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Automatic Record Collection

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P.H. Haroz, Conversion Technology Inc., USA, looks at how an automated electronic record keeping and reporting system helps meet the conditions of the Title V Permit.

Introduction

All facilities that operate under the Clean Air Act Amendments' Title V Operating Permit understand that the recordkeeping and reporting required by the permit can be a very labour-intensive process. These requirements place significant pressure on the plant personnel assigned with environmental responsibilities such as daily, weekly or monthly recordkeeping, environmental professionals responsible for compiling all these records and preparing the reports (quarterly and/or semiannual). It also places pressure on the 'responsible official', the signing authority for the Title V permit application. The first Title V certification can be a problem for many facilities. For the year of issuance of a Title V permit, the facility is required to complete a compliance certification for the period from permit issuance through December 31. If a permit is issued in December, the facility is required to provide a compliance certification covering this period. This often sends facilities scrambling to prepare and submit the report and cross their fingers that the information that was submitted is sufficient for state officials.

Although the general format of the Title V permit is relatively uniform, the recordkeeping requirements vary depending on the type of facility, the type of emission sources and the pollution control equipment that is in use at the facility. The 'who' and 'how' of obtaining and maintaining the required records falls into the facility's environmental professional's lap. Many facilities accomplish the task through manual tracking and hand calculations (using multiple spreadsheets or notepads). An automated electronic recordkeeping and reporting system that will interface the signals from the process and pollution control equipment monitors to gather the necessary information is an optimal solution. This type of system will minimise time requirements and optimise accuracy for complying with the conditions of the Title V Permit.

Recordkeeping requirements

Maintaining compliance with the recordkeeping requirements of the Title V Permit is very labour-intensive. Requirements vary for each facility, depending on the type and amount of emissions, as well as on the control equipment used. Table 1 provides examples of typical recordkeeping requirements for various emission units.

Table 1. Typical recordkeeping requirements for emission units

Emission unit	Recordkeeping requirements
Boiler	Record daily steam usage Record, on daily basis, percent oxygen at the stack exit Routine maintenance Shut down/Start up time
Venturi scrubbers controlling particulate matter (PM)	Record pressure drop Record scrubbant flow rate Routine maintenance Shut down/Start up time
Electrostatic precipitator (ESP) controlling particulate matter (PM)	Record secondary voltage and amperage Routine maintenance Shut down/Start up time
Baghouses	Record if visible emissions are present If visible emissions are present, the permittee shall record the cause of the visible emissions, pressure drop, any other pertinent operating parameters, and the corrective action taken Record pressure drop across the bag house and ensure that it is within the appropriate range Routine maintenance Shut down/Start up time
Cyclones and/or multiclones	Record results of inspections for holes in the equipment or evidence of malfunction in the interior of the cyclones and/or multiclones Pressure drop across the multiclone Routine maintenance Shut down/Start up time
Regenerative thermal oxidisers	8 hour average of combustion zone temperatures 12-hour average of gas stream pressure in the plenum 12-hour average of ID fan motor speed 24-hour average ID fan static pressure Routine maintenance Shut down/Start up time
Fugitive dust	Maintain a record of all actions taken to suppress fugitive dust from roads, storage piles, or any other source of fugitive dust. Such records shall include the date and time of occurrence and a description of the actions taken.



Figure 1. The system interfaces the signal from the process with the Title V Recording & Reporting software.

Reporting requirements

In addition to the cumbersome recordkeeping requirements of Title V, a substantial number of reports must also be filed with state offices. These include the following:

- *Out of compliance notification reports:* facilities operating under a Title V Permit are required to submit to the state in writing, within seven days, any deviations from applicable requirements associated with any malfunction or breakdown of process, fuel burning or emission control equipment for a period of four hours or more which results in excessive emissions. The written report must contain the probable cause of the deviation(s), duration of the deviation(s) and any corrective actions or preventive measures taken.
- *Semiannual reports:* facilities are required to submit written reports of any failure to meet an applicable emission limitation or standard contained in the permit and/or any failure to comply with or complete a work practice standard or requirement contained in the permit.
- *Annual compliance certification:* all reports that are submitted for operation under a Title V permit must be certified by a 'responsible official' within the company that the statements and information in the report are true, accurate and complete based on information and belief formed after reasonable inquiry.
- *Annual emission fees:* companies operating under a Title V permit must calculate their annual emissions of criteria pollutants and multiply it by the fee rates to determine their annual emission fees.

Maintaining records

Facilities are required to maintain records of all required Title V recordkeeping and reporting for a minimum of five years.

