

Chengdu Cigarette Factory

VESDA smoke detectors protect millions of dollars worth of highly flammable tobacco in their warehouses.

Chengdu Cigarette Factory, China

Size: 4750 employees

Location: Chengdu, Sichuan, China.
www.pride56.com

Industry
Manufacturing, Tobacco

Products used
37 VESDA LaserSCANNER detectors
14 VESDA LaserPLUS detectors
VESDA System Monitoring (VSM) software

The Challenge

Chengdu Cigarette Factory recently embarked on a two year project to construct their 15th production facility in their 56 year history. They wanted to find a fire protection solution that could adequately safeguard the facilities which generate an annual turnover of US\$ 554 million.

In addition to the fire risk from potential electrical and mechanical equipment faults, the large quantity of flammable materials present, in both production and storage areas, would assist the rapid growth and spread of fire. Not only would this endanger the lives of the 4750 employees, it would result in significant loss of revenue due to stock damage and production down time. Tobacco is only harvested once per year and must be stored for two years before it is ready for cigarette production. In view of these circumstances, any stock loss would be a financial catastrophe.

Typical tobacco production and storage areas present the following challenges to the early detection of smoke by traditional, spot-type, detection technologies:

- **Large open spaces and high ceilings** – means that smoke has further to travel in order to reach a detector. This increases the chance that smoke, from a smouldering fire, will run out of thermal energy before it rises to ceiling height.
- **Tall densely packed storage racks** – interfere with the normal dispersion of smoke preventing it from reaching detectors.
- **Ventilation** – causes air movement resulting in the dilution of smoke which would make its detection very unlikely.

In addition to these difficulties, maintenance of detectors above storage racks would be awkward; in-rack detectors being prone to damage by forklift trucks. The frequent fumigation, necessary to protect the stored tobacco leaves from insects, produces highly corrosive substances which also damage traditional detectors. False alarms have been found to occur continuously following a single dowsing with pesticides. Such spot-type detectors could cost up to 500RMB (approximately US\$ 63) a piece to replace.

In this situation, fire suppression would not be a realistic option since sprinkler systems would result in just as much damage to stock and raw materials as smoke or flame; gaseous suppression systems would also be totally unsuited to such large open spaces.



High concentrations of dust and pesticides within the production facility, would increase the likelihood of nuisance alarms and, hence, instances of unnecessary business disruption.

The Solution

This demanding environment required a fire protection solution that provided the following:

- High sensitivity, to enable early warning of small smouldering fires and rapid response to fast growth fires.
- Flexibility of detector placement, allowing sampling at multiple locations throughout the facility - on ceiling, within storage racks etc.
- Simple system maintenance, both safe and convenient.
- Protection against detector damage, both mechanical and chemical.
- Tolerance to nuisance alarms.

It was decided that the very early warning capability of the VESDA Aspirating Smoke Detection system offered the best solution, as it satisfied all of the above requirements.

Both the production and storage areas of the Chengdu Tobacco Factory are now fully protected against fire, and the consequent disruption to business, by an integrated fire protection system. This system includes VESDA Aspirating Smoke Detectors and the VESDA System Manager (VSM) system configuration and monitoring software.

A total of 51 VESDA detectors (37 LaserSCANNER 600 and 14 LaserPLUS 400) cover the rending workshop plus its associated multi-layer warehouse, the racked storage warehouse, fire duty rooms and central control rooms.

The Results

"The VESDA system's ability to provide early warning detection allows our staff time to investigate any threat, large or small, and take appropriate action before any significant damage occurs. It has provided us with great confidence in the safety of our staff and the ongoing reliability of supply to the demands of the tobacco market", said Mr Li, Security & Safety Manager for Chengdu Tobacco.

Another advantage of the VESDA solution is its flexibility with respect to where it can be installed. In this instance, sample pipe networks were placed on the ceiling, inside the ceiling void and run along storage racks close to the potential source of a fire. The detectors themselves were mounted in more easily accessible locations, at ground level, for convenience of operation and maintenance. This flexibility also allows detectors to be mounted outside regularly fumigated areas so that they are not damaged by pesticides.

The VSM monitoring system software, installed on a PC in the fire control room, allows all aspects of the detection system to be configured and commissioned. It is now used in the daily monitoring of the facility. Staff use VSM issued early warning alarms to promptly investigate any risk of fire. VSM generates real-time, prioritised indications of all alarms and faults related to floor plans of the facility and its various buildings. The software also supports remote control and interrogation of all devices on the network, logging all events occurring on the system for tracking purposes.

VESDA detectors possess unique electronics and software which makes them unlikely to issue nuisance alarms in response to the high levels of dust occasionally occurring in the facility. Detectors can also have their software programmable thresholds tuned to their environment remotely, via the VSM software.



“With VESDA detection system, we have significantly improved our overall fire protection capability.”

Mr Li
Security & Safety Manager
Chengdu Tobacco Factory

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