

DR DAS Open CEM

Compliance monitoring within industrial facilities must be supported with data collection, quality review and reporting systems. DR DAS designs, assembles and installs effective, labor reducing, state of the art data acquisition and reporting solutions that unify and simplify the total continuous monitoring performed at industrial facilities. Most facilities have over time accumulated a variety of environmental data acquisition and reporting systems. It is not uncommon to have three or 4 special purpose PC's competing for space and attention in the control room environment. At DR DAS our experienced applications specialists and Microsoft software developers can assess you total facility information collection and reporting needs. To address these requirements they apply DR DAS's Open Source data management software programs. Typically all data are assembled in a central SQL Server database with Web Based data review. Client Server applications support computational and reporting needs. All systems offer a corporate environmental information Intranet.

DR DAS Open CEM software consists of:

DR DAS SQL Server 2000 database - Advanced relational database supporting storage of network configurations and data, including measured values, digital status, calibration results and calculations. Meteorology, Air Quality and Emissions monitoring and reporting are the most common applications that are supported. Both continuous and periodic measurement programs can be supported. For example lab data can easily be imported through other Microsoft products such as Excel and Access.

Typically data sets are organized in RAW and Edited Stations. Within the system a Physical Station represents points in a singular data source such as a data logger or PLC. For each Physical Station holding RAW data, a companion Edited Station exists. The points in the Edited station are copies of the raw data except that they alone can be adjusted for calibrations and or edited. A separate data table documents all changes made to Edited data stations.

Automated tasks provide data base maintenance, allowing near zero administration requirements.

SiteView HMI data collection and HMI software - Supports collection of continuous measurement data from numerous PLCs, data loggers, data historians and DCS systems. SiteView HMI performs calculations and averaging in support of regulatory requirements. Monitoring program support is offered for ambient air quality, meteorology, continuous emissions and or parametric monitoring and water quality. Alarms may be set on levels, digital point states, calibration failures and communication failures. Alarms are annunciated visually, by audio means, by relays and by email. Alarm acknowledgement, reason entry, entry of expected calibration levels, calibration correction and invalidation is supported.

Calculations are performed automatically and on demand. The system utilizes knowledge of the dependency of one station on other stations to coordinate the timing of calculations.

The user may construct displays for various monitoring programs, plant areas, and emissions sources. DR DAS will typically develop up to 5 displays for turn key installations.

Point values turn yellow or red on alarm. Open alarms may be displayed in a companion display. A click on the point launches a real-time trend with the last 60 values displayed. From this display the user can drill down to calibration information about the point, current states for associated discrete points and to alarms related to that specific point.

Site Manager configuration and CEM system support software - Supports configuration of:

- Physical (raw) and edited stations as well as the computed stations.
- Measured and calculated monitor values
- Digital points
- Alarms
- Expected calibration values, drift limits and methods for drift determination, and calibration correction methods

- Communications
- Personnel data (including email and pager information)
- Equipment (monitors, sensors, etc. used in the measurement programs)
- Measurements, i.e. NOX, Temperature
- Units, i.e. PPM, degree F

Reporter - report generation software – Supports creation of reports covering:

- Unit Status/Operating Periods
- Monitor Out of Service Period
- Exceedance Periods
- Calibration Events
- Data Listings

Reports are generated as HTML and text with the output stored in the SQL database for retrieval and review through Reporter and the Intranet. Reports can also export results to Excel worksheets allowing user formatting within Excel. Reports detecting monitor downtime or emission limit excesses can be automatically emailed or sent via FTP to agencies and other parties.

EIS Web environmental information web site – offers an Intranet web site with:

