

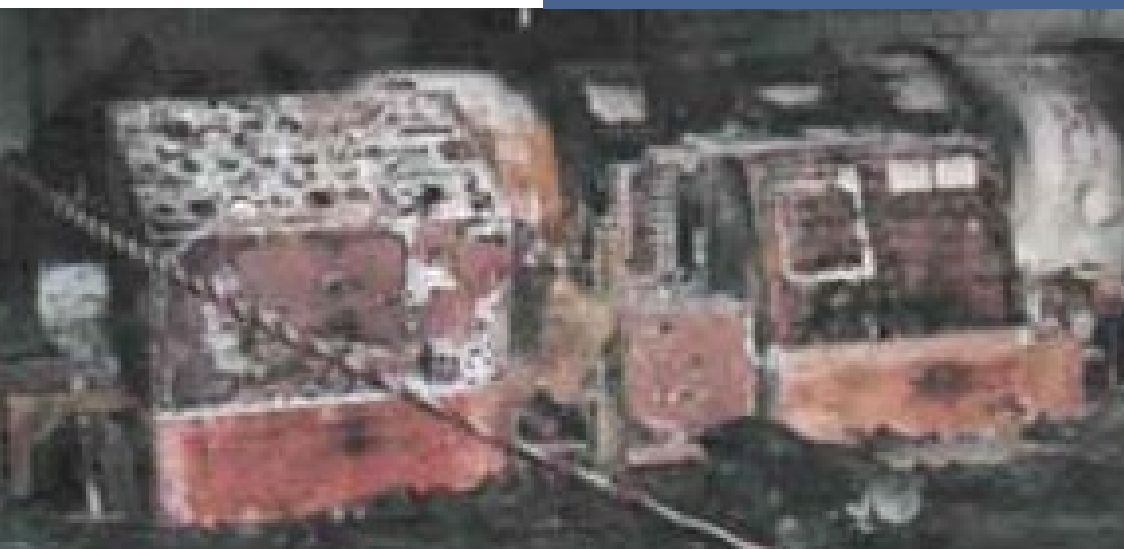
# LOSS LESSONS

## VOLUME 5

ALLIANZ GLOBAL CORPORATE & SPECIALTY®

# FIRE IN A TURBO- GENERATOR UNIT

REPORT PUBLISHED BY  
ALLIANZ RISK CONSULTING



### Occupancy:

Food processing industry

### Property Damages:

Equipment: € 4,000,000

Buildings: € 600,000

### Business Interruption:

€ 1,500,000 (additional  
operating costs)

## CIRCUMSTANCES

The sugar production season begins on May 4<sup>th</sup> with the transformation of syrup into sugar. This is preceded by the sugar beet season, which begins in mid-September. The latter is particularly important as it lasts only 80 days and is the only time when syrup is produced from sugar beet during the entire year (and thus, a major financial asset).

On May 5<sup>th</sup>, the following events took place:

- 1:30 a.m.: a technician on duty detected a fire starting in a turbo-generator unit in the boiler house
- 2:00 a.m.: the fire department arrived from a nearby town
- Between 2 a.m. and 5 a.m.: EDF (public electricity provider in France) cut off the 225 kV breaker at the request of the firemen
- 5:25 a.m.: the fire was put out

## CAUSE OF THE LOSS

The fire seems to have been caused by a loose pressure gauge.

During the days prior to the incident, the turbo-generator unit, located in the boiler house, was undergoing maintenance work: employees who operated it were cleaning the hydraulic circuit. The pressure gauge seems to have come unscrewed due to the effect of the oil pressure and vibrations of the turbo-generator unit. The oil from the hydraulic unit then spread to a hot point (probably steam pipes) and caught fire.

This hypothesis is supported by the following findings:

- A pressure gauge was missing from one of the tap-ins to the turbo-generator unit
- A pressure gauge was found on the floor in the boiler house. It showed no heat damage
- The threading on the pressure gauge and its seat were in good condition, which excludes a possible blow-out

## EXTENT OF THE DAMAGE

- The destruction of 2 turbo-generator units (4 MW and 6 MW), the second one being located next to the one where the fire started
- Serious deterioration of the load-bearing structure of the boiler house
- Contamination due to soot deposits:
  - On the travelling crane used for handling the turbogenerator units
  - On the electrical installations:
    - Boiler house LV bays and primary panels
    - HV breakers
    - LV and HV cable runs
- “Massive seizure” of the machinery due to crystallization of the syrup.

