

Impact of large wind farms on Power Quality. First experiences gained in the Argentinian Power System

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SUMMARY

Nowadays in Argentina a great number of large wind farms are being built. The main reason for this is that the Government is encouraging players to invest in the renewable energy sector by means of attractive economic signals.

As a result, the wind power installed capacity, which is about 200 MW at the moment, is expected to increase significantly. For instance, several projects representing a potential installed capacity of 750 MW have already been put out to tender within the GENREN I program framework. In fact, some of these wind farms are already operating, while others are currently being built. In addition, future projects representing almost 1000 MW are being put out to tender within the GENREN II program framework.

Most wind farms are being installed in the Patagonia region since this area is particularly favourable in terms of wind resources. Such plants are connected to the main grid.

On the one hand, this fact represents a significant change in terms of environmental issues. On the other hand, it is widely known that wind turbines are prone to emit disturbances, mainly harmonics and flicker, towards the grid they are connected to.

For this reason, it is essential to assess carefully their impact on Power Quality. Additionally, in the Argentinian grid code the disturbances produced by wind farms are not properly dealt with.

In order to assess the actual levels of disturbances emitted by the wind farms, a harmonic and flicker portable measurement system, which is based on an Electric Field Sensor (EFS) and a Magnetic Field Sensor (MFS), was employed [3].

This paper deals with the results obtained from the field measurements and with an analysis of the current regulatory framework, emphasising its weakest points, particularly in terms of Power Quality aspects.

KEYWORDS

Electric Field Sensor (EFS) – Emission – Flicker – Harmonics – Magnetic Field Sensor (MFS) – Power Quality – Wind Farm – Wind Turbine.

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