CEMData

A fully integrated PC-based data acquisition and report generation package developed specifically for the complex requirements of continuous emissions monitoring and reporting.

CEMData has been designed for maximum flexibility combined with ease of use, implemented via a hierarchical system of access control to the following levels:

- Application set-up — *Project-specific assignment of measurements, alarms, status signals, acquisition parameters*
- Maintenance mode — *On-line tools including built-in digital storage oscilloscope, assignable by software*
- Supervisor mode — *Interpretation of legislation into report templates, set-up of all operator parameters, etc.*
- Operator mode — *Real-time monitoring and report generation*

System
Custom-assembled PC system to suit client's requirements, typically 1GB RAM, 2.8GHz Intel dual core processor, 2 x 250 GB HDDs, 48x DVD
Operating system Windows® 2008 server, Windows® 7 Professional
Integrated data acquisition and report generation software written in-house by LOWE Engineering.
Traditional solution:
On-board PC data acquisition cards can be fitted, typically 32 x 16-bit Analogue inputs + 32 digital I/O per card providing analogue and digital input/output signals as required - number of cards limited only by capacity of PC and/or auxiliary chassis.
Modern alternative signal handling by:
Serial data I/O via RS232 ports.
RS485 data I/O via MODBUS ASCII and/or MODBUS RTU as MODBUS master or slave.
TCP/IP data I/O via LAN/WAN using Ethernet (MODBUS/TCP).
CEMData client/server workstations networked via LAN/WAN using CEMBUS (TCP/IP).
CEMData OPC DA 1.0 & 2.0 interface

Data security and backup
CEMData runs automatically on power-up. A watchdog timer can be provided to alert the DCS or SCADA of system failure.
Cost effective options include write-only archive on second hard drive, mirrored drives or RAID array.
Data stored in secure binary format, system security to US Dept. of Defense level C2.

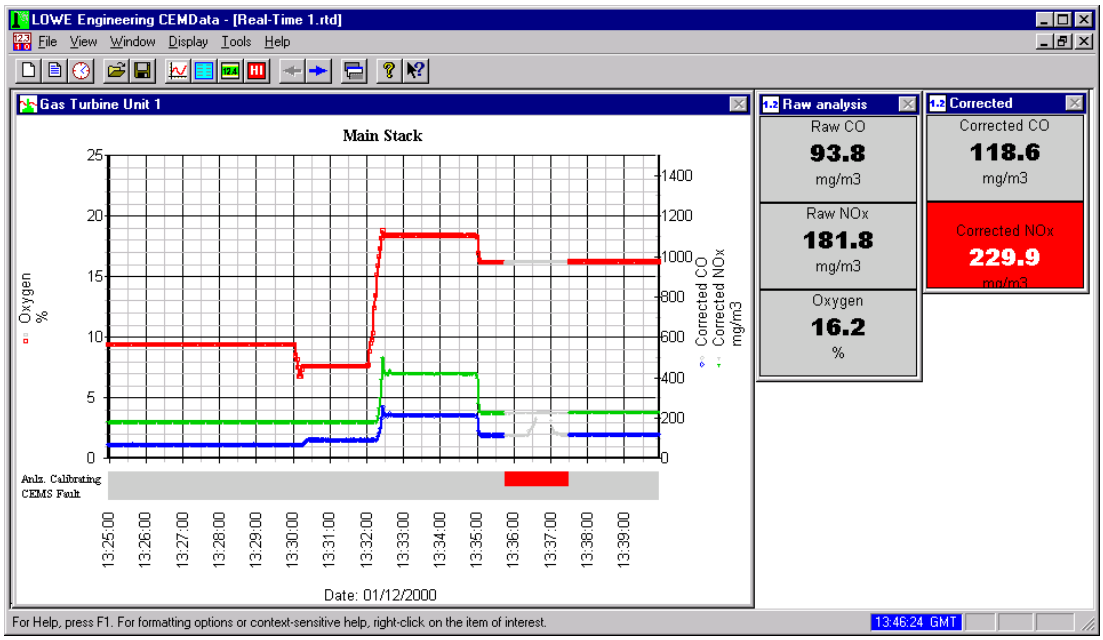
Data handling
CEMData maintains three rolling data archives of data, each widely configurable for frequency and archive length:

- Real-time data — *typically written every 1-2s, over-written after 1 hour*
- Semi-historical data — *typically written every 2-10s, over-written after 6 months*
- Main archive — *typically written every 1min, over-written after 10 years – used for all report generation*

