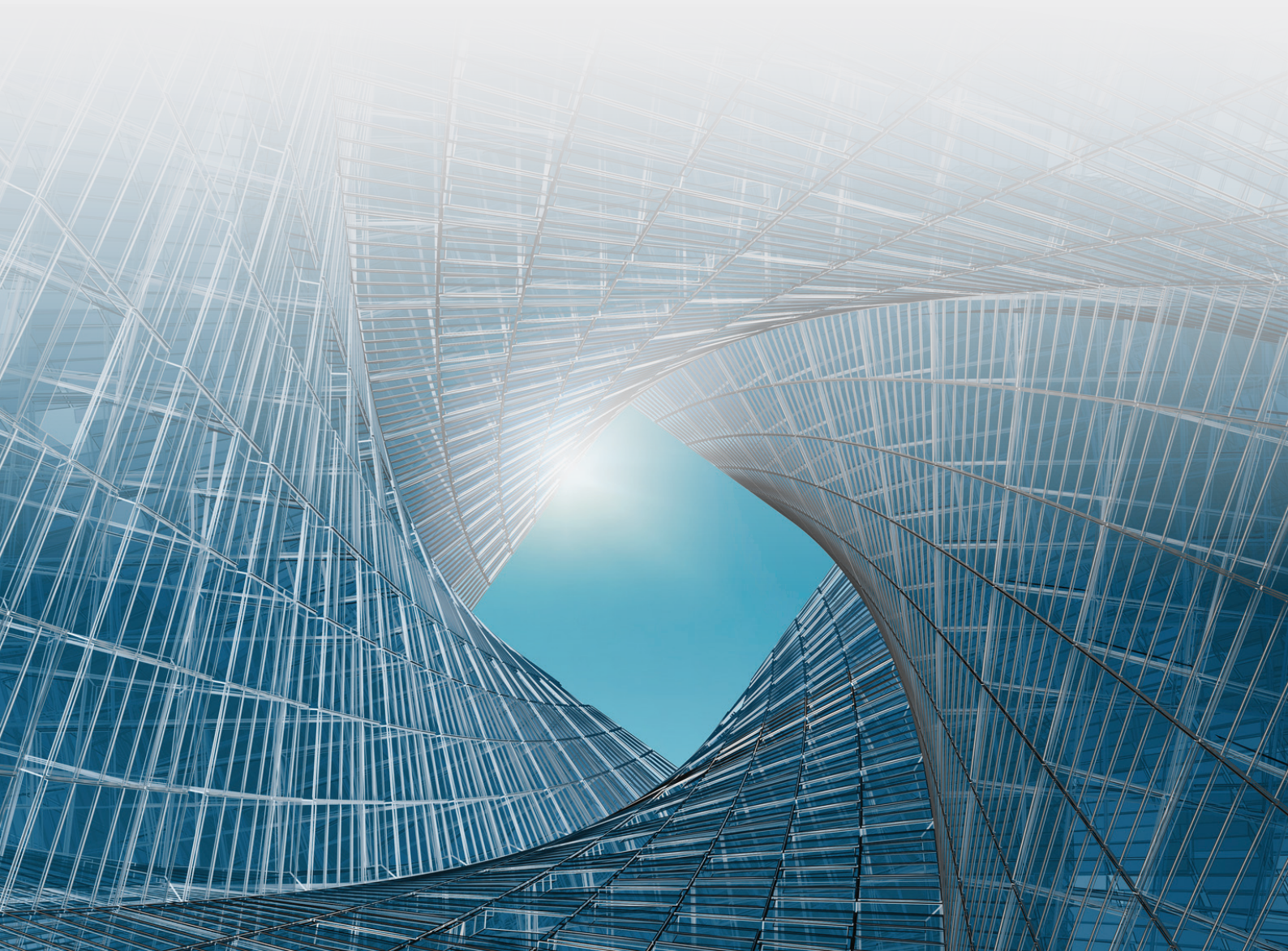




Technical Notes

Metering and Recording Devices

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METERING AND RECORDING DEVICES

The plethora of industrial and domestic devices in common use which employ electronic circuitry which distorts the sinusoidal mains waveforms is growing by the day and the complexity of each device and associated equipment is such that the waveforms encountered bear no resemblance to their generated forebears.

Unfortunately the range of waveforms is such that many instruments are not suitable for the proposed application and will give an erroneous reading.

If one has not been encouraged to exercise rudimentary mental arithmetic it is easy to fall into the trap of wrongly entering $2 + 2$ into the calculator and blindingly accepting as correct an answer of 5!

Likewise when measuring electrical data.

First let's set some ground rules. Just because you have a fancy new tong or power analyser it does not make you immune to electric shock or electrocution so the message here is SAFETY FIRST.

Are you a trained professional such as an electrician or electrical engineer? If not don't even think about opening a live electrical cubicle or piece of equipment.

Now ask yourself what it is you want to measure and why you want to do it – think about the $2+2 = 5$ above.

If you pay \$10,000.00 for a fancy camera it does not of itself make you a top notch photographer, merely the owner of a very expensive camera!

Likewise a \$2,000.00 tong tester or \$15,000.00 power analyser does not impart the wisdom and knowledge that only training and experience can bring.

Sounds pretty obvious really, after all you want to go home and see the family tonight and not be a news item about the guy who was electrocuted doing something stupid.

But what if you can connect the power analyser in a safe manner or get the tong around a conductor without risk, are you capable of knowing you have the correct instrument for the job and what will you make of the data collected.

Do you know the nature of the waveform you are attempting to measure?

Do you know the principle of operation of the instrument? Is it moving coil, moving iron, rectified average or RMS?

We are often asked why the input current of a VSD can be so much lower than the output current. People get very excited – they tell us that they are getting more out than they put in. Perhaps they have found a perpetual motion machine defying all the laws of physics – the thrill and pleasure of getting something for nothing.

Sorry but once again there is no free lunch, this phenomenon is easily explained and well understood by those with suitable training and experience.

The only measurement taken has been current not power. Power is calculated from a number of inputs

including volts and current and at reduced speed the output voltage will be considerably less than the input voltage.

As always it pays to understand what you are doing before coming to conclusions.

If you are presented with data from others and advised to undertake expensive action, think very carefully and remember the $2+2=5$ above.

Contact Zener if you need some help.

CONTACT ZENER

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