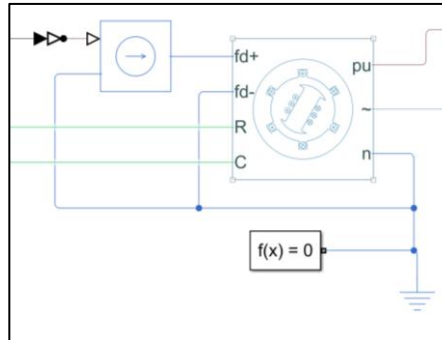


Simscape : Synchronous Machine

In order to validate your results with the synchronous machine in Simscape here are the values you can enter for now.

The Simscape synchronous machine to be use is the : Synchronous Salient Pole.

Obviously the excitation is generated by a current source.



Nearly all the values are defined as variables and here are the values you need to know, you can infer the missing ones yourself.

```
%% SM parameters
% Main
Sn =      ;
Un =      ;
If0 = 2; % Will be determined in practice afterward
Ifn =     ;
Fn =      ;
Pp =      ;
% Impedances (p.u.)
ra =      ;
xl = 0.072;
xd =      ; % parametres de l'exercice
xq =      ;
xdp = 0.184;
xdpp = 0.115;
xqpp = 0.207;
% Time Constants ( short circuit )
Tdp = 0.012; % s
Tdpp = 0.003; % s
Tqpp = 0.003; % s
```

Block Parameters: Synchronous Machine Salient Pole

Synchronous Machine Salient Pole

Synchronous machine with a salient pole rotor parameterized using fundamental or standard per-unit parameters. For simulation with standard parameters, transient and subtransient parameter values are converted to fundamental per-unit parameters based on classical definitions.

Right-click on the block and select Simscape block choices to access variant implementations of this block.

Settings

Main
Impedances
Time Constants
Saturation
Initial Conditions

Rated apparent power:

Sn

V*A

Rated voltage:

Un

V

Rated electrical frequency:

Fn

Hz

Number of pole pairs:

Pp

Specify parameterization by:

Standard parameters

Specify field circuit input required to produce rated terminal voltage at no load by:

Field circuit current

Field circuit current:

If0

A

Zero sequence:

Exclude

Rotor angle definition:

Angle between the a-phase magnetic axis and the d-axis

OK

Cancel

Help

Apply

Block Parameters: Synchronous Machine Salient Pole

Synchronous Machine Salient Pole

Synchronous machine with a salient pole rotor parameterized using fundamental or standard per-unit parameters. For simulation with standard parameters, transient and subtransient parameter values are converted to fundamental per-unit parameters based on classical definitions.

Right-click on the block and select Simscape block choices to access variant implementations of this block.

Settings

Main
Impedances
Time Constants
Saturation
Initial Conditions

Stator resistance, Ra:

ra

Stator leakage reactance, Xl:

xl

d-axis synchronous reactance, Xd:

xd

q-axis synchronous reactance, Xq:

xq

d-axis transient reactance, Xd':

xdp

d-axis subtransient reactance, Xd'':

xdpp

q-axis subtransient reactance, Xq'':

xqpp

OK

Cancel

Help

Apply

Synchronous Machine Salient Pole

Synchronous machine with a salient pole rotor parameterized using fundamental or standard per-unit parameters. For simulation with standard parameters, transient and subtransient parameter values are converted to fundamental per-unit parameters based on classical definitions.

Right-click on the block and select Simscape block choices to access variant implementations of this block.

Settings

Main
Impedances
Time Constants
Saturation
Initial Conditions

Specify d-axis time constant:
Short circuit

d-axis transient short-circuit, T_d' :
Tdp
s

d-axis subtransient short-circuit, T_d'' :
Tdpp
s

Specify q-axis time constant:
Short circuit

q-axis subtransient short-circuit, T_q'' :
Tqpp
s

OK
Cancel
Help
Apply

Synchronous Machine Salient Pole

Synchronous machine with a salient pole rotor parameterized using fundamental or standard per-unit parameters. For simulation with standard parameters, transient and subtransient parameter values are converted to fundamental per-unit parameters based on classical definitions.


Right-click on the block and select Simscape block choices to access variant implementations of this block.

Settings

Main
Impedances
Time Constants
Saturation
Initial Conditions

Magnetic saturation representation:
None

OK
Cancel
Help
Apply

Block Parameters: Synchronous Machine Salient Pole

×

Synchronous Machine Salient Pole

Synchronous machine with a salient pole rotor parameterized using fundamental or standard per-unit parameters. For simulation with standard parameters, transient and subtransient parameter values are converted to fundamental per-unit parameters based on classical definitions.

Right-click on the block and select Simscape block choices to access variant implementations of this block.

Settings

Main

Impedances

Time Constants

Saturation

Initial Conditions

Initialization option:

Set real power, reactive power, terminal voltage, and terminal phase ▾

Terminal voltage magnitude:

0

V ▾

Terminal voltage angle:

0

deg ▾

Active power generated:

0

V*A ▾

Reactive power generated:

0

V*A ▾

OK

Cancel

Help

Apply