



Detonating Cord Plant Fire Investigation - Gomia

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Executive Summary



On the 17th of December 2011 a fire in spinning compartment 1 (SM1) at the Gomia cord manufacturing plant located in Jarkland, India, completely destroyed compartments 1 & 2. It is believed that there was a total of 8kgs of PETN and 1800mtrs of semi fuse spread across both machines. There were no injuries and there was no explosion. The ensuing fire consumed both spinning compartments and destroyed both machines but the fire was confined to that area only. The rest of the plant suffered smoke and soot damage only.



The Plant



- ❑ Cord plant was established in 1969 with four spinning machines.
- ❑ Two extra spinning machines (5&6) were added in 2002 with the same technology and design.
- ❑ Each spinning machine has a separate compartment with a blast wall protection from three sides. At the opposite end to the blast view window there are blow out panels made of wood and plastic as is the roof.
- ❑ All the operations for Cord manufacturing are carried out in a single building numbered - DO-1
- ❑ Gomia manufactures various strengths of Detonating Cord ranging from 6 g to 40g
- ❑ The production capacity of the plant is 18 million meters of Detonating fuse per annum.
- ❑ The building has a water deluge system that is manually operated

Events Leading up to the fire



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- 10.00pm Night Shift started – Spinning Machines 1 & 2 running
 - 11.00pm Changed belt on Spinning Machine 1, used second hand belt
 - 5.30am Night shift operator cleaned all machines and signed out

 - 6.00am Day shift started
 - 6.30am Operator started Spinning Machine 1 followed by machines 2, 3 and 4
 - 8.45am Changed reel on Spinning Machine 1, retentioned belt & restarted SM 1
 - 9.15am Operator stopped all Machines and went to canteen

 - 10.30am Operator returned and started Spinning machine 1 first followed by 2, 3 and then 4. Spinning Machine 4 did not start up correctly so the operator spend several minutes adjusting yarns to get the machine to run.

During the fire



- ❑ 11.05am Operator returned to Spinning Machine 1 and when he viewed the spinning machine through the blast window he noticed flames between the SM and Semi fuse reeler

- ❑ Operator then;
 - Went to examining room and told charge hand
 - Isolated power
 - Attempted to operate deluge system – he could not
 - Raised the alarm

- ❑ All personnel from cord plant, LA plant, IS Plant and PETN plant evacuated to 1000mtrs and headcount completed

- ❑ Access to above area's barricade by security at 1000mtrs

- ❑ Emergency Response Plan activated

Building re-entry post fire



- Investigation team arrived Site 20th December 2011
- The area surrounding the cord plant still locked down
- Risk assessment carried out for re-entry inspection
- Hot spot testing with infra-red gun
- Wetting down
- Air monitoring

What we found



What we found



What we found



The Investigation



Investigation - Guard



Investigation - Guard



Investigation - Belt



Investigation - Belt



Investigation - Belt

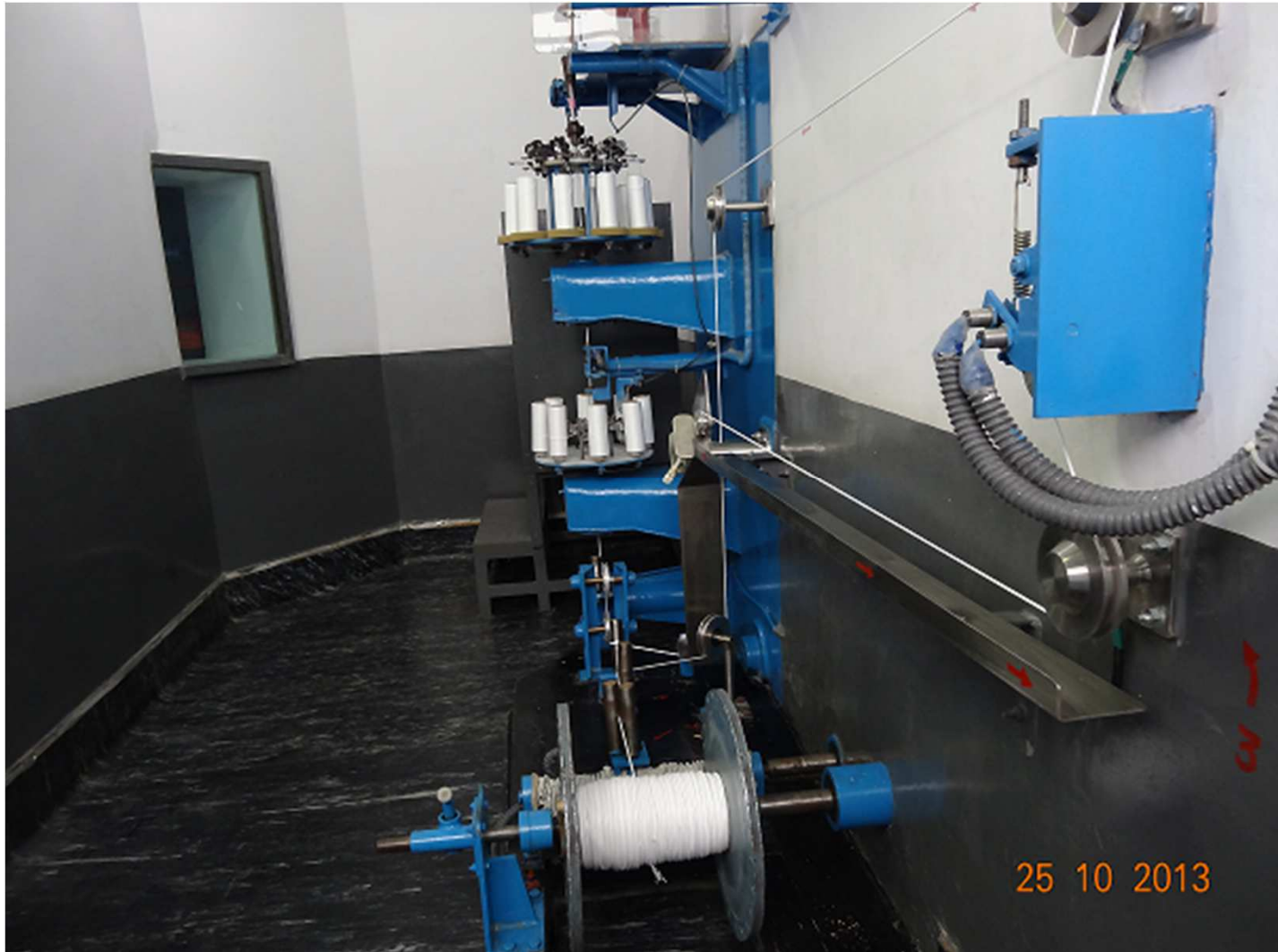


Lessons Learnt



- Drive systems to be located outside of manufacturing area
- Need for fused leather belts without metal joins
- Need for tension system without manual intervention or slippage controlled
- Single button activated deluge systems
- Guards to be in fixed position at all times

Today



Questions