1.1 Over-temperature Protection

1.1.1 Rationale

Verify the functionality of the over-temperature protection, if any necessary for safety reasons that prevents the operation at over-temperatures inside the [RESS]. This test should simulate the lost of thermal control.

<JASIC Comment>
This procedure imposes unreasonable design restriction to have cut-off function, although another solution, e.g. protection by PTC of cell, may exist.
As this procedure has never discussed at international standardization bodies, careful review with a view to the practicality is necessary.

1.1.2 Requirement

When the maximum working temperature of the [RESS], specified by the manufacturer, is exceeded, ~~the [RESS] high voltage buses shall be opened [or~~ the battery cannot be operated at the latest [5 min] after this temperature is reached.

~~After the test, the components shall be functional.~~

3.9.2.1 Conditions

The [RESS] shall be at any state of charge, which allows the normal operation of the power train as recommended by the manufacturer.
The [RESS] shall be placed in a convective oven or climatic chamber (hereby called over-temperature room). The over-temperature room temperature shall be increased at a rate of de 5 °C/min ± 2 °C/min until it reaches the maximum working temperature of the [RESS], specified by the manufacturer + 20°C.
The [RESS] temperature shall be monitored by the measurement devices which are integrated inside the [RESS] by the manufacturer.
~~Temperature measurement shall be performed inside the [RESS].~~ Cooling system, if any, shall be deactivated if the [RESS] is able to operate under this condition. In the other cases, the manufacturer shall demonstrate by test that the operation of the [RESS] stops when deactivating its cooling system. Then the [RESS] doesn't have to fulfill over-temperature test requirements, but the manufacturer shall provide the technical service with the relevant information showing that the cooling system is well-dimensioned and fits with the [RESS]' thermal exchanges.
~~and reactived for the verification in 3.9.3.~~

The manufacturer shall provide the technical service with the relevant technical information dossier of the measurement device. ~~The content of this information dossier shall be provided by the technical service.~~

The test shall be interrupted when the requirement is satisfied or when the [RESS] reaches or exceeds the maximum working temperature specified by the manufacturer for more than 5 min without satisfying the requirement.

3.9.2.2 Acceptance criteria

The [RESS] complies with the requirement when operation of the RESS stops. ~~the signal related to the stop of operation physical opening sent by the BMS is detected~~.

~~[a) of undefined visible venting]~~

=> action item for German working group / UTAC /SP/ Autoliv

b) battery enclosure rupture (no degradation of protection degree)

c) fire

d) explosion.

1.1.3 Verification

[The internal temperature and the signal related to the opening of the high voltage buses of the [RESS] are monitored. In order to verify the functionality of the components, the [RESS] shall rest until it reaches the ambient temperature (25°C ± 5°C). A charge/discharge cycle shall be applied to the [RESS]. The charge and discharge shall be functional.

During the test and before the verification, to give the possibility to make a reset of the default.]