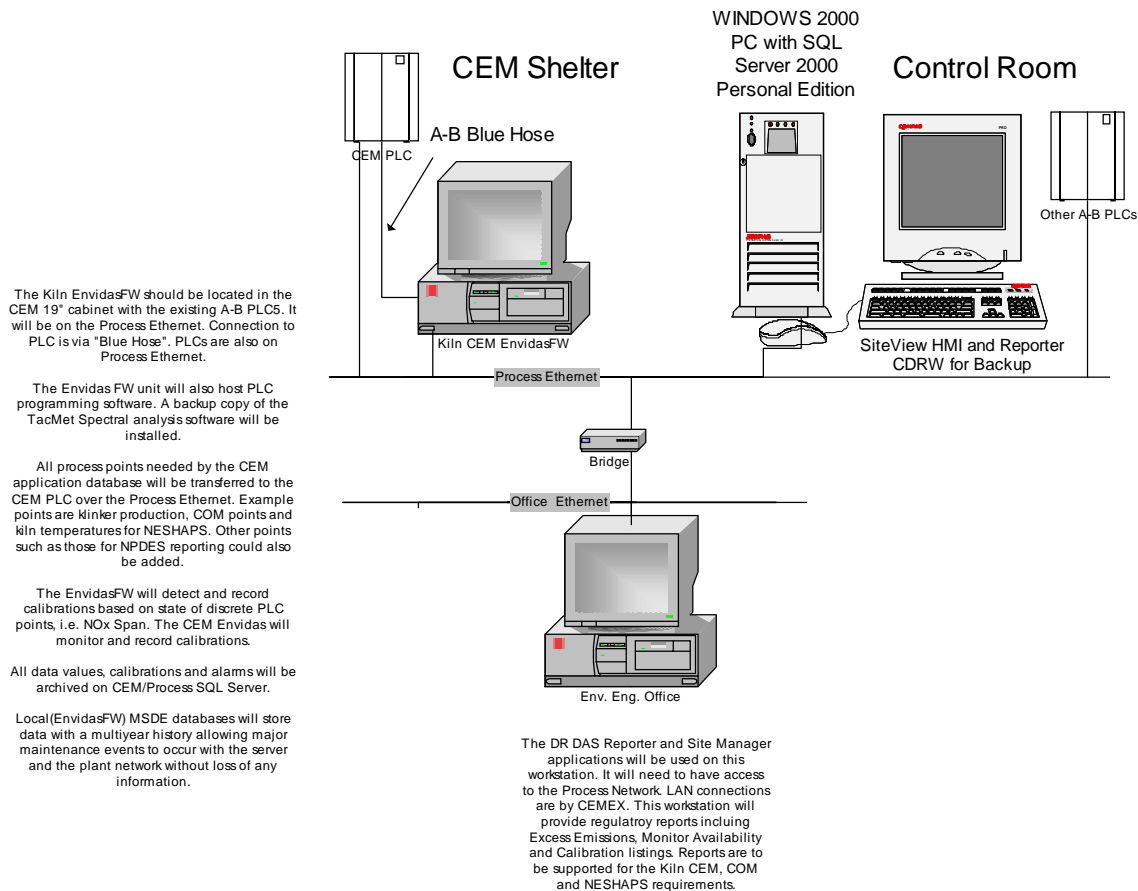
- Current values and data status
- Open alarms
- Recent trends
- Calibrations
- User defined reports
- Review of previously created reports

Data Acquisition Options

DR DAS supports a number of data acquisition options: PLCs; industrial control systems, data historians and HMI/SCADA packages; most environmental data loggers including the EnvidasFW data logger and ODBC compliant databases.

Example System Design

This example design integrates a number of the core and optional DR DAS Open CEM system components with the existing infrastructure to create a cost effective, open solution.



The EnvidasFW unit included in this design forms all the averages in a regulatory compliant fashion and records calibration results and faults. Invalid samples are excluded from averages. Local data storage and data analysis is supported by the system. This allows the central database and other programs to be taken off line as needed without data loss.

After the EnvidasFW units form the CEM values, the control room CEM workstation will collect them over a Process Ethernet Network. The DR DAS Open VB application **SiteView HMI** is used for this purpose. Data will be inserted in the central SQL database. In the base design, the SQL database is co-located on the new Control Room Workstation. Alternatively a facility can host SQL on an existing server with an IT area.

SiteView HMI will calculate all required values and store these in the SQL database. Alarm conditions detected by the SiteView MI program can be automatically emailed to staff. Users of SiteView HMI acknowledge alarms and enter reason/action codes. SiteView HMI can adjust data as required for cal failures, make required calculations and averages per regulatory requirements and display and annunciate alarms. Users may acknowledge the alarms and enter reason and actions taken.

Typically two years of raw data and 5 years of all other values will be retained in the Enview database. There is ample room for greater storage capacity if desired. The system will back up the database and the workstation drive to CDRW once a day. Within the database utilities DR DAS will include procedures for data substitution.

The Reporter program is provided for regulatory and other reporting needs. It includes a data editor. **Reporter** is an Open VB6 application providing on-demand and automatic report generation capability. **Reporter** automatically prints and sends a report via email or ftp. Reporter produces both text and HTML files that are stored inside the DR DAS Open CEM SQL database. Storage of reports in SQL provides for

easy retrieval of reports by either the **Reporter** application or the **Environmental Information Web Site (EIS)**.

Multiple copies of Reporter are often supplied. In the Control Room it supports automatic reports for Control Room personnel and viewing by others on the EIS web site. Reports showing missing data or excesses can be emailed to specified staff automatically. The Environmental Engineer's PC also has the Reporter program installed.

The **Site Manager** application provides the HMI to configure all the SQL database objects. **Site Manager** typically runs on the Environmental Office PC.

The **EIS Web Site** provides plant wide access to data and reports. This allows information delivery without client program installation and the need for program specific training. It can be implemented on the Control Room Workstation or a separate server.