

Teaching Field Oriented Control using Animation

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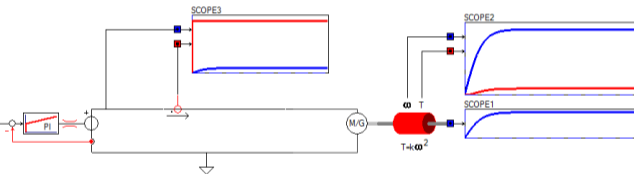
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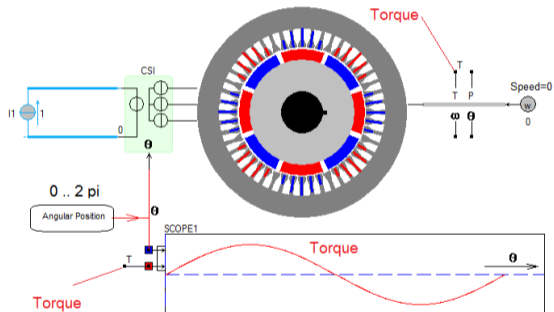
Generic Machine

- Generic Machine Behavior
- Generic Drive Dynamics
- Understanding the Machine
- Understanding the Control



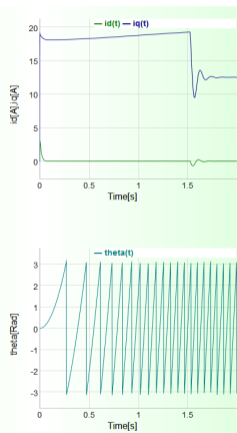
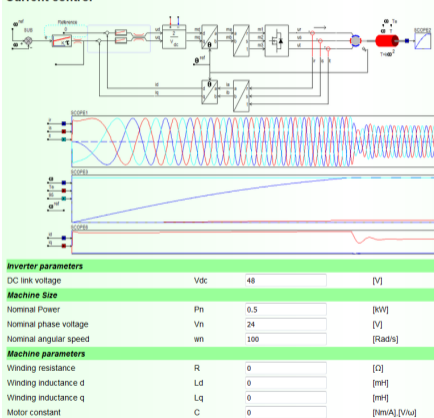
PMSM motor drive

- Generic Model
- Basic behavior
- Visualization of behavior
- Easy access to parameters



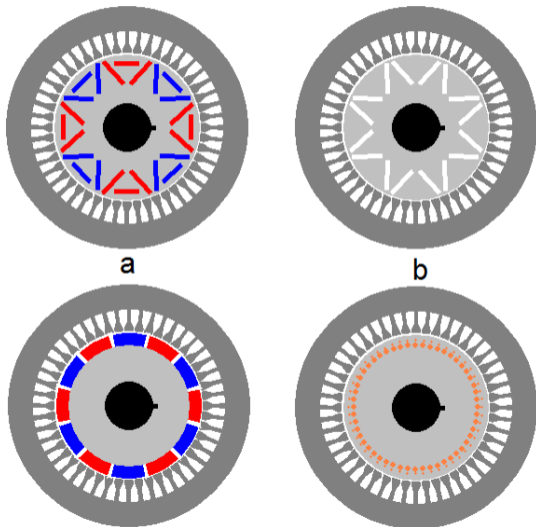
- Easy access
- No mathematics
- Direct result

