



Measuring Three Phase Power

Objective

To design a 3-phase AC power monitoring solution and using an FPGA for industrial power management.

Background

Most industrial machinery uses 3phase power, but there is no cheap way to measure the power usage. Power mismanagement increases operational costs, creates additional heating, as well as contributes to a reduction in the product's life expectancy. With 3 phase power monitoring, quality we can proactively prevent issues in manufacturing.



ADE9078 3-phase AC Power Meter







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Voltage Measuring Design

Current Measuring Design





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Approach & Summary

Researched solutions for three phase power monitoring. Main components of our device 1. ADE9078 Polyphase IC chipset

- High performance energy polyphase measuring solution
- Support many measurements like total active power, watthour, current and voltage RMS per phase
- 2. iCE40 Ultra FPGA board
- Low cost and flexible FPGA
- Built-in DSP functionalities like FFT to measure phase directly
- Pipeline processing and reprogrammability to have multiple real time waveforms, noise detection/removal, and predictive analysis

Continuous feedback with advisor for Eagle circuit schematic optimizations

Team Members

Lead	Esteban Granizo (EE)
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