



















$\theta_s$	Angle between stator and rotor flux
P	Number of pole pairs
$\omega_{sr}^*$	Slip speed reference

## APPENDIX

**Table 3.** DSIM parameters (Radhwane S. et al 2012)

DSIM Mechanical Power	4.5 kW
Nominal voltage	220 V
Frequency	50 Hz
Pole pair number	1
Stators 1,2 resistances	3.72 $\Omega$
Rotor resistance	2.12 $\Omega$
Stators 1,2 self inductances	0.022 H
Rotor inductance	0.006 H
Mutual inductance	0.3672 H
Moment of inertia	0.0625Nms <sup>2</sup> /rad
Friction coefficient	0.001Nms/rad