

JUPITER: Analysis of the Start Up of a generator set and Load Applied.

The purpose of this document is to show the ability of the JUPITER instrument to analyse the start up transient of a genset and of the subsequent application of the load. JUPITER is a complete analysis recording measurement system, capable of measuring and memorising the functioning parameters of an electrical system. As well the display in real time on the integrated screen the recorded data can be viewed and analysed with our PC software called PQ Studio manager

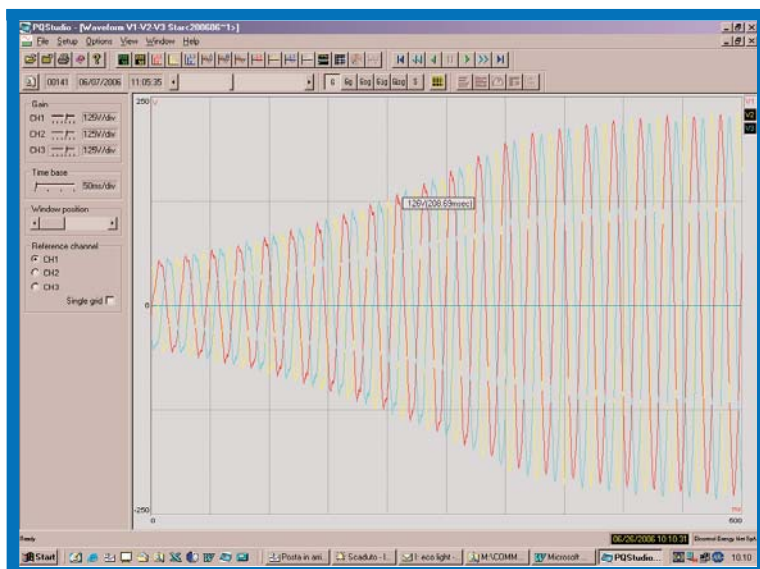


In this application, the measurement is set for the analysis of electrical transients during the functioning of a generator set, the system has been programmed for recording on the internal memory the instantaneous numerical values of the three voltages and of the three large currents which occur on the network, with a recording interval of 310 micro seconds. In this way is possible to reconstruct in a very detailed way the changing electrical parameters of the system allowing the exact reconstruction of each situation, which is not recordable with standard equipment, even of the last generation. In this setup mode, the JUPITER in the standard combination will record up to 3 hour3 consecutively

The following are some of the pages available in a graphic and numerical format which the JUPITER-PQ Studio provides in an actual case of measurements made on an isolated genset. In the selected example the instantaneous values of the three voltage between the phases or the absence of the phases.

The pages also show the real wave forms, which show the fast events and give an overview of the electrical supply system,

Start up transient and generating voltage.

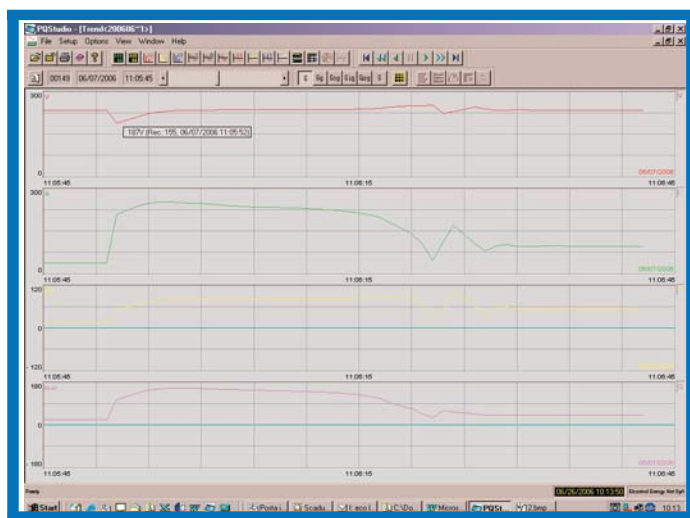
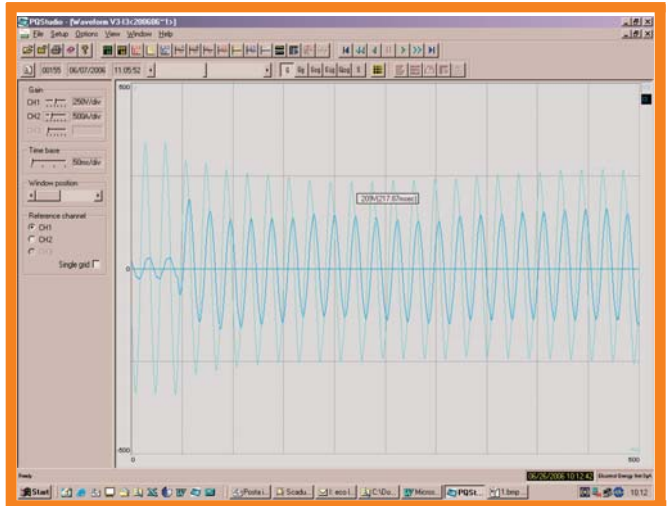


