

Grid Impedance Estimation through Grid-Forming Power Converters

<https://www.youtube.com/watch?v=47OLNbSvjNE>

The main aim of the project is to design a grid-forming power conversion system which uses to monitor the grid Impedance Estimation through Frequency converter.

This project proposes an impedance estimation method well suited to grid-forming power converters. The method benefits from easy implementation without any harmonic distortion or safety concern.

The proposed method contains four operating modes, most of which operate non-intrusively without disturbing power systems. The method consists of four operating modes, which work well in voltage and power control cases. In the voltage control case, the voltage amplitude perturbation or phase angle information is exploited. Subsequently, the grid inductance and resistance are derived from power measurement. Alternatively, the active or reactive power information serves to estimate the grid impedance in the power control case. The proposed method features an easy implementation without any harmonic distortion, safety concern, or dependence on control parameters.

The major building blocks of this project are:

- Regulated Power Supply.
- PIC Microcontroller.
- LED Indicators.
- Reset.

- Crystal Oscillator.
- Step down transformer.
- Rechargeable battery.
- Charging circuit.
- 555 TIMER IC.
- Step up transformer.
- H-Bridge circuit.
- POT.