Potential problems

Missing data

In addition to paper records being lost or misplaced, personnel assigned to recordkeeping responsibilities may miss a record. Missing records may be due to forgetfulness or to an employee being out on vacation and the backup personnel may not record the necessary information. Another common reason for missing data is malfunctioning equipment, such as strip recorders. Malfunctions can be caused by as simple a problem as pens running out of ink. The missing data is

often not discovered until the required semiannual report is in the process of being prepared. Each instance of missed data may result in violations and fines that are in many cases very substantial.

Erroneous data

Personnel may record data erroneously and the errors are not discovered until the semiannual reports are being prepared.

Late discovery of excursions

Data is recorded by personnel or strip recorders to ensure there are no excursions, but many times the excursions are not discovered until it is time to prepare the semiannual report. Then, during preparation of the report, it is discovered that the percentage of time the facility was not within its operating limits is far greater than it should have been. Often corrective action is taken in response to an excursion and it is not properly documented or worse, required corrective action is not taken.

The items above can be avoided with an electronic recordkeeping system that automatically records data and provides alarms when excursions are approached. Even if data is still recorded by personnel, maintaining the records in an electronic recordkeeping system identifies problems early when they can be corrected, not six months later when it is too late to take corrective action.

The challenge

There are many different Title V Permit Conditions for maintaining compliance with emission limits, testing, monitoring, recordkeeping, and reporting requirements. It seems impossible for one person to

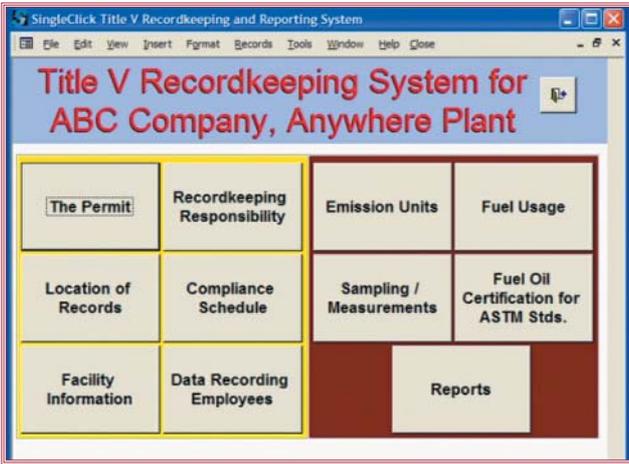


Figure 2. The main screen provides buttons to access all record keeping and reporting requirements.

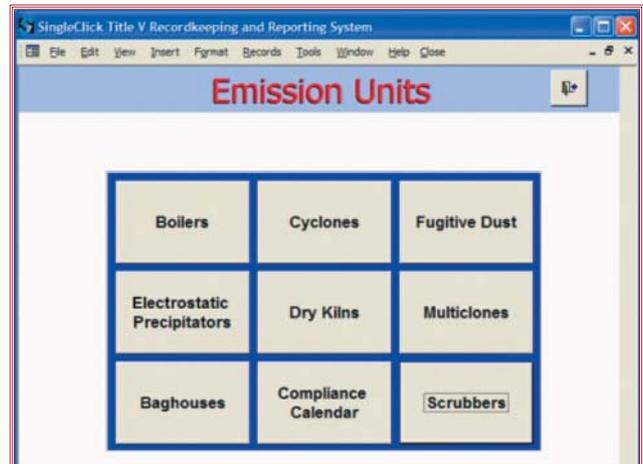


Figure 3. The Emission Units screen provides buttons to access the emission units with recordkeeping requirements.

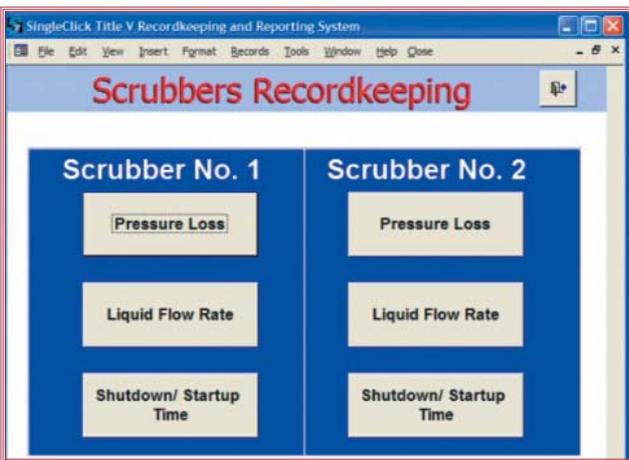


Figure 4. The Scrubbers screen provides buttons to access each scrubber and its recordkeeping requirements.