The PQ Software Studio can display the path of all the recorded parameters, in the example case the instantaneous values of the three phases are shown between the phases and the neutral during the start up period (the voltage between the phases is also available). The cursor allow the display of the exact value at the selected point; the time scale is programmable, with full scale from 50ms to 500ms (as in the figure); the full scale is programmable for each parameter (in the case of the voltage , with full scale from 50V to 2kV)

Load Application.

For evaluating the effect of the applied load, the display can show both current and voltage on the same graph; in this way the effect of a very variable current is very clear, with a phase angle different from the voltage which must support it, which includes the system and the generator. In the example, you can see how the voltage supplied by the gen set varies from a true RMS value of 239V to a value of 156V in the range of 8 periods (160 millisecond), for a load of 170Kva.

With the same graphs it is possible to quantify the frequency of the supply in each period, for evaluating the dynamic effect of the load applied produces on the gen set



Course of the true RMS value

In order to chart in an effective way the functioning dynamics of the system, it is possible to display the trend of the true RMS value of the electrical parameters in a window of 1.2 millisecond. In the example the voltage, current, active power, reactive power are shown.

From the above example it is clear that the Jupiter system is a superb user friendly instrument for the detailed analysis of the electrical system dynamics during and after fast changing events on a three phase network; The unique ability to continue recording which guarantees the recording of the transients which otherwise

MAIN FEATURES:

- Shock and water proof IP67 carrying plastic carrying case.
- 320x240 pixel, color, graphic LCD screen (mm. 115.2x89,3)
- 3 Voltage inputs: dual scale 500/1000Vrms; accuracy +/-0.2% +/- 0,05%,
- Maximum input Voltage : 600V CAT III
- 3 Current inputs for exchangeable flexible current transducers, without external amplifiers (1000Arms) or ct Clamps (1000A/1Vac or 3000A/1Vac); accuracy +/- 0,2%; +/- 0,05%fs.(+/- current transducers errors)
- 1 Auxiliary channel with clamps with 0-Vac output; accuracy 0.2% 0.05% f.s. (+/- current errors)
- Transients (max. Vpk 1400V) duration 500us.
- Frequency range measurable : fom 40 to 80 Hz.
- From 40 to 80 Hz. Harmonic and Interharmonics up to 31st . max 80 Hz.
- Plastic alphanumeric keyboard.
- Scope function (oscilloscope) for the display of waveform and transient (single and recurring events)
- Vector diagram display of voltage and current phase sequence.
- Graphic display of the voltage and current harmonics
- Measurement display (full 3-phase analysis: V, A, VA, W, VAR,P.F.; Hz,KWh,KVAR,Cog,DVAh,THD%,ecc
- Power Quality analysis according to EN50160: frequency, Voltage variation, voltage dips, phase to phase voltage swells, short and long interruption,supply voltage unbalance, harmonics)
- Event recording (samples recording, recording of the processed data.)
- Removable compact flash (512Mb included, support up to 2 Gb or more according to available size.
- Power Supply. Mains deskstop power supply. Battery 2 independent battery compartments, 5AA rechargeable NiMH batteries each . 2300 mAh.
- Language : Italian, english,spanish,french, german.
- Standards and Regulations: Compatible with power quality standards IEC61000-4-30;IEC61000-2-8;EN61000- 4-15;EN61000-4-7;EN50160;EN60868; EN60868-0
- Internal Software: Software updatable/ upgradeable by the user via internet
- Linux operative system.