Current control



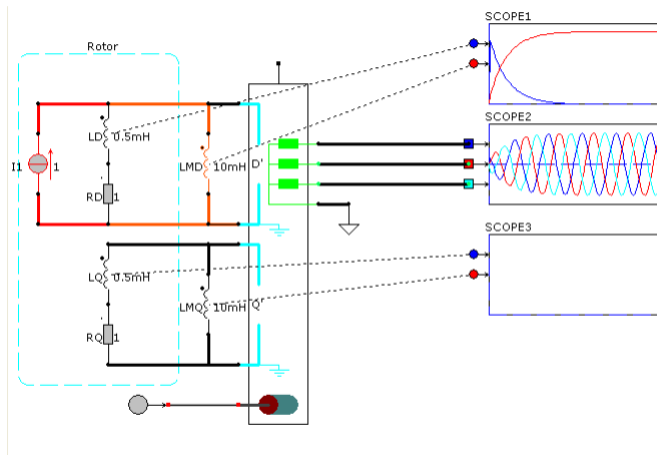
Machine types

- IM
- PMSM
- IPM
- SynRel

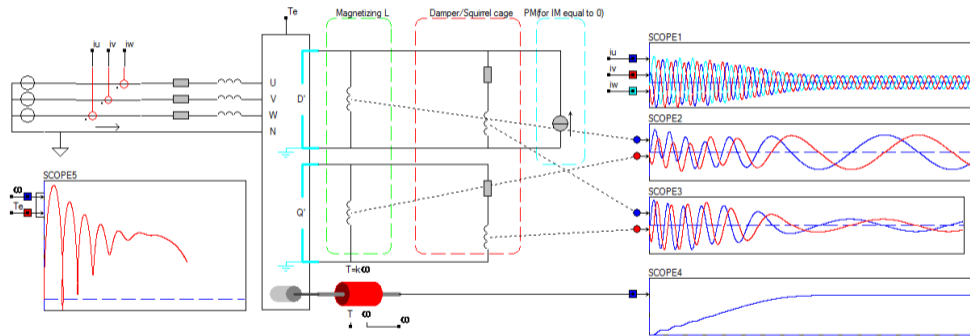


Ideal Rotating Circuit Transformer IRCTF

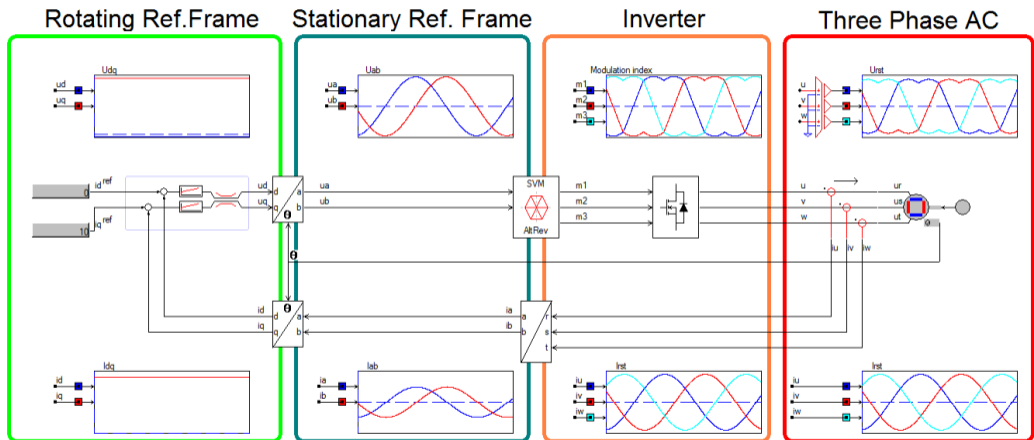
- Each AC machine type
- Rotor and Stator
- Damper windings
- rotating/stationary frames



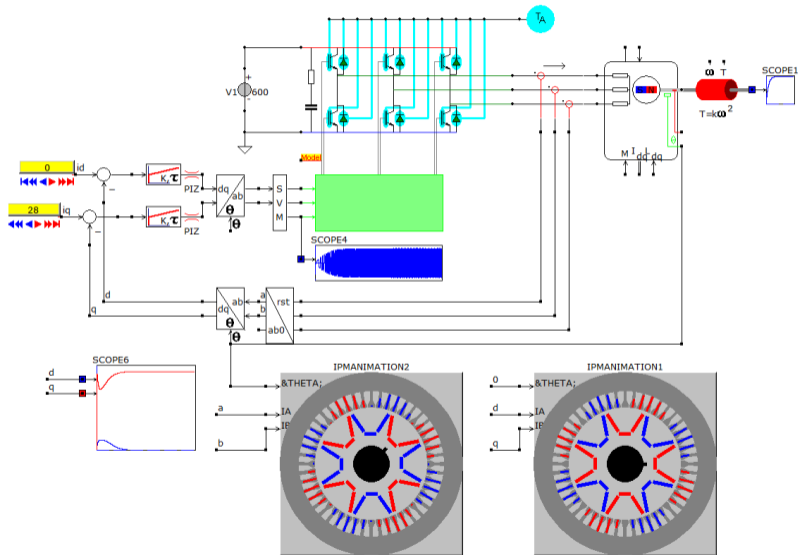
IRCTF Induction Machine start-up



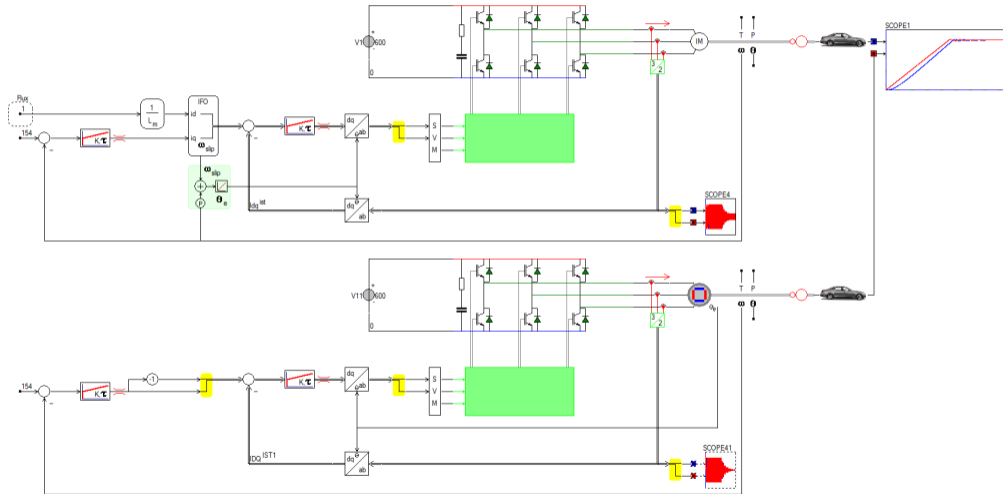
Generic Field Oriented Control



Field Oriented Control of Interior Permanent Magnet Machine



Field Oriented Control of IPM versus IM



Conclusion

- Basic knowledge of drives should be available
- Understand the similarities in AC machines
- First understand the principle of D and Q in AC machines
- IRCTF explains D and Q
- Visualize Field Oriented Control using Animation!

Thank you!

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