Simplifying
the design process

EV CHARGING³
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Implementing a charging station is a complex challenge: all manner of components and functions have to be integrated and interconnected – from the hardware and software through to the wireless communication and connection to the electricity grid. Various standards and norms also have to be taken into consideration. All in all, the process of designing and fully developing a charging station and bringing it to market is a very extensive one.

Main components of a charging station
A charging station for electric vehicles generally consists of three main components: the performance level, the charging controller and the human-machine interface (HMI), which includes payment and billing elements, as well as security functions. The need for certification and approval of the charging station design represents another outlay.

Reducing design complexity
Avnet Abacus, EBV Elektronik and Avnet Embedded are helping to simplify the complexity of this process and reduce risks. This means that developers or manufacturers of charging solutions have a one-stop-shop for all the components that are required for modern charging infrastructure: from the charging cable and connector, the converter technology and connectivity, through to Cloud solutions, for example for payment functions.

Faster with modules
The three companies have also developed preconfigured modules for the different functions required in a charging station. The user can simply customise their charger by selecting from a range of different modules: e.g. charging controller with software, integrated performance level, as well as HMI with payment and billing function. This means that, even if a company does not have any relevant hardware or software knowledge, it can still build an integrated solution. As a one-stop-shop, Avnet Abacus, EBV Elektronik and Avnet Embedded not only provide the required hardware and software, but also support users with expertise and a range of services during the development process.

Flexible connectivity
An example: the Embedded Universal Integrated Circuit Card (eUICC/UICC) from Avnet. The turnkey plug-and-play system enables flexible access to 4G/LTE-M/NB-IoT and older 2G and 3G networks in over 200 countries and to over 700 mobile communications networks around the world. It is possible to switch mobile network providers at anytime – even if the charging station has been in operation for a long time – without the need for an on-site visit. This is what makes the charging stations future-proof.

Secure charging controller
Another example is the Combined Charging System on Module (CCSoM) from IoTecha, a partner company: the certified System-on-Module solution enables the use of a range of AC and DC charging applications. It acts as the “brain” of the charging station and also provides all of the necessary communication interfaces for connection to an OCPP server (Open Charge Point Protocol). The CCSoM enables combined charging with Plug & Charge according to ISO/IEC 15118. In combination with the integrated Secure Element and the tamper protection, it considerably reduces the amount of work involved in developing a smart, secure charging solution.

Saving on internal resources
As a one-stop-shop, Avnet Abacus, EBV Elektronik and Avnet Embedded can provide turnkey solutions to support developers and manufacturers of charging solutions with several new technologies, such as vehicle-to-grid. They receive everything that they need for their solution – not just the hardware, but also the software, electromechanics and connectivity. This takes a considerable amount of pressure off the R&D department and means that internal resources remain available for the core business.