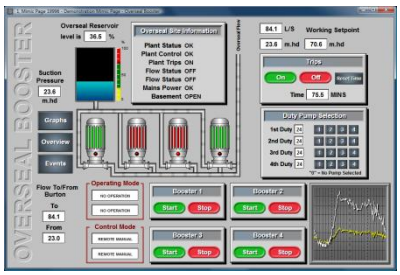
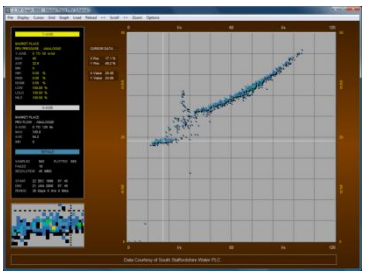
OPUS software

Specialists in Telemetry & SCADA System Software

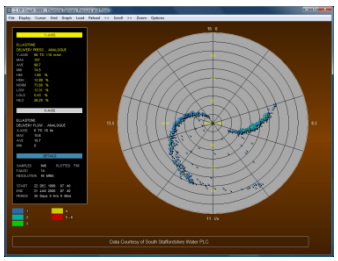


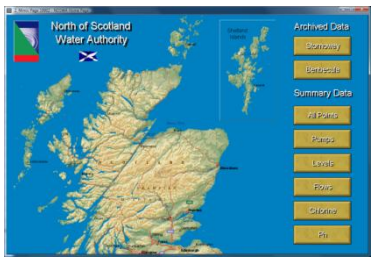


Product Overviews

PC6-SQL Master Station

AGWS6 Graphic Workstation





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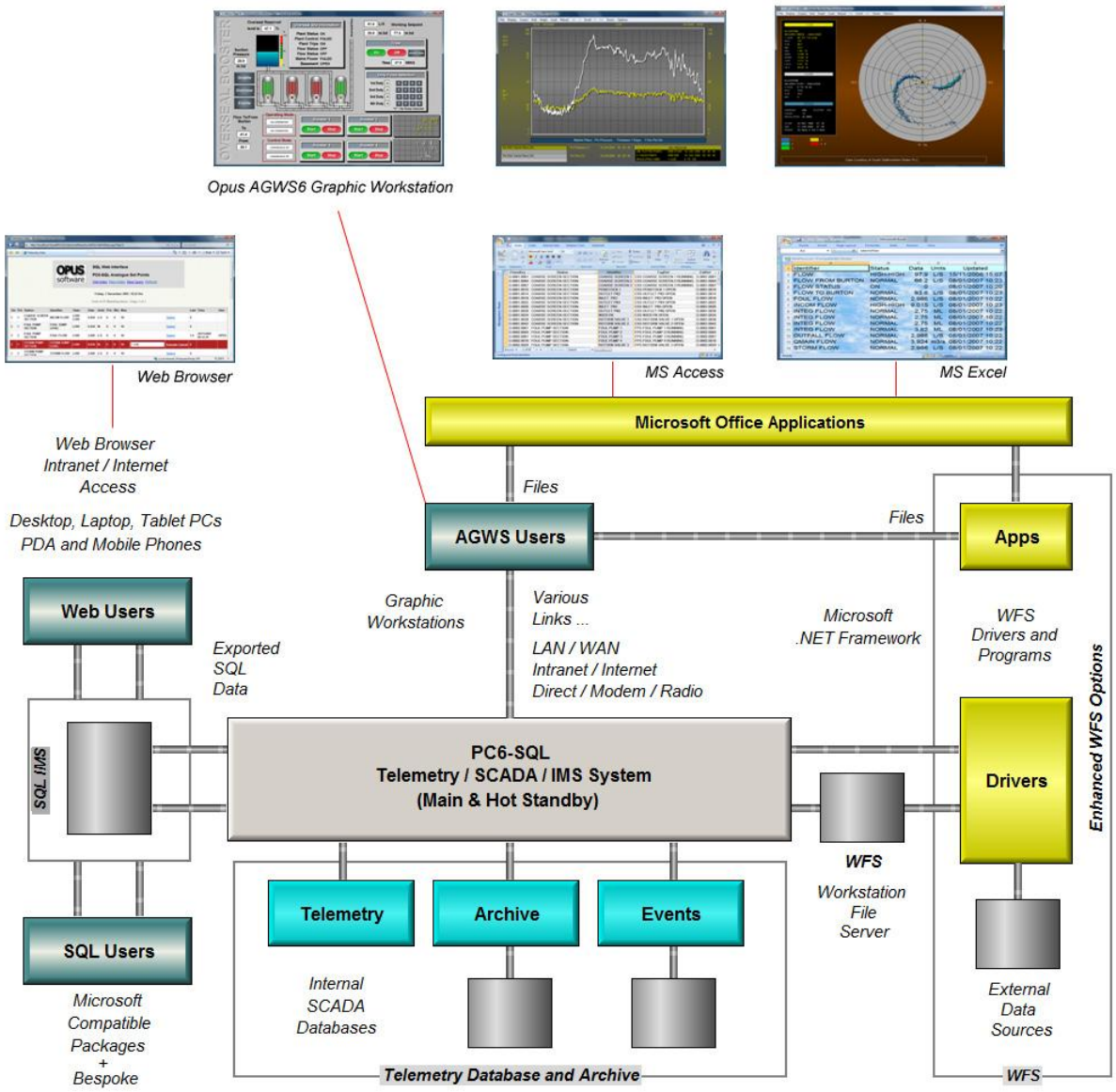
Introduction

OPUS SOFTWARE presents **PC6-SQL**, the sixth generation of Telemetry/SCADA (Supervisory Control And Data Acquisition) software. This system combines the very latest real-time multi-tasking software with an integrated SQL based Information Management System and sophisticated Web Interface.

The PC6-SQL software is the culmination of 20 years of continued development and refinement. The proprietary package is state-of-the-art, having been extensively field proven over the years to provide an extremely capable and flexible system, one that is able to meet your current needs and able to grow to accommodate your future requirements.

PC6-SQL is ideally suited to all sizes of system ranging from small standalone HMIs to large distributed multi-user telemetry schemes. This product is designed for use on Microsoft Windows based systems.



Standard System Configurations

The PC6-SQL system is ideally suited to all sizes of Telemetry/SCADA system from small single user standalone systems to large multi-user main/standby systems. The system is designed to operate in both standalone and hot-standby environments. Additional File Servers, SQL Servers, Web Servers and Workstation Servers can be integrated into the PC6-SQL architecture to create a powerful and flexible distributed Telemetry/SCADA system.

All PC6 systems provide full on-line reconfiguration of the Master station's database and workstation's setup data. Each system is limited only by the number of stations and/or points that can be configured within the Master station's database. Each system is fully upgradeable and can be expanded reutilising the existing hardware and software components to accommodate practically any size of database, any number of local/remote workstation users and practically any number of protocols to communicate over a variety of bearer circuits (private wire, PSTN, radio,LAN/WAN etc.). This flexibility enables your system to grow according to your requirements whilst still preserving your initial investment.

All RTU, ELS and SM systems can be licensed as either standalone or main and hot-standby systems.

HMI Systems

HMIs are restricted for use as standalone full-graphic display systems supporting touch-screen displays, typically panel mounted. These single-user systems cannot be configured as sub-systems (RTUs or Sub-Master stations) to other higher-level systems. The standalone HMI software excludes all printing, management report, general point processing, alarm paging, SQL based IMS and associated Web interface functions. The software is, however, fully upgradeable.

RTU Systems

RTU (0 User) systems are intended for use at remote unmanned sites operating as Remote Telemetry Units providing typical outstation and data logging facilities. These systems are full-featured Telemetry/SCADA/IMS systems equipped with integrated SQL based Information Management System, a sophisticated Web interface, printing and management report generation facilities, alarm paging and a single-user interface based on the very latest Advanced Graphic Workstation software. No permanent workstation user is included in the basic RTU license; however, the local and remote admin consoles can be used to assist reconfiguration, maintenance and system administration.

