Engineering Insurance

Claims Review

Completed Works Insurance
Silo

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Debris of collapsed concrete grain silo

Amount of Loss

Swiss Francs 750,000 Material Damage
Swiss Francs 375,000 Third Party Liability

Object

Concrete grain silo

Short Description

The collapse of one of two 14-year-old silos was caused by the severe corrosion of steel bar reinforcements due to cracks in the concrete structure where dampness seeped into the structure and attacked the iron bars.

Comments

The durability of reinforced concrete is basically determined by the quality of the concrete itself, the sufficient cover of the steelbars with concrete, the aggressivity of the air (i.e. near the sea) and the safety margins in the design calculations. Too often only static force to silo walls is taken into consideration whilst the increased force created by moving stored material when emptying the silo is neglected. This can cause too much stress on the structure leading to cracks in the concrete.

Lessons Learned

Modern design theory has to be applied and sufficient concrete cover of steelbars should be provided.
Adequate concrete quality tests and checking of position of steelbars and their fixation before concrete pouring have to be observed.

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Aerial view showing collapsed silo next to undamaged one and damage to third party property

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Undamaged silo and debris of collapsed silo