## WHAT HAS WORSENERED THE LOSS

### PROPERTY DAMAGE

- Absence of fire protection systems and compartmentalization:
  - The lack of fire protection equipment and compartmentalization led to growth and spread of the fire in the “energy” room and to the HV/LV areas.
- “Massive seizure” of the installations following shutdown of processing:
  - Because electric power was cut off to permit intervention by the firemen, the syrup processing facilities were subjected to “massive seizure” by the crystallized syrup.

### BUSINESS INTERRUPTION

- Presence of concrete-asbestos panels:
  - The roofing on the boiler house was composed of corrugated panels loaded with asbestos. The section located over the turbo-generator units was damaged. This constitutes an additional delay due to the time required to remove the panels, which generates a higher business interruption loss.
- Absence of back-up electric power sources:
  - The 2 damaged turbo-generators are essential to production operations at the site. They provide 2/3 of the power required for operations. Despite their critical nature, the company had no back-up turbo-generator unit.

- In order to ensure that the facilities are operational at the start of the beet sugar season (in the event that the turbo-generator units are not replaced by mid-September), the contract with EDF will have to be renegotiated, thus generating important additional cost.

## WHAT HAS LIMITED THE LOSS

- A technician on duty was present near the turbo-generator in the “energy” room right when the fire started.
  - The fire department was called and arrived quickly, which allowed them to limit the amount of damage caused by the fire.
- The sugar beet season:
  - The sugar beet season plays a major financial role since it lasts only 80 days a year. Fortunately, the incident occurred 4 months before the season was due to start. These few months allowed the operator to begin the necessary repairs and to take palliative measures such as renegotiating the EDF contract.
  - If the fire had taken place during the sugar beet season, the business interruption loss would have been much greater.
- Syrup processing:
  - During the period required to repair the damage, the syrup was processed by another of the group’s sites. This transfer of production did not generate major cost increases since the other site was able to handle the additional sugar to be processed.

## COMMENTS AND LEARNINGS

### AUTOMATIC FIRE PROTECTION FOR TURBO-GENERATOR UNITS

Given the simultaneous presence of a major amount of oil and hot points (steam pipes), there is a substantial fire hazard. The installation of smoke detection and a sprinkler type protection system in compliance with NFPA Standard 850 is thus required.

## GEOGRAPHIC SEPARATION OF ELECTRIC POWER SOURCES

There are 3 sources of electric power:

- 2 turbo-generator units,
- Normal EDF power distribution.

They are all required to operate the equipment at the site. In principle, this diversification of electric power supplies is satisfactory since the risk is distributed. However, they are not geographically separated.

The fire therefore destroyed both the 2 turbo-generator units and the HV and LV lines passing through the same space (joint loss of normal and auxiliary power sources).

The operator plans to reroute the new LV and HV wiring outside of the room where the turbo-generators are located. In addition, the 2 turbo-generator units should be installed in separate, concrete-wall rooms with 2-hours fire cutoff rating each.

## CONTINGENCY PLAN

The establishment of a contingency plan serves to limit indirect losses caused by a fire. It constitutes a fallback position allowing one to continue or resume production under the best possible conditions (see the quick repair and syrup processing transfer operations mentioned above). Such a plan defines the measures and resources needed to achieve this. It is extremely valuable in industrial groups with high financial stakes based on interconnected internal needs.

## QUESTIONS OR COMMENTS?

### Nicolas LOCHET

Regional Technical Manager  
Allianz Risk Consulting  
+33 607 798 412

[nicolas.lochet@allianz.com](mailto:nicolas.lochet@allianz.com)

[www.agcs.allianz.com](http://www.agcs.allianz.com)

Reference LL 05/18/05

Design: AGCS Graphic Design Centre