RTU (1 User) systems are based on the standard RTU system license upgraded with a single AGWS/HMI full-graphic workstation user. These systems are ideally suited for all types of HMI or local/remote control room workstation operation utilising standard Microsoft Windows based computer systems equipped with either mouse driven or panel mount touch-screen displays.

All RTU licenses are fully upgradeable.

Entry Level Systems

ELS (Entry Level System) systems are full-featured Telemetry/SCADA/IMS systems equipped with integrated SQL based Information Management System, a sophisticated Web interface, printing and management report generation facilities, alarm paging and a single-user interface based on the very latest Advanced Graphic Workstation software.

Additional user licenses can be added to the ELS systems to support a practically unlimited number of local/remote workstation users. Workstation Server systems are also available to distribute the burden of supporting large numbers of workstation users. Separate File Server and Web Server options are also available.

Small single-user systems are typically based on Mini-ITX (or Nano-ITX) hardware platforms equipped with bootable hard disk drives and data logging solid-state IDE flash drives. Utilising fanless low cost ultra-low power motherboards and solid-state 'active' data logging drives these systems are ideally suited for 24/7 operation (i.e. 'once on always on' systems). Opus Software Limited can provide a variety of turnkey Mini-ITX and Nano-ITX computer systems.

Larger Systems

The PC6 license can be upgraded to support up to 4,096 remote units (outstations, data loggers or PLCs) communicating via one of 32 full duplex data acquisition channels. Larger database sizes can be accommodated at the user's request. The remote devices may be of varied type and the data acquired via any form of bearer circuit. Each Master station may also communicate with a practically unlimited number of Sub-Master stations to form a fully integrated distributed system. Software procedures are available to provide semi-automatic procedures for 'upline' and 'downline' loading of configuration data with full on-line reconfiguration of the target system remotely from the appropriate Master or Sub-Master station site.

Multi-User Systems

The basic single user license can be upgraded to support multiple local and remote users. Each user accesses the system using the very latest high performance Opus Advanced Graphic Workstation software. Both operator (real-time update) and management (periodic update or static display) workstations are supported. The extent and type of access to the system is fully user configurable.

The Master station's software design ensures that the system's performance is largely independent of the number of workstation users accessing it's centralised database.

File Servers

'Peer to Peer' or Server based networks can be installed to provide automated backup of all essential data, including database configuration, telemetry data and all archive data. The network link also facilitates the export of telemetry data to external systems.

Workstation Servers

Dedicated Workstation Server PCs can be installed on large systems to accommodate practically any number of workstation users, networked or otherwise.

Standby Systems

A variety of cold, warm and hot standby systems can be provided with a standard hardware configuration to support manual or automatic changeover to the standby system in the event of main system failure. The standard main-standby link can be used to provide an automated backup of all telemetry and configuration data. In addition, Peer to Peer and Server based networks can be installed to provide automated backup of all essential data, including all event and point archive data.

Hybrid Systems

The multi-protocol support of the Opus PC6-SQL SCADA Master stations permits easy integration into existing telemetry schemes. The Master stations are also ideally suited to linking multiple systems together into one coherent telemetry/SCADA system.

Standard System Software

The Master station software consists of a number of standard base system, optional and in some cases bespoke software processes. Each Master station process runs concurrently on the host computer system and is responsible for a specific Master station function. The Master station's software is a proprietary package that has been extensively field proven over the past twenty years. The following sections provide a brief description of the standard software elements applicable to all Opus PC6-SQL Telemetry/SCADA Master stations.

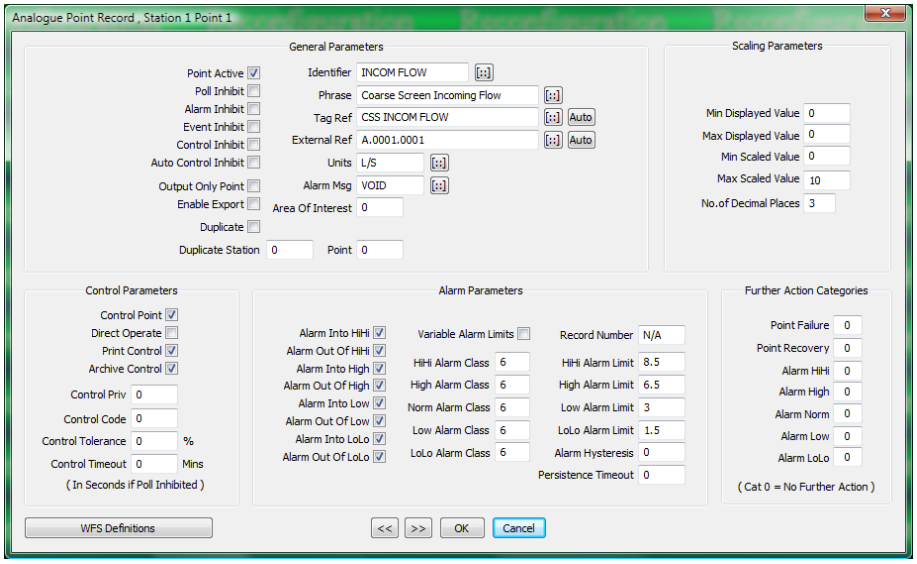
Telemetry Database

At the very heart of the system is a specially designed high-speed real-time relational database. This database is independent of the SQL IMS and hence provides for both efficient and fault tolerant operation of the Telemetry/SCADA system. In addition, exported telemetry data can be accessed via the SQL database tables using a variety of Microsoft compatible products (MS Access, MS Excel etc.).

The PC6-SQL fixed-schema relational database and its accompanying Database Management System (DBMS) software provides the system with some very unique and novel features allowing the user to interrogate and query the system for information which is displayed in real-time at the operator's console. Such features remove the need to create special summary and report pages and provide the user with a secure but virtually unlimited access to the system.

Reconfiguration

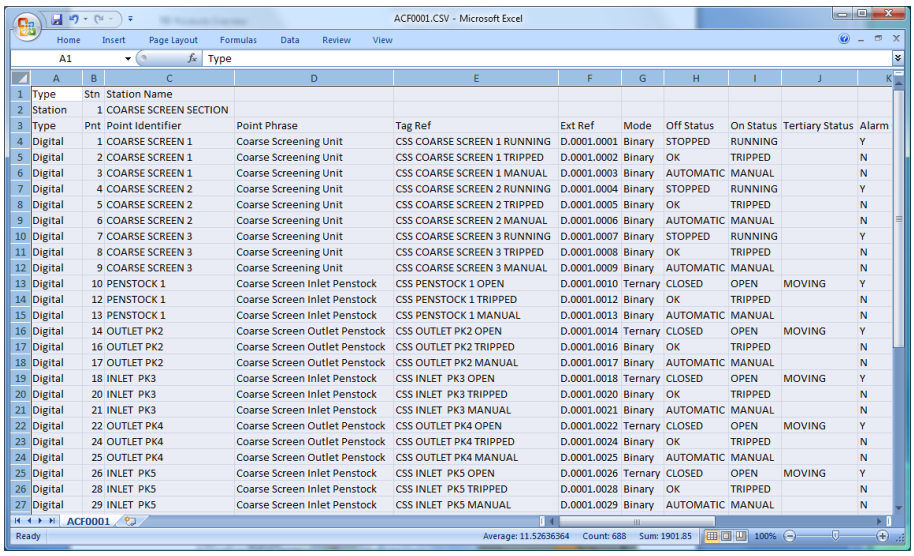
Full on-line reconfiguration of the Master station's database, mimic pages and the workstation's setup is provided as standard on the system.



