

Explosion in particle board factory, 2006

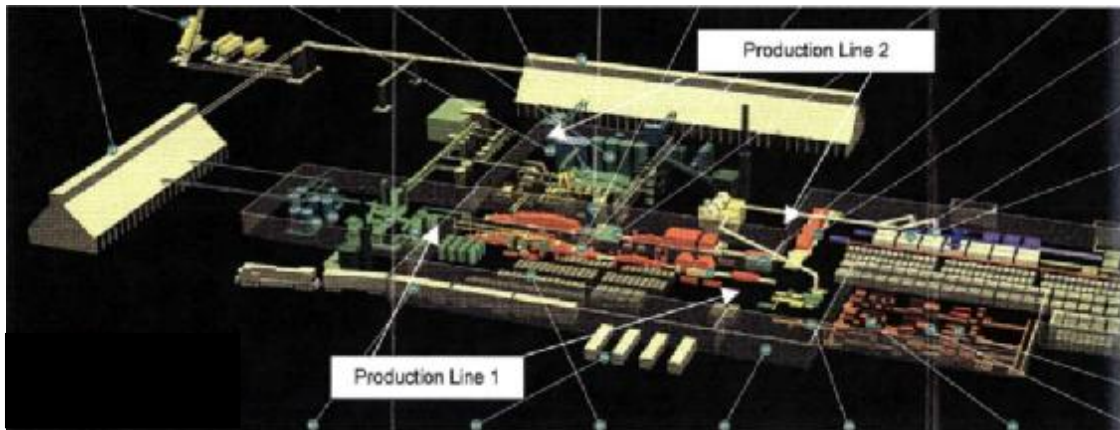
Plant description

The plant in this case produces wood particle boards for use in modern furniture and other applications. It was commissioned in 1990 with Line 1 including a 9' wide press and a capacity of 350,000m³ per year.

In 2000 the plant was extended and Line 2 was commissioned with a capacity of 650,000m³ per year, including a 10' wide press. Approximately 32% of the production destined for the melamine laminate process, achieving a higher margin finished product.



The facility was surveyed by insurance representatives on different occasions, by both brokers and insurers and the last survey was around 10 months before the loss. Risk quality was regarded as excellent, with an 80% sprinkler area and no comments were made about deficiencies in the protection systems in the air grader area. Loss estimate in the last report calculated a Maximum Foreseeable Loss at around € 240 mio based on a fire in the press in line 2, due to thermal oil release and assuming a failure in fire protections and fire doors with a full BI loss for rebuild.



The Normal Loss Expectancy considered the scenario of a dust explosion in preparation area of line 2 causing a fire and a secondary dust explosion within the line 2 building. The fireball from the first explosion was expected to activate the sprinklers within the building and help control the fire. Damage estimation was of € 1.1 mio for PD and € 4.3 mio for BI.

The incident

One day at around 9:15pm, plant employees smelled the odor of smoke and begun searching for its source (it was later determined to come from a testing in the laboratory and unrelated to the explosion). Approximately 15-25 min later an explosion was heard, centered within the

“preparation” area of Line 2. Within seconds, secondary explosions in the oversized silo, reclaimer silo and dust collection system followed the first explosion, causing extensive damage to the roof and exterior walls of the structure housing Line 2 and destroying or severely damaging the equipment within the building. Line 1 building was only marginally affected.

After extensive investigations, a major failure was discovered in a conveyor that carries wood particles through the production line and feeds the air grader in line 2. Damage on the conveyor caused several sources of friction which are believed to have initiated a fire which found its way into the air grader causing the explosions.



Reconstruction, loss adjustment and policy considerations

Declared values for the plant were around € 202 mio for PD and € 32 mio annually for BI with an 18 months indemnity period.

The plant had to be completely shut down due to the incident and re-starting of line 1 was delayed due to security constraints imposed by local authorities regarding the risk of building collapse and compliance with building codes. Furthermore, the loss of the company’s leading market share created a shortage of particle boards; boosting the spot price and making it difficult to mitigate BI consequences by buying board form other regional manufacturers.

Reconstruction of line 2 turned out to be a proper mechanical erection project on its own. The main constraint for the reconstruction was the supply of a new particle board press which took around 15 months. A renowned contractor was appointed to handle the reconstruction project with an initial 18 months schedule. However, due to complications in the reconstruction, the actual duration was around 24 months downtime for line 2. During reconstruction, improvements to the buildings were also necessary to comply with more recent construction codes, which exhausted the public authority’s sublimit. Deficiencies were found in explosion suppression systems, however after consideration by the reinsurance panel, subrogation was abandoned.

The final loss for material damage resulted as follows (figures in mio €):

| | | |
|--------------------|-------|----------------|
| Demolition | 7.5 | (sublimit 10) |
| Buildings | 15.7 | |
| Equipment | 78.9 | |
| Public authorities | 7.5 | (sublimit 7.5) |
| Professional fees | 2.5 | (sublimit 2.5) |
| Total PD | 111.6 | |

Regarding the BI loss, the full indemnity period was taken and furthermore there were 6 months of plant stop without compensation from insurance. The initial claim was initially at around € 85 mio and was settled at around € 56 mio. Despite the fact that the declared BI values for 18 months were € 48 mio, underinsurance had been waived in the policy wording and the client argued an unnoticed error in the schedule of values.

The total loss was then settled with reinsurers 2 years after the incident at € 166 mio net indemnity.

Lessons learned

This loss made evident the importance of accurately declared values and particularly from underinsurance of provisions within policy wordings and the danger of waiving them, which in many markets is currently standard practice.

Equally important is the appropriate estimation of reconstruction times for which unforeseeable situations must also be considered, with the consequent danger of inadequate cover to the insured.

The survey report previous to the loss also underlines the difficulties of assessing all possible scenarios and their consequences even in facilities considered as good risk quality.

Despite no damages having occurred during the reconstruction in this particular case, a plant reconstruction of this magnitude represents a medium sized EAR project on its own and insurance considerations should be made accordingly.

In this respect it also remains an open question if, instead of promptly appointing one contractor for the project, would it have been more efficient in the long term to submit the reconstruction project to a tender process with several contractors gaining a better controlled budget and works schedule?

A cohesive reinsurance panel with active participation in every market meeting is also crucial to a swift adjustment.