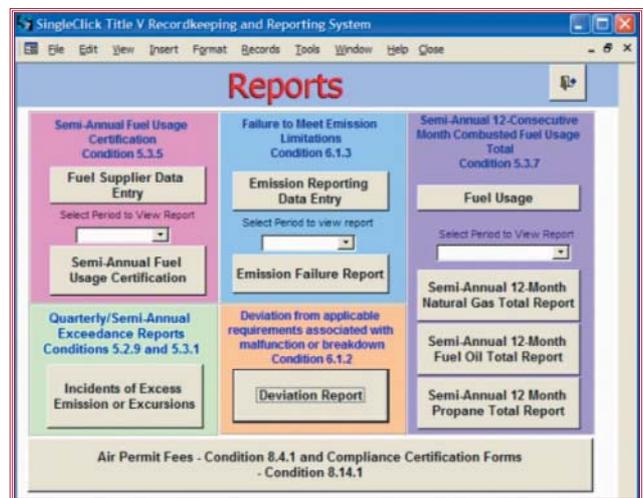


Figure 5. The reports screen provides access to all reporting requirements.

handle them all. In addition, the responsible person for the Title V at the facility is dependant on operator and maintenance personnel to conduct periodical activities required by the conditions of the Title V permit and on top of that they must record necessary parameters correctly.

The solution

The optimal solution for maintaining compliance with a facility's Title V Permit is an electronic recordkeeping and reporting system. A successful system should be user-friendly, so that all employees responsible for upkeep of the Title V permit can easily use it. It should be customised to address the facility's specific Title V permit conditions, a manual system must allow for simple user input of the required data such as pressure drops and visible emissions. However, this manual process can be completely automated by installing a Continuous Monitoring System (CMS), which will log the data directly into the Title V recordkeeping and reporting software. The system should also generate all required reports and enable the responsible official to review the data electronically in a very friendly mode. It should alert the user to any non-compliance issues, help prevent the facility from being in non-compliance, minimise the recordkeeping time requirements and

maximise the accuracy of the reports. It should also be affordable.

The SingleClick™ Title V Automated Electronic Recordkeeping and Reporting System, developed by SingleClick Co. and Conversion Technology Inc., meets these criteria and also provides other beneficial features. The system is fully automated and requires minimal user interaction (Figure 1), offers custom interface electronics, networkable controller, automated on screen indicators to show over range, under range and standard operating conditions, e-mail notification of alarm or out of range conditions if needed, and an automated audible alarm for extreme out of tolerance conditions. The main screen provides buttons to access all recordkeeping and reporting requirements (Figure 2). A 'Permit' button opens the Title V Permit, and an 'Emission Units' button opens the emission units that have operating conditions (Figure 3). Clicking on the 'Baghouses' button, for example, opens a screen that shows all of the facility's baghouse systems, and each baghouse has its own buttons for the required recordkeeping, such as visible emissions, shut down and start-up times, and preventive maintenance. The 'Scrubbers' button opens a screen with all scrubbers and the buttons for their required conditions (Figure 4), while the



'Reports' button provides access to all of the reporting requirements (Figure 5). All of the required reports are automatically generated from the recordkeeping database.

The system also features extensive drop-down menus that enable the selection of entries from a pre-selected list including details regarding the following:

- Proper operation of equipment.
- Cause of excursions and other pertinent operating parameters and corrective actions taken.
- Operating conditions existing at the time of sampling or measurements.
- Adjustments and maintenance performed on the various systems and devices.
- Description of routine maintenance performed on all air pollution control equipment.
- Description of actions taken to suppress fugitive dust.

The system also features out of compliance warnings that are automatically activated in any of the following eventualities:

- Any twelve-consecutive-month total emissions limit is reached from sources.
- Any one hour period during which the average emissions from any source are equal to or greater than the permitted limits.
- Any baghouse pressure drop is out of the permitted limits.

- Any scrubbant flow rate is out of the permitted range.
- Any ESP secondary voltage and amperage is out of the permitted range.
- Thermal oxidiser temperatures are below the permitted limits.

All electronic records are stored in an easily accessible database. Included in the database is a tracking system with the location of all paper records required for Title V permitting. A compliance schedule automatically keeps track of compliance due dates, as well as a list of actions that need to be carried out on hourly, daily and weekly basis for the facility to stay in compliance with the Title V operating conditions. Additionally, the Title V recordkeeping system calculates emission fees.

Conclusion

The complexity of the recordkeeping and reporting requirements of most Title V operating permits is overwhelming. An automated electronic recordkeeping and reporting system can ease the operator's task of inputting the data, help environmental managers report the necessary information, and provide alarms when violations of permit conditions are approached. It will also prepare the required reports and provide responsible officials a better comfort level prior to compliance certification of the annual reports. With electronic recordkeeping and reporting, manufacturers can meet successfully Title V operating conditions while minimising labour requirements.

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THE SOLUTION



The Title V Electronic Recordkeeping and Reporting System
A SingleClick Management System Developed by CTI and SingleClick Co.

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