Editing an Analogue Point Record

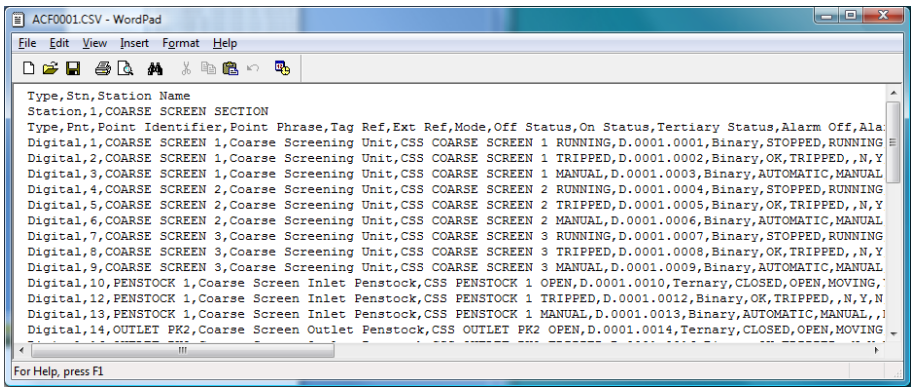
Reconfiguration can be performed by privileged operators without the need for any additional development licenses.

Database records can be copied to speed up the configuration of similar sites. In addition auto configuration text CSV files can be used to copy or import data. For example, remote station point schedules can be imported into Excel spreadsheets, edited as necessary, and then simply imported into the Master station's database.



	A	B	C	D	E	F	G	H	I	J	K
1	Type	Stn	Station Name								
2	Station	1	COARSE SCREEN SECTION								
3	Type	Pnt	Point Identifier	Point Phrase	Tag Ref	Ext Ref	Mode	Off Status	On Status	Tertiary Status	Alarm
4	Digital	1	COARSE SCREEN 1	Coarse Screening Unit	CSS COARSE SCREEN 1 RUNNING	D.0001.0001	Binary	STOPPED	RUNNING		Y
5	Digital	2	COARSE SCREEN 1	Coarse Screening Unit	CSS COARSE SCREEN 1 TRIPPED	D.0001.0002	Binary	OK	TRIPPED		N
6	Digital	3	COARSE SCREEN 1	Coarse Screening Unit	CSS COARSE SCREEN 1 MANUAL	D.0001.0003	Binary	AUTOMATIC	MANUAL		N
7	Digital	4	COARSE SCREEN 2	Coarse Screening Unit	CSS COARSE SCREEN 2 RUNNING	D.0001.0004	Binary	STOPPED	RUNNING		Y
8	Digital	5	COARSE SCREEN 2	Coarse Screening Unit	CSS COARSE SCREEN 2 TRIPPED	D.0001.0005	Binary	OK	TRIPPED		N
9	Digital	6	COARSE SCREEN 2	Coarse Screening Unit	CSS COARSE SCREEN 2 MANUAL	D.0001.0006	Binary	AUTOMATIC	MANUAL		N
10	Digital	7	COARSE SCREEN 3	Coarse Screening Unit	CSS COARSE SCREEN 3 RUNNING	D.0001.0007	Binary	STOPPED	RUNNING		Y
11	Digital	8	COARSE SCREEN 3	Coarse Screening Unit	CSS COARSE SCREEN 3 TRIPPED	D.0001.0008	Binary	OK	TRIPPED		N
12	Digital	9	COARSE SCREEN 3	Coarse Screening Unit	CSS COARSE SCREEN 3 MANUAL	D.0001.0009	Binary	AUTOMATIC	MANUAL		N
13	Digital	10	PENSTOCK 1	Coarse Screen Inlet Penstock	CSS PENSTOCK 1 OPEN	D.0001.0010	Ternary	CLOSED	OPEN	MOVING	Y
14	Digital	12	PENSTOCK 1	Coarse Screen Inlet Penstock	CSS PENSTOCK 1 TRIPPED	D.0001.0012	Binary	OK	TRIPPED		N
15	Digital	13	PENSTOCK 1	Coarse Screen Inlet Penstock	CSS PENSTOCK 1 MANUAL	D.0001.0013	Binary	AUTOMATIC	MANUAL		N
16	Digital	14	OUTLET PK2	Coarse Screen Outlet Penstock	CSS OUTLET PK2 OPEN	D.0001.0014	Ternary	CLOSED	OPEN	MOVING	Y
17	Digital	16	OUTLET PK2	Coarse Screen Outlet Penstock	CSS OUTLET PK2 TRIPPED	D.0001.0016	Binary	OK	TRIPPED		N
18	Digital	17	OUTLET PK2	Coarse Screen Outlet Penstock	CSS OUTLET PK2 MANUAL	D.0001.0017	Binary	AUTOMATIC	MANUAL		N
19	Digital	18	INLET PK3	Coarse Screen Inlet Penstock	CSS INLET PK3 OPEN	D.0001.0018	Ternary	CLOSED	OPEN	MOVING	Y
20	Digital	20	INLET PK3	Coarse Screen Inlet Penstock	CSS INLET PK3 TRIPPED	D.0001.0020	Binary	OK	TRIPPED		N
21	Digital	21	INLET PK3	Coarse Screen Inlet Penstock	CSS INLET PK3 MANUAL	D.0001.0021	Binary	AUTOMATIC	MANUAL		N
22	Digital	22	OUTLET PK4	Coarse Screen Outlet Penstock	CSS OUTLET PK4 OPEN	D.0001.0022	Ternary	CLOSED	OPEN	MOVING	Y
23	Digital	24	OUTLET PK4	Coarse Screen Outlet Penstock	CSS OUTLET PK4 TRIPPED	D.0001.0024	Binary	OK	TRIPPED		N
24	Digital	25	OUTLET PK4	Coarse Screen Outlet Penstock	CSS OUTLET PK4 MANUAL	D.0001.0025	Binary	AUTOMATIC	MANUAL		N
25	Digital	26	INLET PK5	Coarse Screen Inlet Penstock	CSS INLET PK5 OPEN	D.0001.0026	Ternary	CLOSED	OPEN	MOVING	Y
26	Digital	28	INLET PK5	Coarse Screen Inlet Penstock	CSS INLET PK5 TRIPPED	D.0001.0028	Binary	OK	TRIPPED		N
27	Digital	29	INLET PK5	Coarse Screen Inlet Penstock	CSS INLET PK5 MANUAL	D.0001.0029	Binary	AUTOMATIC	MANUAL		N

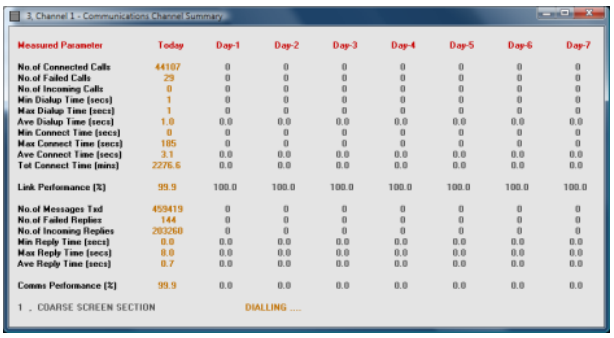
Editing an auto configuration CSV file using MS Excel



Editing an auto configuration CSV file using MS WordPad

AGWS6 mimics can be treated as templates enabling the same page to be re-used for different sites or plant areas.

Data Acquisition



The Master station's standard Polling software is responsible for communication with the local and remote telemetry equipment (outstations, data loggers and PLCs), acquiring the data and forwarding on all control requests. The type and extent of the communications is governed entirely by the Master Station's database configuration, which needless to say is fully on-line reconfigurable.

