New test method developed at SP Fire Research, Norway:

Fire testing of cryogenic spill protection (CSP)

SP Fire Research AS

The test specimen is subjected to cryogenic cooling directly followed by jet fire exposure, in a new test method developed at SP Fire Research.
We have long experience in jet fire testing and have been involved in the development of several jet fire test standards used by the industry and the authorities today.

Background

The low liquid temperatures in cryogenic spills may cause brittle fracture to structural elements, equipment and devices, as well as damage to the passive fire protection (PFP), which would reduce the system's integrity against fire. If the liquid in question is liquid natural gas (LNG), the flammable vapour from the spill represents an additional fire and explosion hazard. Effective CSP systems must protect against cryogenic exposure without compromising the fire protection.

Solution

SP Fire Research has participated in developing a new test method where the insulation abilities with regards to both cryogenic cooling and fire exposure is tested. The test has a realistic approach, and simulates a realistic chain of events.

Method

The test specimen is first cooled down and immediately exposed to either a jet fire or hydrocarbon fire. This mode of action provokes large thermal stresses, and will reveal whether the material is suitable as both cryogenic spill protection and passive fire protection, using only one test specimen.

Jet fire testing of cryogenic spill protection. The test specimen is subjected to cryogenic cooling (upper image), directly followed by a jet fire test (lower image).

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SPFR INFO 2014-03
2014-09-08