

## ENERTECHNOS

Response to consultation on electric vehicle chargepoints in residential and non-residential buildings

### **What other issues do you think, relevant to using Building Regulations to set standards for the provision and safety of electric vehicle chargepoints, we should consider?**

Enertechnos welcomes the government's commitment for all new cars and van to be effectively zero emission by 2040 and supports the work it is doing to build a world-leading EV charging network, including the proposals outlined in the consultation for improving charging provision in residential and non-residential buildings.

However, Enertechnos is concerned that the government is neglecting a key consideration in these proposals – the need to ensure the cabling used to connect new infrastructure is fit for purpose.

Traditional cabling is inefficient and leads to energy loss. According to BEIS, **in 2017/18 power lost in the transmission and distribution systems totalled 26,663 GWh<sup>1</sup>, enough to power nearly seven million homes, wasting almost £1.3 billion** (£1,291,022,460 based on the 'societal cost of losses' set by Ofgem at £48.42/MWh – not taking into account the cost of measures taken to reduce losses).

Both the transmission and distribution networks operate using alternating current (AC). Over distance, the current (amps) phase loses synchronisation with the voltage phase (volts). This leads to a portion of the generated power being converted into 'reactive power' which means less usable energy comes out of the cable at the end. In addition, it also causes significant voltage drop. The result is that more energy must be generated to service the same demand – increasing costs and emissions.

As we shift towards electrification, it is absolutely vital that energy losses are minimised to ensure that the demand coming from charging EVs can be met without the need for a drastic increase in generation. By reducing losses through using more efficient cabling, we can go a significant way towards meeting this extra demand.

Based on National Grid's 2018 Future Energy Scenarios – which predicts peak EV demand in a number of scenarios, and on the conservative estimate that losses continue at around 7.5 per cent of total demand, tackling losses could provide up to 200 per cent of the electricity needed to power such an increase in demand from EVs. At a minimum, losses make up 55 per cent of the energy needed to meet peak EV demand. The threat that EVs will cause unmanageable demand, especially at peak times, has a simple solution – tackle losses in place of increasing generation.

Tackling losses will be increasingly important as we move toward a flexibly energy system, with electricity moving two ways through vehicle to grid charging systems. Losses will only multiply in this scenario. We must ensure that losses are minimised so that the positive benefits of these new, innovative technologies can be harnessed without harmful consequences from increased losses.

Given the long typical lifetime of an underground cable of 40 to 50 years, it is critical that the cable installed now is fit for the future and provides sufficient capacity to avoid costly network reinforcement down the line. To help address the issue of energy losses, Enertechnos has developed an innovative technology – the Capacitive Transfer System ('CTS') – which provides a cost-effective solution to replacing existing cabling and deploying new infrastructure while providing significant system benefits through reduced losses. A CTS-enabled cable balances reactance and capacitance, which results in lower voltage drop and lower losses compared to traditional electrical cables available on the market.

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<sup>1</sup> Department for Business, Energy and Industrial Strategy, Digest of UK Energy Statistics, 2019

Leading UK clean-tech innovator Enertechnos has won government funding to develop novel means of delivering power to wired and contactless charging, which has the potential to revolutionise the market and help keep pace with global demand for EVs. Where there is a need for multiple chargepoints, such as at apartments or car parks, there are significant problems and constraints on charging with conventional cable in dealing with the future technologies in car charging demands. These demands will include higher power for fast charging and wireless charging. During testing of the CTS, it was shown to have additional benefits in load balancing which means it will be very suitable for supplying varying amounts of power to a long string of loads.

Enertechnos welcomes the government's ambitions on EV charging infrastructure, and the proposal to ensure provision in new build homes and existing and new non-residential buildings. However, any new regulation should seriously consider how to ensure that the cabling used in meeting these new requirements is capable of supplying capacity into the future and will not multiply the already costly impact of losses. Tackling this problem head on, by ensuring efficient cabling is used, will help underpin government's ambitions and support an energy network fit for a clean, green future.