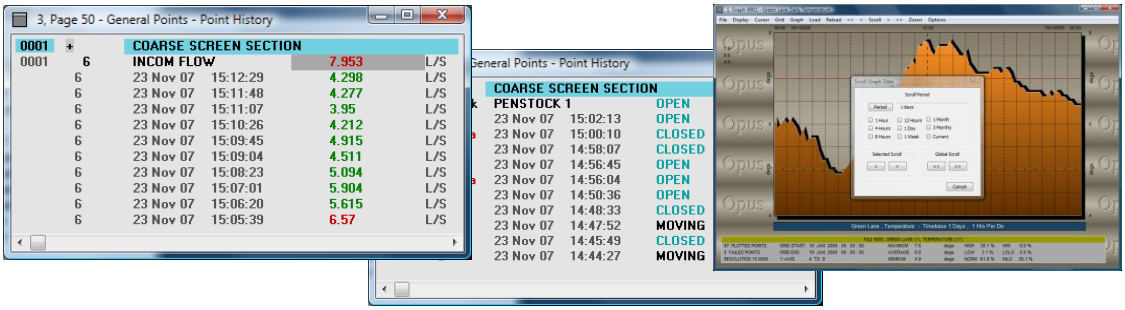
The standard Polling system software is capable of simultaneously communicating over 32 full duplex data acquisition channels. Various asynchronous links (bearer circuits) may be utilised including local and wide area networks.

The Polling software has been designed to support a practically unlimited number of protocol emulator packages enabling the system to communicate with any make of remote telemetry equipment including other SCADA systems.

Point Histories

All telemetry points within the database have a recent history associated with them. This record of recent events is automatically logged by the system with no requirement for any manual configuration.

A real-time summary or graph of a point's history can be displayed with a simple click of the mouse.



Point Archiving

The point archive consists of data files (sometimes referred to as logs or trends) recording all locally sampled and remotely acquired periodic point archive data and time-stamped point archive data.

All telemetry points on the system can be archived, including pseudo (calculated) points and points imported from the SQL database.

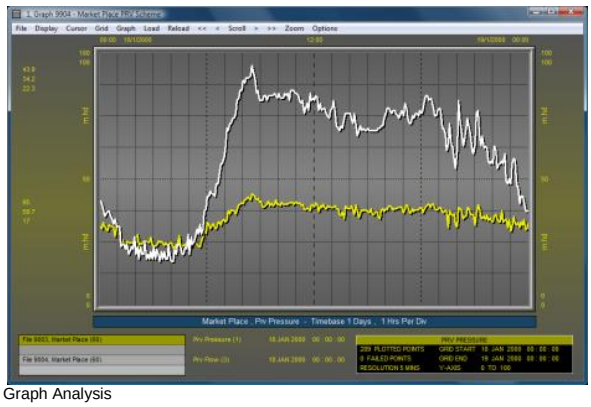
A point's value can either be archived periodically or time-stamped when an event occurs. The sampling period for each periodic point archive is configurable from one minute to one day. Data samples are appended to a time-stamped point archive whenever the point changes state or value, and according to a configured maximum sampling rate (in seconds).

All point archive files are backed up automatically daily and monthly by the system providing an unlimited record. In addition, exported archive data can be accessed via the SQL Archive database.

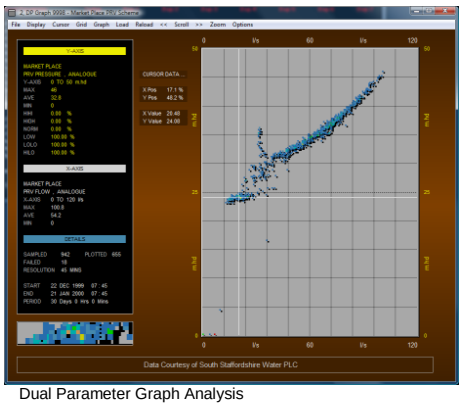
The Archives Directory lists details of all archives. Any that haven't been updated for more than 24 hours are displayed in yellow, or if they haven't been updated for more than a week they are displayed in red as a visual warning that there is a problem.

Both live and historic data may be examined on the system and displayed in a variety of formats. The Archive Data Manager utility enables you to edit, compress, extract, resize, merge and convert archive data files into text files or spreadsheet formats.

Exported archive data can be accessed via the SQL Archive database.



Graph Analysis



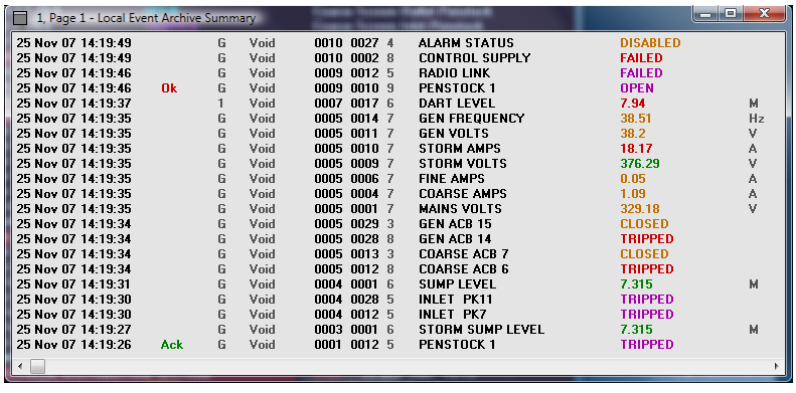
Dual Parameter Graph Analysis

Event Archiving

The event archive consists of data files recording time-stamped events, such as point alarms, alarm acceptance, control actions, user login etc. This extensive archive is backed up automatically daily and monthly by the system providing an unlimited record of all recordable events and alarms on the system. In addition, exported event data can be accessed via the SQL Events database.

Events can either be generated locally by the Master station or acquired from the remote stations. The following types of event can be archived on the system at the user's discretion,

- Channel failure or recovery
- Station failure or recovery
- Point failure or recovery
- Digital point alarms or changes in state
- Analogue point alarms or changes in alarm state (*)
- Operator login and logout
- Operator alarm acknowledgments
- Operator controls and control time-outs
- System software startup and shutdown



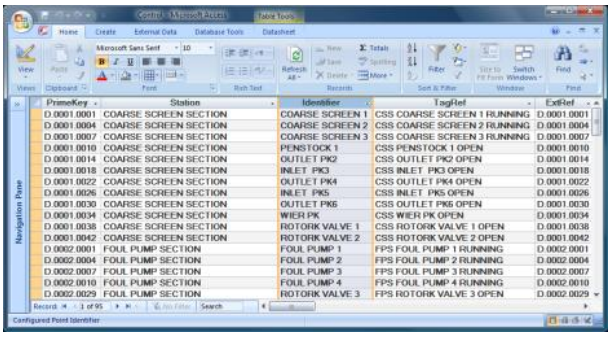
1, Page 1 - Local Event Archive Summary

25 Nov 07 14:19:49		G	Void	0010	0027	4	ALARM STATUS	DISABLED	
25 Nov 07 14:19:49		G	Void	0010	0002	8	CONTROL SUPPLY	FAILED	
25 Nov 07 14:19:46		G	Void	0009	0012	5	RADIO LINK	FAILED	
25 Nov 07 14:19:46	Ok	G	Void	0009	0010	9	PENSTOCK 1	OPEN	
25 Nov 07 14:19:37		1	Void	0007	0017	6	DART LEVEL	7.94	M
25 Nov 07 14:19:35		G	Void	0005	0014	7	GEN FREQUENCY	38.51	Hz
25 Nov 07 14:19:35		G	Void	0005	0011	7	GEN VOLTS	38.2	V
25 Nov 07 14:19:35		G	Void	0005	0010	7	STORM AMPS	18.17	A
25 Nov 07 14:19:35		G	Void	0005	0009	7	STORM VOLTS	376.29	V
25 Nov 07 14:19:35		G	Void	0005	0006	7	FINE AMPS	0.05	A
25 Nov 07 14:19:35		G	Void	0005	0004	7	COARSE AMPS	1.09	A
25 Nov 07 14:19:35		G	Void	0005	0001	7	MAINS VOLTS	329.18	V
25 Nov 07 14:19:34		G	Void	0005	0029	3	GEN ACB 15	CLOSED	
25 Nov 07 14:19:34		G	Void	0005	0028	8	GEN ACB 14	TRIPPED	
25 Nov 07 14:19:34		G	Void	0005	0013	3	COARSE ACB 7	CLOSED	
25 Nov 07 14:19:34		G	Void	0005	0012	8	COARSE ACB 6	TRIPPED	
25 Nov 07 14:19:31		G	Void	0004	0001	6	SUMP LEVEL	7.315	M
25 Nov 07 14:19:30		G	Void	0004	0028	5	INLET PK11	TRIPPED	
25 Nov 07 14:19:30		G	Void	0004	0012	5	INLET PK7	TRIPPED	
25 Nov 07 14:19:27		G	Void	0003	0001	6	STORM SUMP LEVEL	7.315	M
25 Nov 07 14:19:26	Ack	G	Void	0001	0012	5	PENSTOCK 1	TRIPPED	

