

DETAILS OF INTERESTING CLAIM

Type of Insurance:
EAR/ALOP

Description of damaged item:
Collapse of a MC (medium consistency) pulp tower



Cause of Loss:
(3) Faulty design

Claim Cost	
PD	3.200 MEUR
ALOP	1.450 MEUR
Total	4.650 MEUR

Description of Incident:

The MC (medium consistency; 10 % dry solids content) pulp tower (tank) collapsed during testing and commissioning when it was in the process of being filled and emptied, with a steadily rising level of filling. There were no injuries to personnel.

At the time of failure, it was at the fullest level (88%) that it had ever experienced. The failure caused total destruction of both the storage vessel itself and all its supporting structure. Most of the bolted joints in the supporting structure failed during the failure process, and the structural steelwork of the support structure was quite widely distributed. The vessel contained about 1270 m³ of pulp at the time of failure. This pulp has a density close to 1 tonne/m³, giving a total weight of the material in the vessel of about 1270 tonnes.

At the time of failure, there were no strong winds, no snow or ice appeared to be on adding load to the tank, no seismic event was reported, and no other events pertinent to the failure appear to have played a role.

In the few minutes prior to the collapse, a witness observed bolt fragments to fall from the structure, and he descended beneath the structure and retrieved one fragment. This bolt is one that clearly failed in shear through its shank, though it may have been stretched before failure. The location of this bolt fragment was identified by the witness as under the tank.

The cause of the failure of the MC pulp tower was the inadequate design of the bolted joint in the diagonal tank support beams to carry both the bending and shear to which it was subjected.

In the days following the collapse of the MC Tower a decision had been reached to bypass the MC Tower in order to allow testing, commissioning and some production to be achieved while the replacement tower was being built. The bypass solution built by the Contractor enabled the owner to continue with the production activities after 1 month from the incident.

The first estimates of the necessary time for replacement of the MC Tower extended to six months after the accident. The Contractor developed a repair methodology incorporating an amended design for the silo vessel which considerably reduced the fabrication time for the stainless steel vessel itself. The result was a reduction in the repair period of at least two months and in that regard the plant was fully restored before three and a half months of the accident had passed.

CODES

1. Type of Insurance

M - Machinery Breakdown

BE - Boiler Explosion

LP (M) M - Loss of Profits

ALOP (DSU) - Advance Loss of Profits

EAR - Erection All Risks

CAR - Contractors All Risks (Civil)

G - Guarantee

EE - Electronic Equipment

O - Other Classes

2. Cause of Loss

(1) Faulty operation

(2) Faulty material or workmanship

(3) Faulty design

(4) Other internal causes

(5) Fire

(6) Explosion

(7) Storm

(8) Earthquake

(9) Other external causes

(10) Other causes or unknown