



Vehicle-to-Grid and Smart Ventilation Technologies

Vehicle-to-Grid (V2G)

The technology of Vehicle-to-Grid (V2G) allows returning an optimal amount of energy stored in the battery of an Electric Vehicle (EV) to the power grid of a building during peak times of energy consumption.

In most buildings, EVs are charged using an AC power source at 110 or 220 volts, and this is adaptable with V2G using a bi-directional charger that links the AC current of the power grid to the DC current of the EV. However, if this is not done properly, it could create fire risks, e.g., by leading to a thermal runaway (i.e., a state of uncontrolled self-heating). A new ISO standard is under development regarding this technology, namely, ISO 15118-20.

Smart Ventilation

The technology of smart ventilation systems allows providing healthy and comfortable indoor air quality conditions while minimizing energy consumption.

A smart ventilation system may reduce the energy consumption for mechanical ventilation by as much as one-third. The system can act in response to a measured demand indicator such as carbon dioxide or temperature levels. However, ventilation during a fire can have unpredictable consequences, e.g., taking away the hot smoke might be beneficial, but not if the smoke spreads to the other parts of the building or if the supply of fresh air helps the fire grow more quickly. The interaction with fire suppression systems is an important topic of study.

Link to the full report: <http://urn.kb.se/resolve?urn=urn:nbn:se:ri:diva-60319>

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FIRE RESEARCH & INNOVATION CENTRE

Fire Research & Innovation Centre

Post address
Box 4767 Torgarden
7465 Trondheim
Norway

Visiting Address
Tillerbruvegen 202
7092 Tiller
Norway

Telephone
+47 464 18 000

E-mail/ web
post@fric.no
www.fric.no

Enterprise/VAT no.
NO 982 930 057 MVA