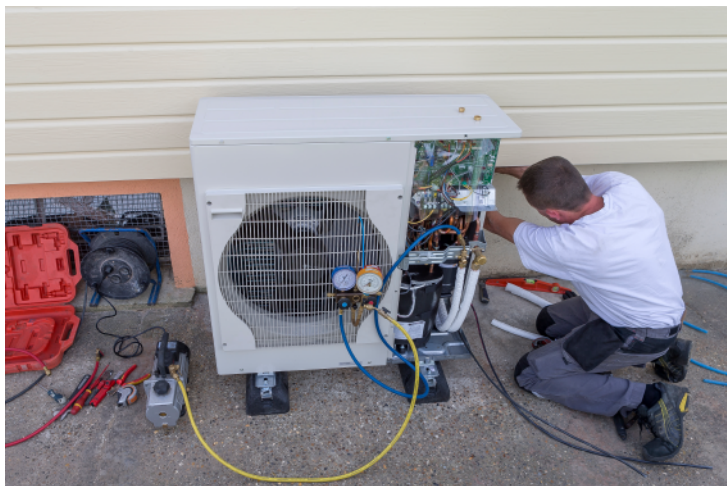




Test for Profit

With the news full of stories about galloping inflation and soaring fuel costs, it's no surprise that many electricians and contractors are looking around for ways of boosting their income. But this is nothing new, says **Julian Grant** of **Chauvin Arnoux**. Ever since the first electricians and contractors started rolling out their cable drums, they've been alert for new opportunities and, over the years, there have been many of these.



Some contractors, for example, diversified into offering fire alarms and security systems and, when the Electricity at Work Regulations came into force in 1990, creating a demand for portable appliance (PAT) testing, many were happy to provide this service and benefit from the revenue it provided. Then came opportunities to install audio and video systems, along with Ethernet cabling for computer systems.

More recently, there has been strong growth in the demand for solar PV installations, EV charge points and heat pumps, all of which offer electricians and contractors excellent ways of generating very welcome extra income.

It's probable that many of you will already have explored some if not all of these opportunities, so what about some new ideas? How about ways of making money by testing, for example? Here are four potentially profitable suggestions: energy surveys, load balance testing, power factor analysis and harmonic measurements. Let's take a closer look.

The truth is that most businesses don't have any detailed idea of where and when they're using electrical energy. With energy costs multiplying by terrifying factors, they'd probably be horrified to know that 46% of the energy used by SMEs (small and medium enterprises) is used out of hours when the business is closed, and that office equipment left on standby during bank holidays and weekends will cost the average SME around £6000 per year – and that's at the old energy prices!



With a portable energy logger (PEL), you can offer your customers energy surveys and show them exactly where and when they're using energy. You simply monitor their

consumption at key points, usually a distribution board, over a period of time – your PEL will do all the work for you – and present a report. You'll be helping your customer to make worthwhile savings on their energy bills and it's likely you'll get some additional work as well, such as fitting occupancy sensors to control indoor lighting and heating, and time switches to control exterior lights.

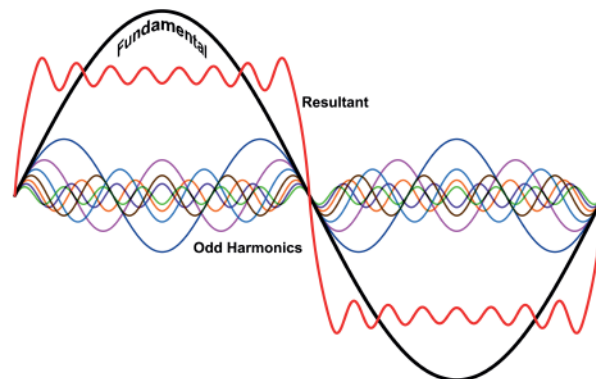
Load balancing is worthwhile on existing installations and is particularly important when new high-power loads, such as EV chargers are being installed. No doubt when an installation was new, efforts would have been made to balance the loads across all three phases of the supply. But much can change over time and, if new equipment has been added, the loads may now be way out of balance. This can lead to excessive losses, premature failure of three-phase motors and increased energy charges.

An investigation using your PEL over a week or maybe even just a day will allow imbalance to be easily identified. Action, such as rewiring the loads to spread them more evenly over the phases, can then be taken to put things right – which is yet another opportunity for you!

Power factor is also an issue that tends to develop over time because new installations are likely to have effective power factor correction. As was the case with imbalance, however, new loads may have been added without considering whether the power factor correction needed updating. Or it may simply be that the capacitor bank used for power factor correction is no longer performing as it should. Whatever the cause, poor power factor, which means lots of reactive power, is money straight down the drain.

Reactive power, which does nothing useful at all, costs exactly the same as true power so, by offering to check the power factor for your customers, you are potentially offering to help them make really big savings. As with most measurements, it's best to log power factor over time to get a complete picture, as some loads may only be operating at particular times of day or on specific days of the week. If poor power factor is found, investing in a new or upgraded correction system will certainly be money well spent for your customer, who will recoup their expenditure in a very short time.

Finally, let's turn to harmonics which are currents at whole-number multiples of the supply frequency. For example, 100 Hz, 150 Hz, 200 Hz and so on for a 50 Hz supply. These days, non-linear loads are everywhere. These are things like variable speed drives, computer power supplies, office equipment and even LED lighting installations. And non-linear loads have an undesirable tendency to inject harmonics into the power system.



This matters, because harmonics produce excessive heat in conductors and can cause all sorts of problems with sensitive electronic equipment. Harmonics can also make lights flicker and motors buzz, and they're a common source of nuisance tripping in protective devices. In short, they're a real menace, but once again armed with your trusty PEL, you'll be able to check out your customers' installations to find out what harmonics are present and to trace their source. With this done, remedial measures, such as equipment upgrades or the installation of filters, can be taken.

If you don't measure something, you can't control it. That's often been said, but it remains as true as ever, and it's certainly true in the case of electrical systems. Your customers can only control their energy usage – and their bills – if they know what's going on in their installations. Testing services you can easily offer will give them all the information they need. Providing those services is a great opportunity for you to increase your profit while saving your customers money and, as we've seen, the results of the tests are very likely to provide even more work for you. So, don't delay, start testing for profit today!



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