(*) low-low, low, high and high-high alarm limits are supported with configuration options to alarm 'into' and/or 'out of' any of the above alarm conditions.

The event archive data can be interrogated using a variety of search keys to specify the period and/or nature of the event.

SQL Database

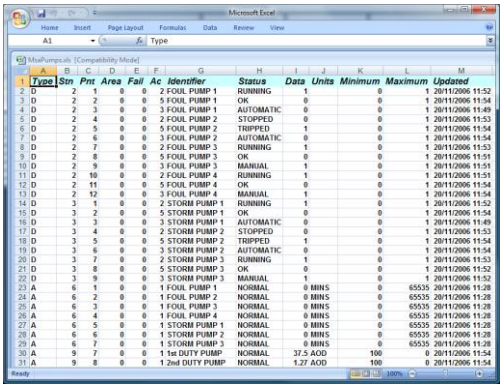


The SQL database tables form the heart of an extensive Information Management System.

These database tables are maintained in real-time by the PC6-SQL export software. Import tables are used to provide a conduit for privileged SQL and Web users to submit requests (controls, set points etc.) and import new or modified archive data back into the system.

The system supports both Microsoft Access and/or Microsoft Sql Server databases and provides access for both Web browser users and any SQL based Microsoft compatible package (MS Access, MS Excel etc.).

SQL Point Archive

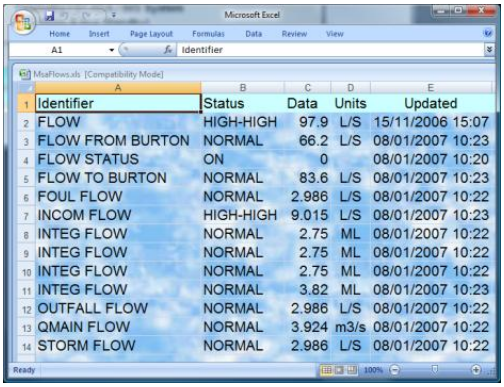


The SQL Archive database records all exported point archive and time-stamped point archive data. Every archive sample is recorded in the SQL Archive along with its time-stamp (to one second accuracy). This data forms part of an unrestricted telemetry point archive on the system.

SQL Event Archive

The SQL Event database records all exported system, alarm and control related event data. Every exportable event is recorded in the appropriate SQL database table along with its time-stamp (to one second accuracy). This data forms part of an unrestricted event archive on the system.

SQL Access



	A	B	C	D	E
1	Identifier	Status	Data	Units	Updated
2	FLOW	HIGH-HIGH	97.9	L/S	15/11/2006 15:07
3	FLOW FROM BURTON	NORMAL	66.2	L/S	08/01/2007 10:23
4	FLOW STATUS	ON	0		08/01/2007 10:20
5	FLOW TO BURTON	NORMAL	83.6	L/S	08/01/2007 10:23
6	FOUL FLOW	NORMAL	2.986	L/S	08/01/2007 10:22
7	INCOM FLOW	HIGH-HIGH	9.015	L/S	08/01/2007 10:23
8	INTEG FLOW	NORMAL	2.75	ML	08/01/2007 10:22
9	INTEG FLOW	NORMAL	2.75	ML	08/01/2007 10:22
10	INTEG FLOW	NORMAL	2.75	ML	08/01/2007 10:22
11	INTEG FLOW	NORMAL	3.82	ML	08/01/2007 10:23
12	OUTFALL FLOW	NORMAL	2.986	L/S	08/01/2007 10:22
13	QMAIN FLOW	NORMAL	3.924	m3/s	08/01/2007 10:22
14	STORM FLOW	NORMAL	2.986	L/S	08/01/2007 10:22

The SQL database tables can be accessed by all SQL based Microsoft compatible packages (MS Access, MS Excel etc.). Various proprietary data analysis and presentation packages are also available.

Web Interface

The PC6-SQL web interface forms part of an integrated and extensive Information Management System (IMS) and is supplied as standard on all PC6 SQL systems.

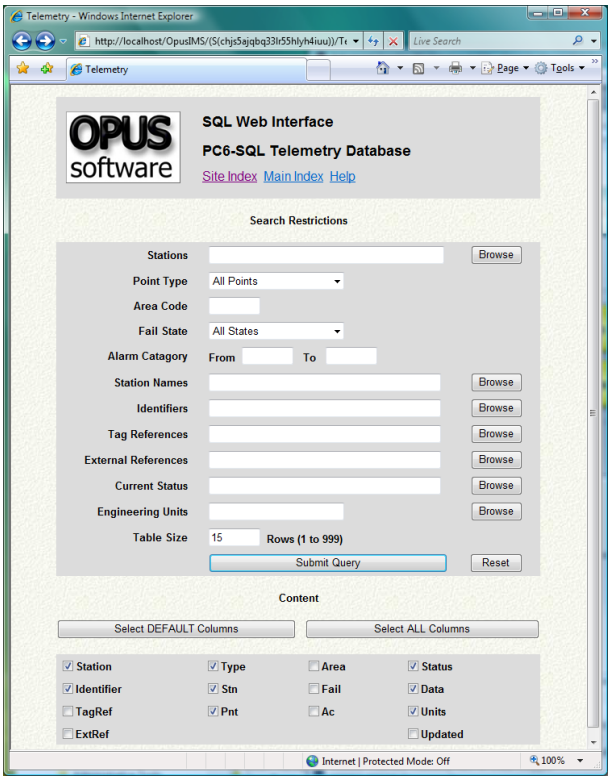
The PC6-SQL web application software provides a browser interface to the master station's exported SQL database tables via either your corporate Intranet or the worldwide Internet.

Each web server is capable of hosting and accessing the data exported from an unlimited number of PC6-SQL sites. In addition, each PC6-SQL site is capable of acting as its own web server.

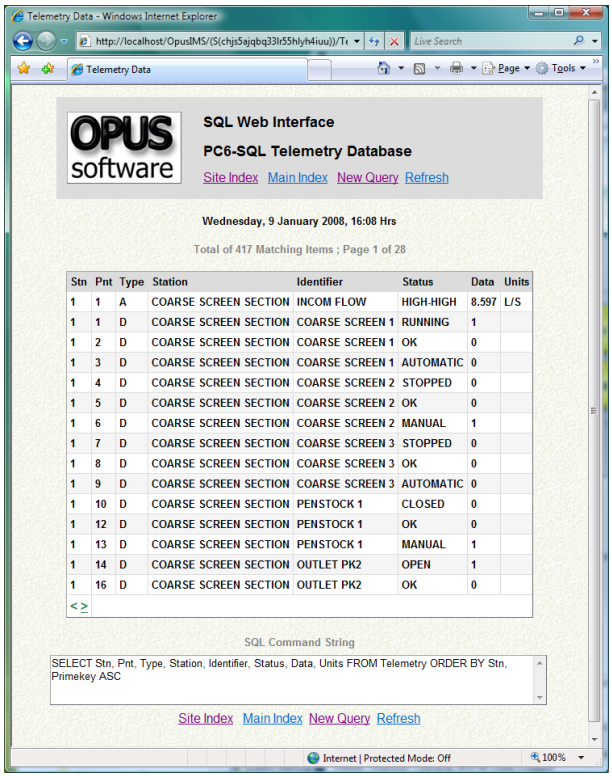
The web application software provides an intuitive and consistent user interface with which a user can query and access all data stored within the standard SQL export databases.