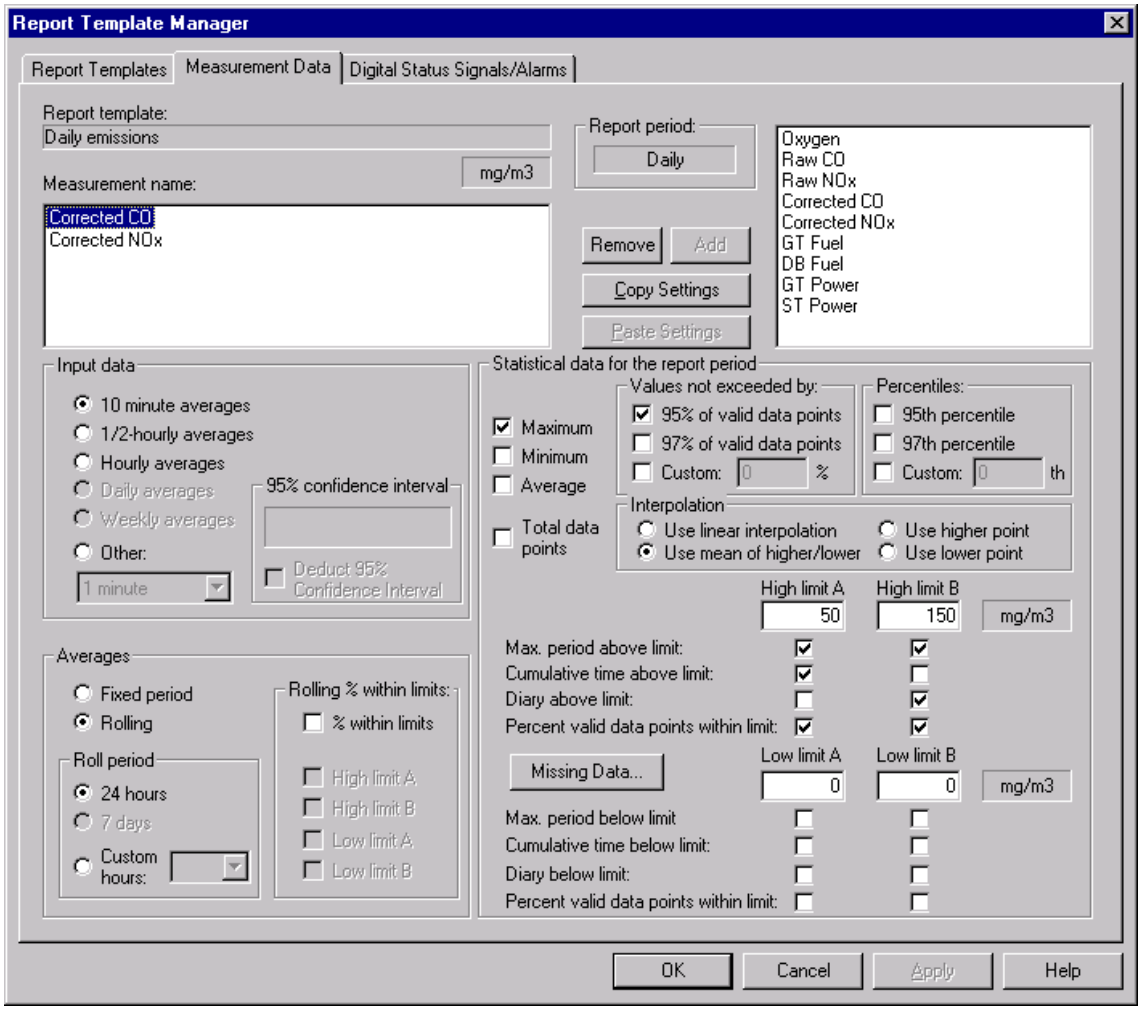
Time and date representation
All times are stored and displayed in UCT (=GMT). Internal representation uses the FILETIME structure, a 64-bit integer representing the number of 100ns intervals since 1/1/1601.
Synchronisation to national/international atomic radio clock or via LAN/Internet.

Report generation
"One-click" report generation to user-generated pre-defined report formats
Fully automatic report generation and printing with flexible options for date/time logic
Custom reports on demand using pre-defined report formats or freely formatted by the user

Historical data display
Powerful zoom feature for on-screen display of all semi-historical data over any interval up to 24 hours
Real-time data display screens with charts, tables, graphs, digital meters, emission countdown meters, annunciators.



Typical real-time display screen



Setting-up a report template

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