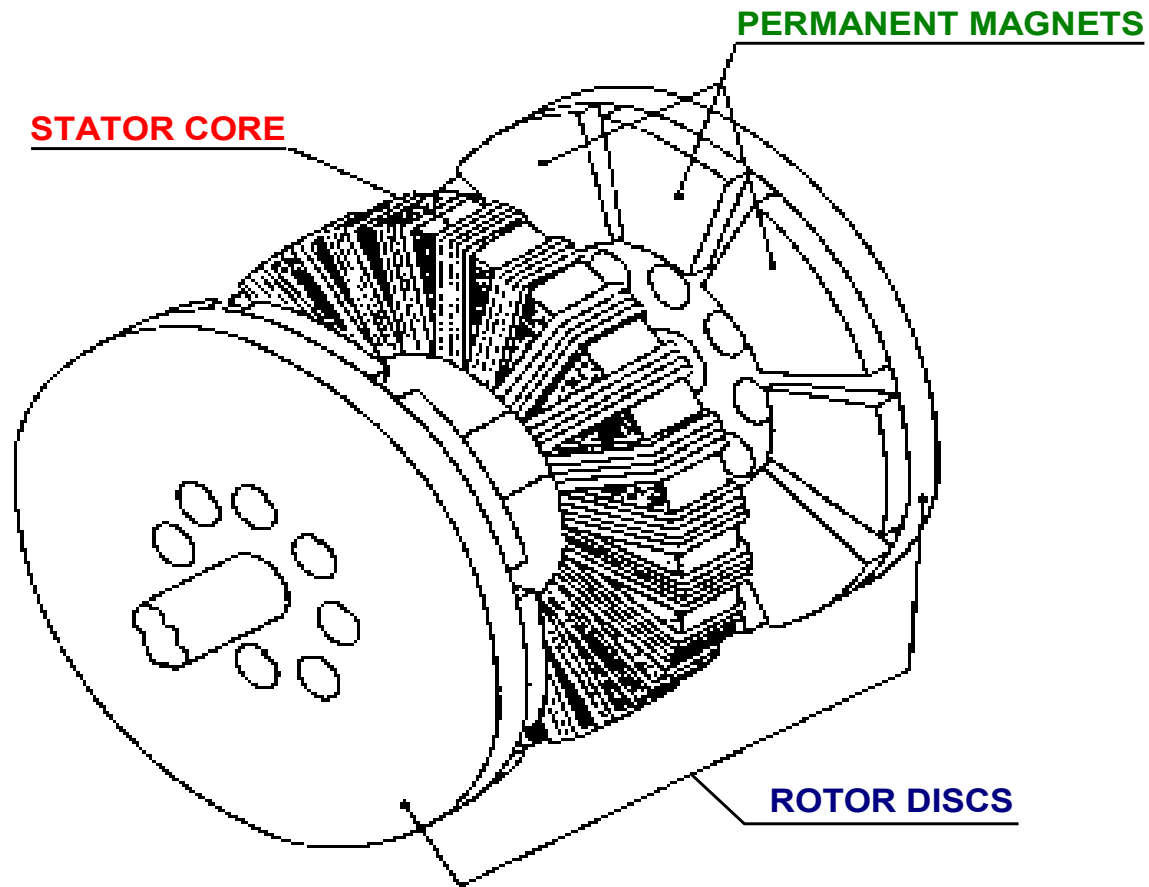


$$T = k_{af} D^3$$

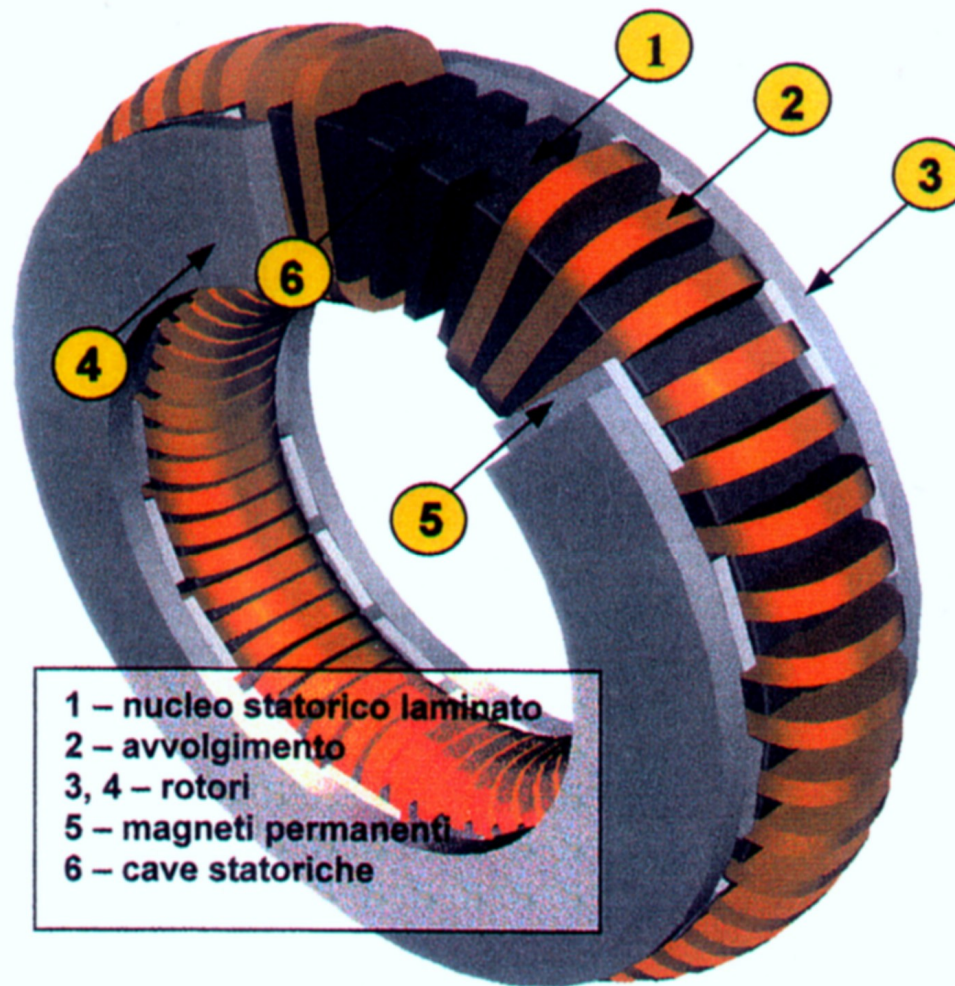
Machine Topologies



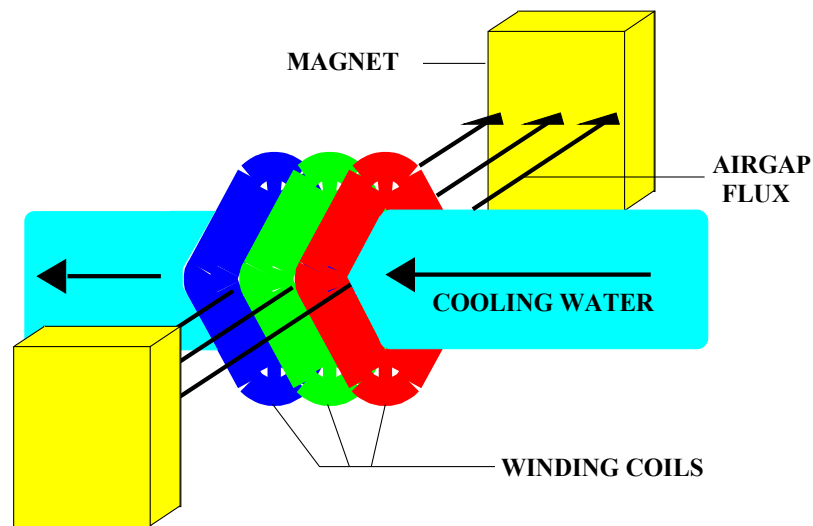
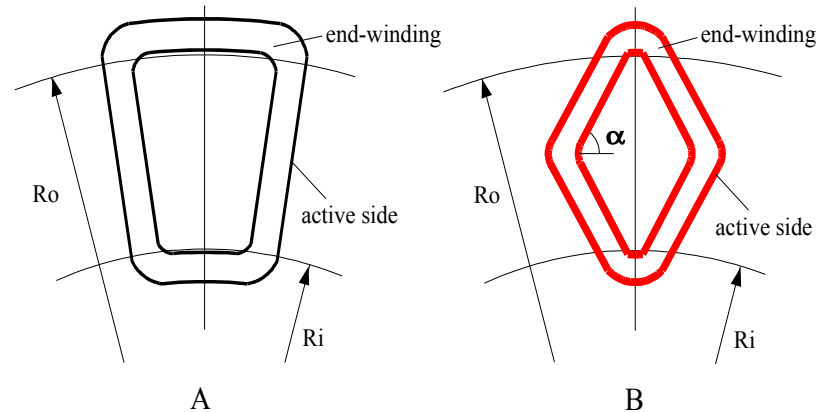
