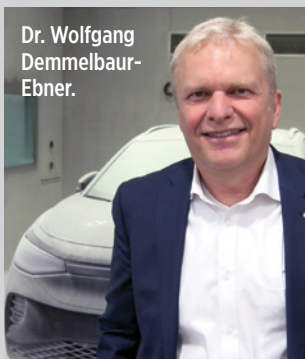


Battery standardization ‘not quite yet’

Q&A with Dr. Wolfgang Demmelbauer-Ebner, VW chief engineering officer

EV battery technology still is in a state of flux, with competing chemistries, form factors, etc. Does VW see a standardization coming?

Not quite yet. There is more to come in the chemistries, including solid-state batteries within the next 5-10 years. And the form factors will continue to be fluid, as OEMs change them to meet different vehicle applications — high-floor cars, low-floor cars, wide and narrow battery packs depending on the vehicle architecture. We are a global manufacturer and have to build vehicles for different customers and regions, so there will not be a single form factor perhaps for quite a while.



Dr. Wolfgang Demmelbauer-Ebner.

Do you see the 12V lead-acid battery being designed out of EVs to save weight and complexity?

No, not any time soon. The 12V battery is inexpensive, reliable, recyclable and has high energy density for a number of use cases.

What role will your R&D partners from Oak Ridge National Labs and University of Tennessee be playing in VW’s EV developments in Chattanooga?

Many roles. They have huge expertise not only in batteries but also in other areas of propulsion technology. We have a super-strong relationship with them. They’re a huge asset for us in identifying new technologies, and also a good pool for new talent.

Lindsay Brooke



An example of the current ID.4 battery pack on display in the Chattanooga pack-assembly plant. This 82 kWh pack uses LG-supplied NCM712 cells and weighs 493 lb. A new pack using SKI-supplied NCM811 cells recently entered production.



a ramp rate of 3 deg. C per minute. Keysight supplied its pack-level Scienlab Battery Test System and its Energy Storage Discovery software for this important lab, which has 1,000V/900A/360kW battery-charging capability.

Dust chamber: Supplied by Italy-based ACS Angelantoni Test Systems, the BEL’s sophisticated dust chamber uses ISO-standardized dust particles, fed at flow rates up to 2,600 cfm to replicate 70 mph (113 km/h) road speed, to attack the test pack’s seals. The ISO-certified “Arizona” dust particulate measuring 1/70th of a human hair in diameter often is blended with abrasive material. A typical dust test at BEL is 20 cycles at 20 minutes per cycle, over approximately seven hours. This would be part of a sequence of battery-pack tests that begin with a thermal cycle, then the dust test, water-jet test at garden-hose pressures, followed by a high-pressure steam test. The pack then is completely disassembled and analyzed.

Water immersion and sodium chloride: Salt-bath tests that simulate up to one year of EV life in a hostile winter environment (such as southeastern Michigan) and a water-immersion test that simulates water ingress after shocking the aluminum case structure, are keystones in VW’s pack development. The 2,100-gal. (8 sq-m) water-immersion tank, supplied by Florida-based Equilam NA, heats the pack structure to 140 deg. F (60 deg C) before dunking it into 40 deg. F water (dyed a color, for easier leak identification) for five minutes. Each immersion test cycle includes 20 tests that are like a Polar Bear Club outing, but for battery cases. ■

ALL IMAGES: LINDSAY BROOKE