One can notice that the stator voltage is equal to that of the grid, while the currents obtained are sinusoidal, which implies a clean energy without harmonics supplied or drawn by the DFIG. The current and stator voltage are in phase opposition, this means that the stator active power is supplied from the generator to the grid.

8 Conclusion

The object of this work consists to control, analysis, development, modeling and simulation of a wind system operating at different wind speeds.
The application of the orientation control of the rotor flow as the direct axis "d" gives a simple stabilization of the wind system.
Indeed, it not only allows us to simplify the model of the machine but also to decouple torque control and the flow. From numerical simulation, it was found that effectively the rotor flow orientation technique to decouple the flow, the powers so that the direct component of the rotor current control reactive power and the quadrature component control the active power. This allows us to obtain high dynamic performance similar to that of the MCC. In this respect, this work can be continued and completed by the implementation of this command in a FPGA card.

Annex:

TABLE I. PARAMETERS OF WIND POWER SYSTEM

Parameters of the turbine	
Diameter of blade	R=35.25 m
Gain multiplier	G=16
Inertia of the turbine	J=0.3125 Kg.m2
Coefficient of viscosity	f=0.00673 m.s-1
Parameters of the DFIG	
Stator resistance	Rs=0.455
Rotor resistance	Rr=0.62
Stator inductance	Ls=0.084H
Rotor inductance	Lr=0.081H
Mutual inductance	Msr=0.078H
Number of poles	P=2

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