The interface also provides the means for a privileged user to initiate control actions in the form of digital commands and analogue set points.

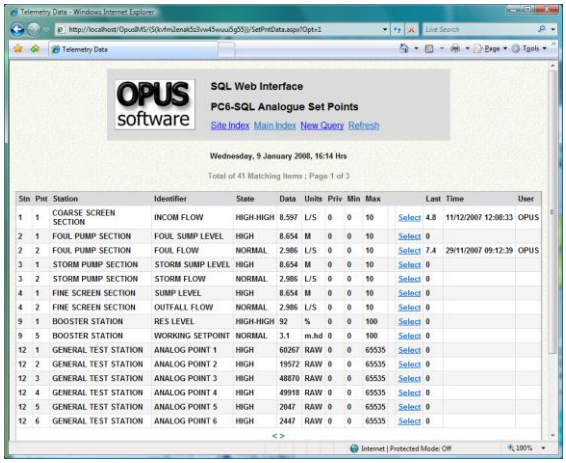
One of the advantages of the web interface is that it can be used to monitor and control the Telemetry/SCADA system using a variety of static and mobile hardware including PCs, PDAs and other small screen devices.



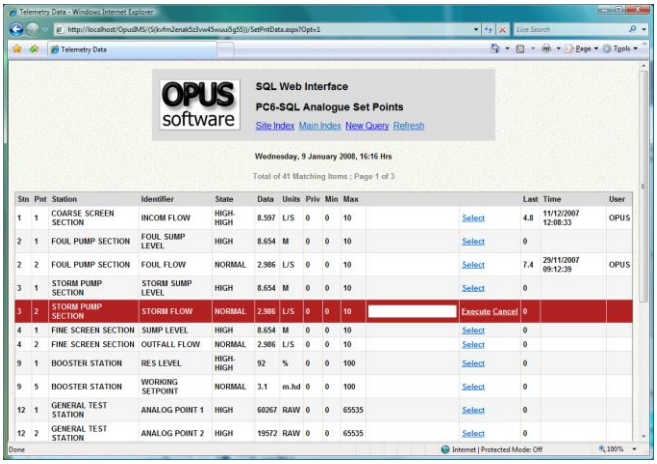
Query telemetry database page



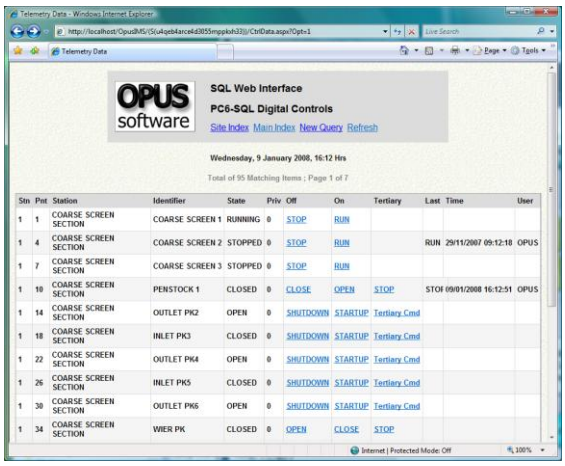
Telemetry data display page



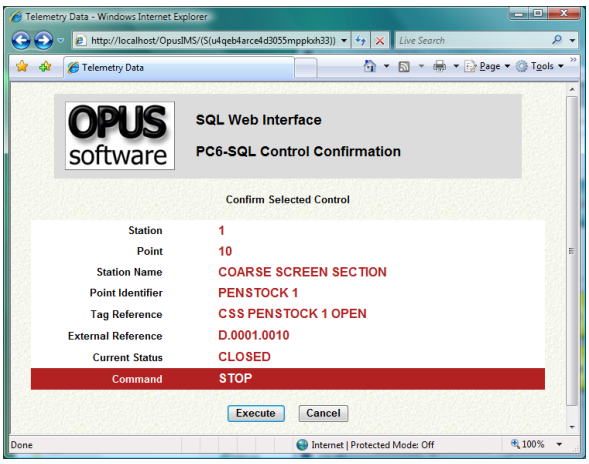
Query analogue set-point control database page



Analogue set-point control page with a point selected



Digital controls data page



Digital control confirmation page

System Event Printer

The Event (Alarm) printer reports all events such as alarms, failures, recoveries, operator controls and alarm acceptance. Brief or verbose printouts are available. A statistical log of all events occurring on the system is printed automatically at the end of each day, together with a running total for the current month.

System Data Logging Printer

The Data Logging (Report) printer prints all operator requested data summaries, data directories, management reports, general text files, event and point archive summaries.

If required each Advanced Graphic Workstation can be equipped with its own 'local' Data Logging printer and a screen dump printer.

Advanced Graphic Workstations

The system supports both integrated and external Opus Advanced Graphic Workstations. The integrated workstation resides on the PC6-SQL computer system and communicates via an internal link. External workstations communicate with the PC6-SQL system via various forms of asynchronous link, including local and wide area networks, wired or wireless links.

The workstation package provides a high performance full graphic man-machine interface for the display of both text and graphic information including the display and analysis of archive data, real-time trace data, mimic pages and map pages.

Console and User Defined Commands

The Console Operating System provides an extensive array of keyboard commands with which to search the Master station's active and passive databases and affect control over the telemetry system. These keyboard commands can be used as an alternative to the normal menu selections and provide a means of embedding commands within function key sequences, user defined command sequences and mimic page markers.

Areas of Interest

An operator's domain may be restricted to certain 'areas of interest' within the Master station's database by associating a user account with up to 16 'area codes'. Each area code identifies a specific group of telemetry points or stations. The points may be classified by type or geographic area simply by reconfiguring the appropriate station or point records.

Concert Operation

Multiple workstation displays can be controlled via a single keyboard using the standard Hash (#) command. The Hash command can also be used to redirect any console command to any console

attached to Sub-Master and higher level Master station sites. A message exchange facility is provided between operators and separate PC6-SQL sites.

