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Application Bulletin

CHEMETRON
Fire Systems ™
A World of Protection

Carbon Dioxide Fire Suppression —

Newspaper Printing Presses
Supplement A –
Protection of Folders and Newspaper Flexographic Presses

In our Printing Industry Bulletin #0200, Newspaper Printing Presses, there is a brief discussion on the protection of the folders. The purpose of this supplement is to further expand on the folder protection. We feel this is necessary for three reasons.

First, in the last few years there have been several potentially serious fires originating in the folder area. There is a lesson to be learned from these as discussed below.

Second, there have been a large number of flexographic newspaper presses put in service recently. Since this process uses water based ink, the fire risk on the printing units is reduced. However, this is not the case with the folders; and thus, flexographic press protection needs some discussion.

Third, there have been changes in the design of folders — enclosures for sound control, built-in dust collectors for dust control, etc. These must be considered in any fire protection system planning and design.

The fire hazard on the folder comprises the paper dust, scrap paper pieces, and lint that quickly accumulate on flat horizontal surfaces of the folder equipment and framing. When ignited, this material burns very rapidly and can ignite the web and printed papers. The purpose of the CO_2 discharge is to quickly extinguish this fire to prevent any damage to the equipment.

Local application CO_2 nozzles are placed such that the discharge will cover these surfaces and extinguish the fire in seconds.

ORR *Protection*
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During a fire in a West Coast plant on a large folder, the CO$_2$ system operated as designed and prevented any damage in the Press Room. Unfortunately, the system was not tied in to shut down the conveyor, which carried some burning paper through the wall to the Mail Room, igniting other paper. Eventually extinguished by the sprinkler system, the combination of fire and water damage caused very serious operational problems for this newspaper. This was preventable.

The lesson is: for a CO$_2$ system to do its intended job, it must cover the entire hazard and include provisions to prevent the fire from being carried outside the hazard.

For example, we carefully design systems for adjacent hazards that are individually protected, but inter-expose one another. Good CO$_2$ system design ensures protection of both hazards, even if the fire starts in one zone and is carried from that zone to the next. This is done by shutting down equipment and overlapping CO$_2$ coverage. Similarly, shutting down the conveyor at the folder and CO$_2$ screening are a necessary part of the fire protection design, even though the adjacent area may be protected by something other than the CO$_2$ system.

It has been noted in flexographic press operations that, without the oil from the ink that apparently traps some dust, dust accumulation is more of a problem, causing protection concern.

CO$_2$ discharges have a proven track record in the quick, clean extinguishment of paper dust, lint, or scrap paper fires.

Although Chemetron recommends that protection concern for flexo presses should also include the press drives, a number of CO$_2$ systems have been installed that just protect the folder. This reduced scope of protection reduces the cost while still meeting the purpose of Special Hazards fire protection — the protection of production continuity.

The sketch on page 3 shows a typical folder with an enclosure around the lower part. We have had the opportunity to visit many plants and noticed that while the equipment is designed for operation with almost a complete lower enclosure, some presses are operating with only portions of the enclosure in place. Also, almost all new installations are equipped with dust collection systems where pick-up ducts suck up a large portion of the created dust and discharge it into bag-type dust collectors. The dust collection system is protected simultaneously with the folder in case burning material is drawn into it. Some dust collection systems serve just one folder, while others serve more than one. In that case, the CO$_2$ system is designed to flood the collector if the system operates on any of the folders served.