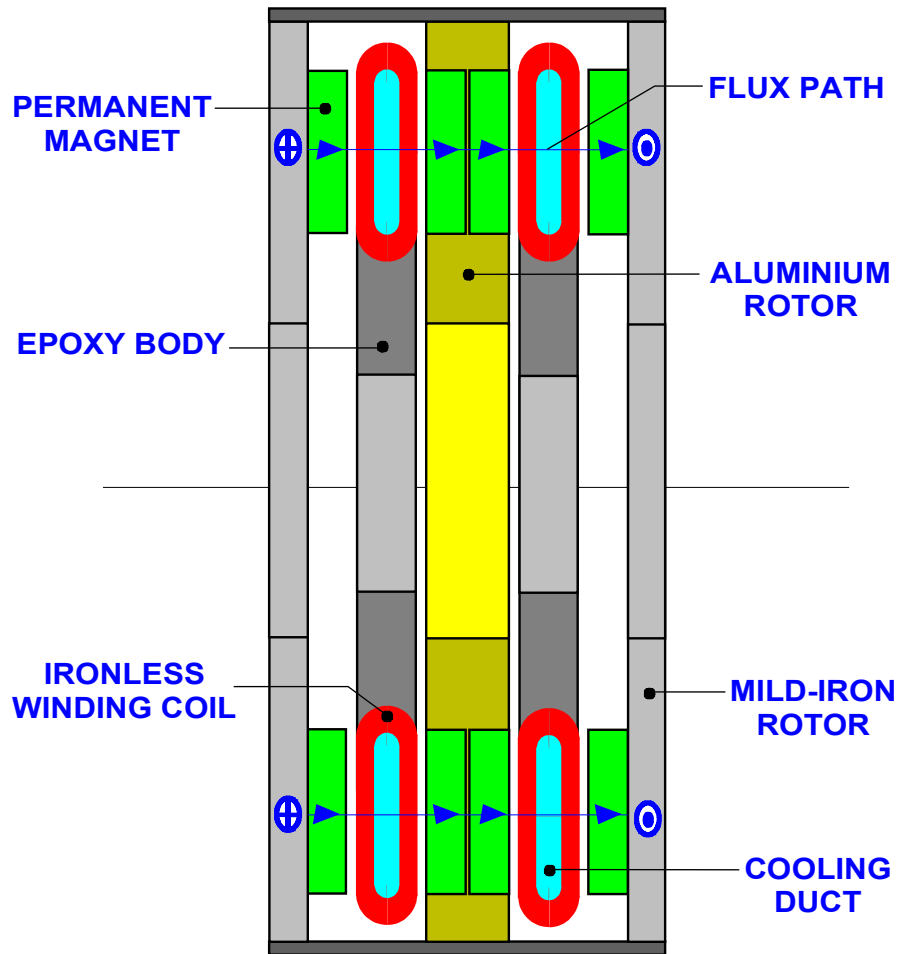
Slotless Winding Axial-Flux Machine



Slotted Winding Axial-Flux Machine



Water-Cooled Ironless Winding Axial-Flux Machine



Why Axial Flux Machine?

Best-->5 Worst--> 1

	Radial Flux	Axial Flux	Transverse Flux	Vernier	DSPM
Torque Density	1	4	5	3	2
Cost	5	4	1	4	3
Overall Efficiency	4	5	2	1	3
Torque Ripple	5	5	2	3	1
Manufacturability	5	4	1	3	2
Tot.	20	22	11	14	11

- Recommendation → Axial flux Torus type geometry.