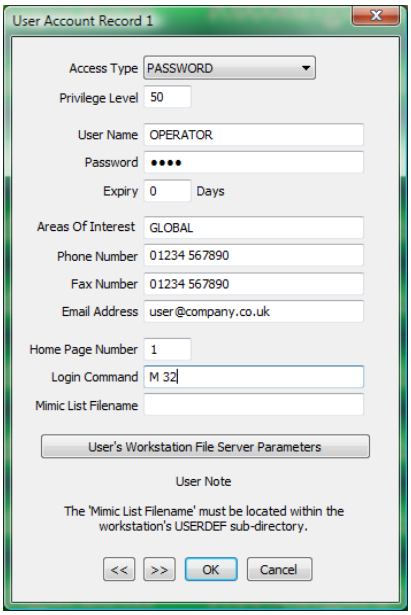
System Security

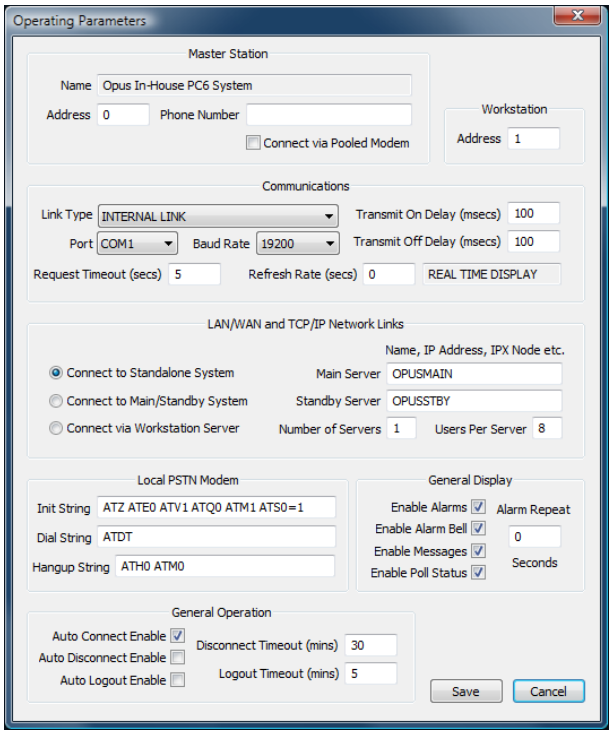
System security for the workstation is afforded using privileged user accounts accessible by password entry.

Area codes can be assigned to each user account, thus restricting the user's display to alarms and summaries relating to their area(s) of interest.

Privilege levels may be assigned to a range of operating procedures including individual point controls, alarm acceptance, database reconfiguration, mimic/map configuration, report generation and printout.

The workstations may be configured to provide a hibernation time-out. If no key has been pressed or the mouse has not been moved for the time-out period then the console automatically logs out of the current user account and into the lowest privilege level user account.





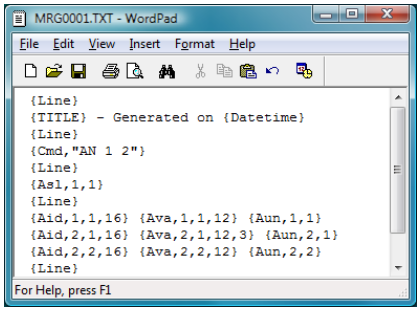
In certain applications the operator should not be allowed to exit the workstation or access the operating system. Therefore the workstation can be configured to automatically run on power up and only exit on password entry.

Management Report Generator

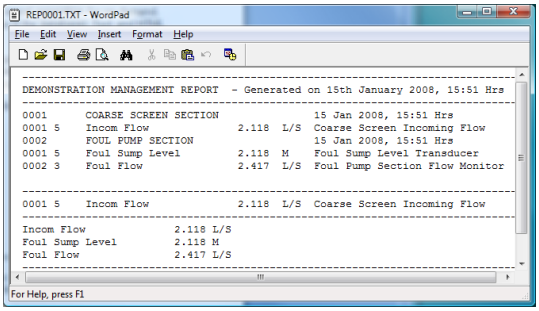
The management report generator supports free-format report generation for on-demand, batch and event driven reporting (i.e. any change of state in the database). Text and HTML report formats are supported.

Reports can include text, current and archived data and pseudo values from the database such as process formula calculation results. Summary data can also be included in reports enabling you to build comprehensive reports easily and quickly.

You can use any text editor or word processor such as Microsoft Word to edit reports.



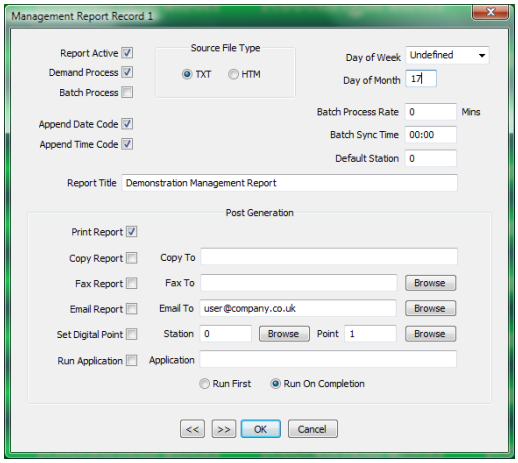
Source text report edited with MS WordPad



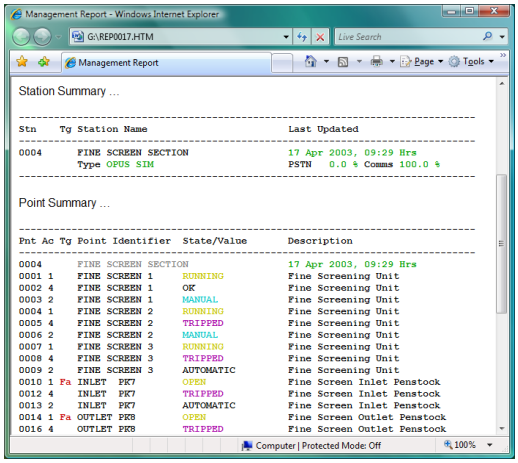
Generated text report viewed on the workstation using MS WordPad

Reports may be displayed on the workstation at any time since all reports are automatically archived to disk and optionally tagged with unique date/time codes. HTML reports can be viewed over the Internet using a standard web browser.

Text reports may optionally be printed, emailed and/or faxed on generation. In additional generated reports may be copied to a specified location (e.g. an SQL database), a digital point may be set within the database and also a specified software application may be invoked.