For the CO$_2$ discharge to do its job, it's imperative that the discharge envelop the entire hazard. Nozzles are carefully placed so that the discharge pattern covers the complete hazard with enclosure structure and panels in place or not. With the panels in place, there may be interference with direct application of the CO$_2$ discharge. But this is acceptable if the enclosure helps retain the CO$_2$ around the equipment, resulting in localized CO$_2$ flooding. However, the local application nozzles must be used for the case where enclosure panels are not in place.
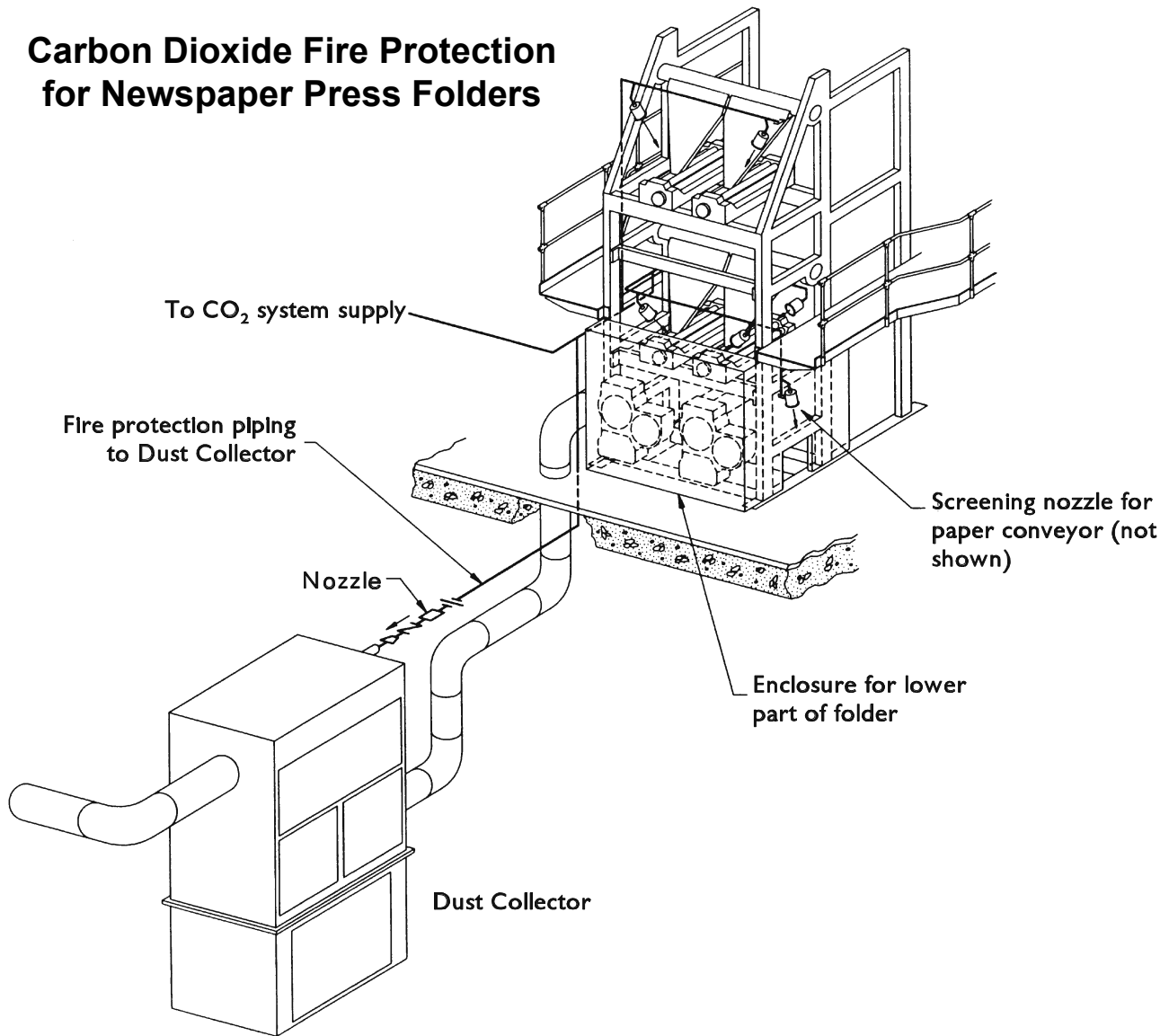
The approach that Chemetron recommends is a design to worst case conditions This may mean a few added nozzles — some that directly cover the protected surfaces when enclosure panels are not in place, and some that flood the folder when they are in place.

We have also noted another new press design feature that can affect proper protection. Some new presses have an added slitter area above the press that is removed from the folder itself. This is also an area of accumulated dust/lint, and thus, needs protection.

With new printing technology constantly developing, it should be expected that protection needs will also continually require modification and update. Chemetr on's 40 plus years of press protection experience is available to analyze such needs.

Unfortunately, no press design will ever be totally fire safe. With paper and other combustibles, fire and subsequent press shutdown will always be a problem. Chemetr on is dedicated to helping keep such a shutdown to an absolute minimum.

Carbon Dioxide Fire Protection for Newspaper Press Folders

To CO$_2$ system supply

Fire protection piping to Dust Collector

Nozzle

Dust Collector

Screening nozzle for paper conveyor (not shown)

Enclosure for lower part of folder

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