ATEX CO Fire Protection & Explosion Prevention System G—1.1

INTRODUCTION

The ATEX CO Fire Detection System is designed to allow early detection of an incipient fire. The incipient fire can then be treated automatically or manually, eliminating the potential of an explosion within the protected equipment at a fraction of the cost of a suppression system. When used with an explosion suppression system it can save the high system operational costs and lower the long down time associated with system reconditioning.

CONCEPT

Sophisticated sensors placed at all air inlets and outlets take air samples at each point. A non-dispersive infra-red absorber (NDIR) analyzes each total sample to determine the CO concentration. The controller then sums all of the inlet and outlet samples. The sum of the signals are compared on a continual basis. An alarm is generated when the CO differential reaches the programmed threshold. The system has three levels of alarm signaling. When the comparison generates an alarm condition the controller can signal the user, automatically shut down the process and/or activate a rapid suppression system to extinguish the fire. With the smoldering fire extinguished the potential of explosion ignition has been mitigated. Cost is contained with a rotating valve to allow one chamber to read all input and outlet concentrations. In cases where a suppression system is present the CO system could prevent an activation and save the associated costs of reconditioning and production downtime.

BENEFITS

- ✓ Quick detection of an incipient fire in under 10 seconds.
- ✓ Lowers damage caused by fire.
- ✓ Mitigation of explosion potential.
- ✓ Lower maintenance cost .
- ✓ Lower suppression systems operational costs.
- ✓ Cost effective option to suppression.
- ✓ On site inspection by plant personnel.
- ✓ Quick installation and commissioning.

CONSTRUCTION

The control cabinet houses all the systems electronics. The electronics include the NDIR, rotating valve, pump, reference sample, AD Converters, computers, printers and all other required hardware and wiring. Each control comes pre-wired to perform the functions per the system design manual. With a function time of ten seconds, the unit provides quick response to a smoldering condition. The control will provide three levels of alarm based on CO concentrations. The first level allows inspection of the process, the second automatically controls the process and the third level is for emergency shut down and automatic extinguishing of the fire. The sensor unit mounts to the process equipment by a single small diameter welded flange. The control unit, has a 24 sq. in. foot print, and is typically located in a control room.

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