Since Qi is effectively the only WPT survivor today, are you backward compatible to Qi? We don't want a war of standards do we?

We ("CE") had anticipated the current WPT market situation long ago; and had predicted exactly where the wireless charging world would land up today. In anticipation, we have been silently crafting a vast IP portfolio for the past few years, one that emphasizes backward Qi compatibility. Several of our pending patents explicitly called that out.

We had also decided long ago on a Trojan Horse strategy--where our transmitters would support the low-power receivers that Qi currently uses. And our proprietary receivers, with our tiny, slim proprietary coils, suitable even for wearables, would work on standard Qi transmitters too. But once a CE transmitter was brought into play with CE receivers, we could support much higher power levels, and different alignments including vertical charging, plus multiple receivers at the same time. We believe we are the only ones around who had planned for over a year for the unfolding market today. For example, we knew exactly where Apple too would land up, well before they likely did, simply based on our deep knowledge of the competing standards, and an appreciation of all their pros and cons. Which we put to work on CE technology too.

When you say "pros and cons", what are the key things that limit all the other technologies?

Qi "won" because it was a near-field, low frequency (100-200kHz) technology, and could therefore meet human safety limits and electromagnetic interference (EMI) limits, though at very low power (<7.5W). It is also severely limited by high receiver-side losses, due to huge spiral coils, a faulty control algorithm based on a mistaken location of the resonant frequency, leading to poor "user experience" of "inductive charging", and a flawed and cumbersome "Foreign Object Detection" (FOD) scheme, which unfortunately relies on assumptions and thus develops unacceptable error at over 7.5W. History is replete with examples of technologies which "won" till a better standard or approach emerged.

Rezence, was always a huge failure in the making by all indications. For example, Intel abandoned them in June 2016, after investing millions, and Qualcomm, the original pioneer also lost interest. A Boston company WiTricity, with erudite MIT professors behind it, "continued" with almost no commercial success to date, and now reportedly focuses only on EV charging, which is a completely different, 85kHz, standard. The key reason for the failure of Rezence was the extremely tight 0.2% frequency tolerance mandated by government (FCC) regulations, a huge production challenge apparently overlooked by Rezence academicians. Further, 6.78MHz, a so-called "ISM (Industrial, Scientific, Medical) band" for "intentional emitters" of EMI, is not a "free-pass for EMI" as some mistakenly assumed, but is capped or limited by human safety limits (SAR, or Specific Absorption Rates). To meet the 0.2% tolerance, Rezence uses huge air-cored coils with distributed capacitance, but exactly for that reason, there is no shielding possible, to protect not only the internal electronics of the receiver from the bombardment of EMI and eddy currents as a result thereof, but also the user. So they run afoul either of the 0.2% limits or SAR limits, or both! It is a classic CATCH-22 situation.

Far-field methods using RF (radio-frequency), such as from Energous, Ossia (Cota), and

Powercast, also run afoul of another ISM band's SAR limits… either 2.4GHz or 5.8GHz, the same frequencies as your home router or microwave oven. Think of the consequences to you, of a microwave oven operating with its door open, while you stand within a few feet of it. Current FCC and international regulations therefore limit the power sent over air, as measured at the transmitter side, to 4W, and that has not changed, despite all the hype. As a result, at the receiver end, you will barely get a few milliwatts at a foot or two, despite any amount of expensive focusing using the phased array transmitters typically used by this technology. And it is even theoretically efficient only up to 5-10% at best, because waves are never captured fully, and are thus lost in the environment forever (same as light or sound).

All near-field methods, such as from Qi, PMA, Rezence, also CE, can theoretically achieve up to 100% efficiency, but at some point a cost-tradeoff is made, and all these will typically end up with a commercially acceptable overall efficiency of 70-90%.

So why is CE the safest and the best? Is it future-proof?

Since we knew all the problems all the others were facing, or would face, before even they did, we had a "simple" strategy. But the related IP development effort was huge. First, we created unique magnetic structures, all patent pending. For example, our 80W receiver coil is about 1/10th the size of a 5W Qi coil, and is at least 4 times more efficient (less receiver side losses, where it matters the most). In addition, our receiver coils are far cheaper than Qi coils. Then we completed the picture by three key operating modes which our transmitter is capable of

A) CE mode:
Where for example 3 phones can be charged vertically. Or wearables, Bluetooth earphones etc.. We use a frequency of around 100kHz, which is the safest. Plus, our FluxLaser principle allows for very focused and intense time-varying magnetic fields, in the proximity of the transmitter, not indiscriminately spewed all around as others do. So we are very safe for that reason too, and very low EMI too. Plus we have several new proprietary FOD methods which do not limit us to barely 7.5W as for Qi.

B) Dual Qi mode:
Where we can easily charge two Qi phones laid flat as Qi does (even Qi can't do dual Qi receivers with one Qi transmitter). And we also have a fixed operating frequency of ~145kHz in this mode, in contrast to Qi which sweeps 100-200kHz, running into EMI test limits above 150kHz and even interfering with car fob frequencies (124 kHz).

C) CERX mode:
We also now support a one-to-one transmitter-receiver mode in high power, up to 100W, to eliminate the DC-DC converter at the receiver side. This is suitable for drones, laptops, automatic vacuum cleaners, etc.

In cases a) and b) we have complex algorithms buried in a microcontroller, which cannot be "back-engineered", to locate and track the "sweet spot" in terms of operating frequency. Indeed we do Qi better than Qi too, simply because Qi has no idea of the resonant frequency peak. That is how we deliver such astonishing amounts of power, safely, combined with our unique magnetics and FluxLaser approach.

We also end up with an inherently zero-EMI transmitter configuration. We are future-proof for that reason.