Report configuration



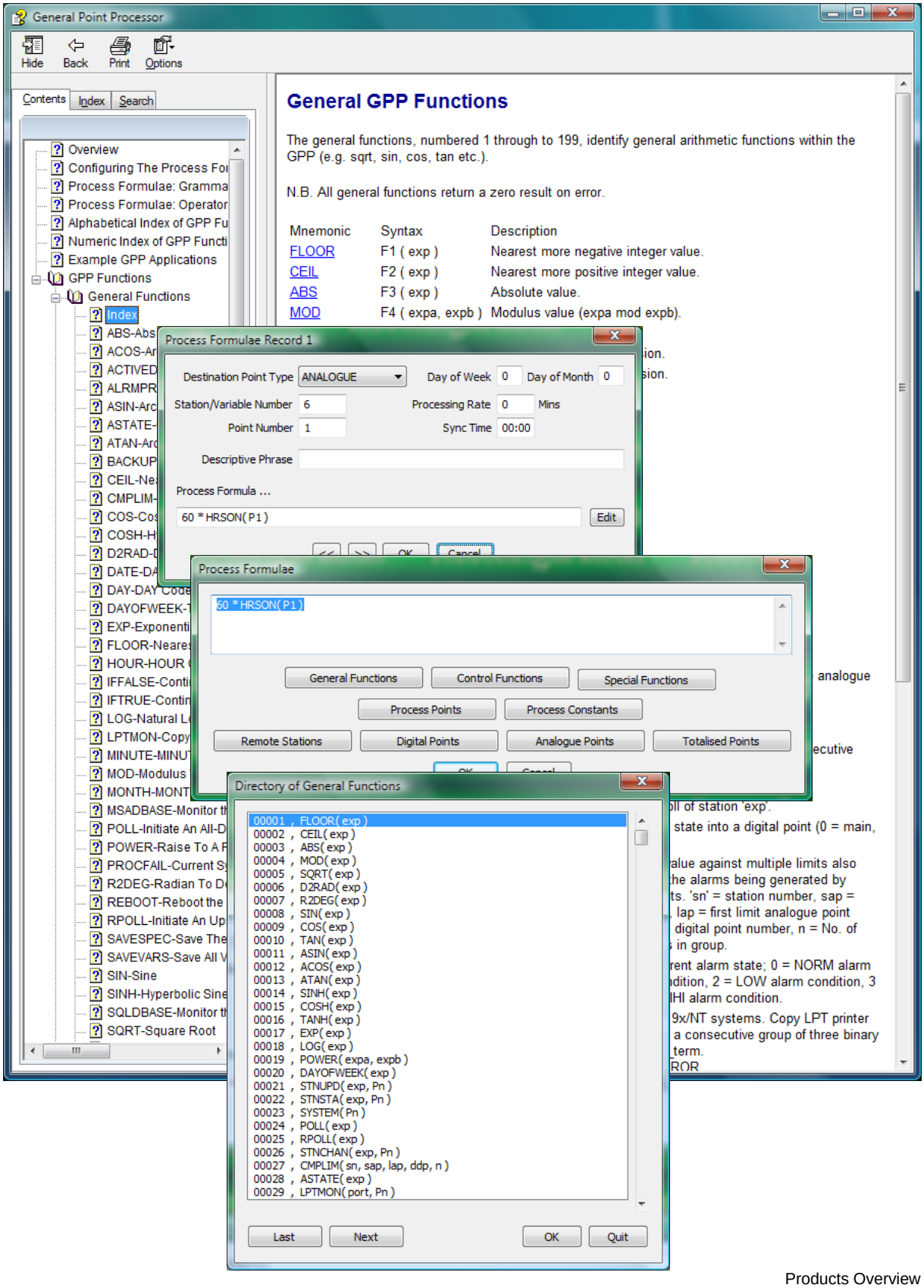
HTML report

General Point Processor

The general point processor provides extensive maths, logic and control functions.

These functions may invoke other data processing and control applications, or trigger events such as the generation of reports, alarm dial out, paging, faxed messages etc.

The formula results may be stored within the database as pseudo points and will generate all necessary alarms and events as determined by the pseudo point's configuration.



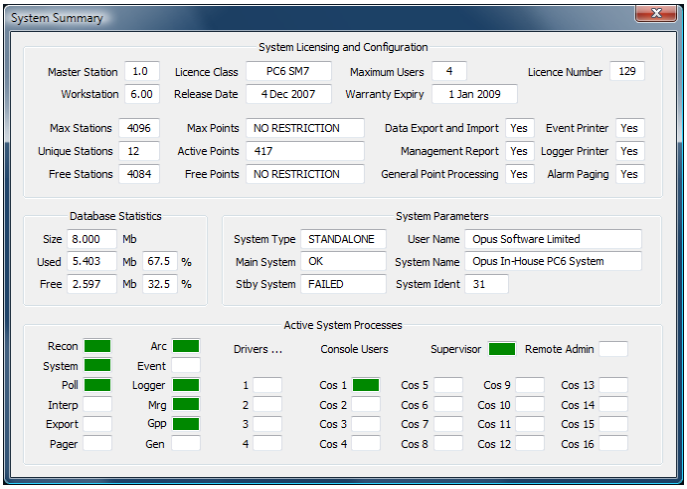
Automated Backup

All key data files are automatically backed up by the system into separate year and month directories, creating a historic log of all configuration, archive and performance data.

The key files will also be backed up to the system's file server PC.

This means that none of your essential data is lost.

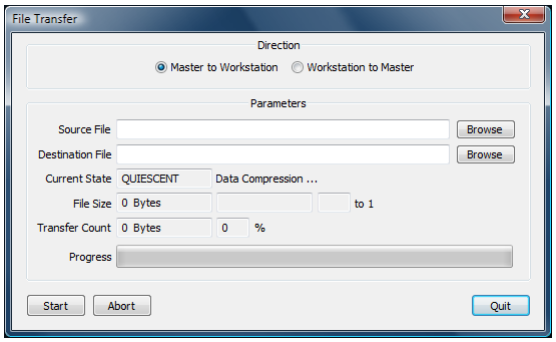
General Utility Software



PC6-SQL includes an extensive array of utility software to simplify system administration. Monitor utilities provide real-time statistical analysis of communications and software performance.

Monthly logs are automatically generated and archived for communications performance, system access and reconfiguration.

Other facilities include the monitoring of processes, all communication ports and network links. Remote diagnostics can be undertaken using the workstation's PSTN or network links (e.g. LAN, WAN and Internet).



A file transfer facility is provided between the workstations and their connected PC6-SQL system. Remote diagnostics can be undertaken using the workstation's PSTN or network links.

Archive Data Management Software

Standard Archive Data Management (ADM) utility programs are provided with each system to enable you to convert, compress, extract, resize, merge and perform global merge operations on the system's Archive Data Files (ADFs).

The workstations also provide ADM support to examine or edit the archive file headers and sampled data. Data edited manually, or by software, is tagged appropriately, and our archive data format has been verified by DWi IT System inspectors as meeting their highest level of data security.

Pager Alarm Dialout

The Pager software provides support for an 'out of hours' alarm dialout facility to send email, fax, or SMS text messages to selected duty officers or offices. The software can communicate with mobile phones on the VODAFONE, O2, T-Mobile and ORANGE networks. Up to six Duty Officers from a configured list of ninety nine can be specified to receive the alarms. The system also caters for selective paging of Duty Officers on a station or individual point basis.

Alarm Dial out to Mobile Devices

Optional Software Products

Protocol Emulators

Protocol emulator packages can be provided to allow the system to communicate with any type or make of remote device (e.g. outstations, data loggers, PLCs).

Bespoke Software

Opus Software can provide bespoke software solutions for all your Telemetry/SCADA, IMS, SQL database needs, including Web applications and Web services.

Optional Support Products

Digital I/O Expansion

A digital I/O card may be installed on each system. The card provides 16 digital output lines and 16 digital input lines.

PC6-SQL General Features:

- Powerful and flexible true multi-tasking software running under the Microsoft Windows operating system.
- Field proven high performance design.
- Integrated Information Management System.
- Support for both Microsoft Access and Sql Server databases.
- Integrated SQL Interface using standard Microsoft packages.
- Integrated Web Interface for Intranet and/or Internet browser access.
- Powerful Advanced Graphic Workstation user interface for local, remote and networked (e.g. LAN, WAN and Internet) users.
- Concert operation of multiple consoles or workstations with message exchange facilities.
- Full on-line reconfiguration of the system's relational database.
- Configurable Privilege User Accounts for complete system security.
- General Point Processing for evaluation of maths/logic/control functions including conditional expressions.
- Free-format Management Report Generation for demand print, batch print and event-driven reporting. Support for text and HTML export formats.
- Selective ‘out of hours’ alarm dial out to pagers or mobile phones.
- Extensive system administration tools, performance monitoring and logs.
- Remote diagnostics.
- Practically unlimited upgrade and expansion options.

Communication Options

- Multiple communication protocols.
- Master to Sub-Master communications.
- All types of asynchronous communication links supported.

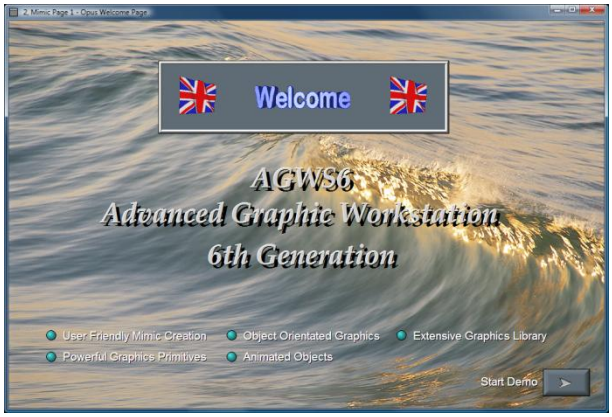
Peripheral Options

- Local and remote man-machine interfaces.
- High performance Advanced Graphic Workstations based on high resolution displays.
- System Event (Alarm) printer for recording all system events and providing daily and monthly statistical reports.
- System Data Logging (Report) printer for obtaining hard copy printouts of data summaries and management reports.
- Local workstation data logging printers.
- Local workstation screen dump printers.
- Local plant and mimic panel interfaces.

Graphic Workstation Introduction

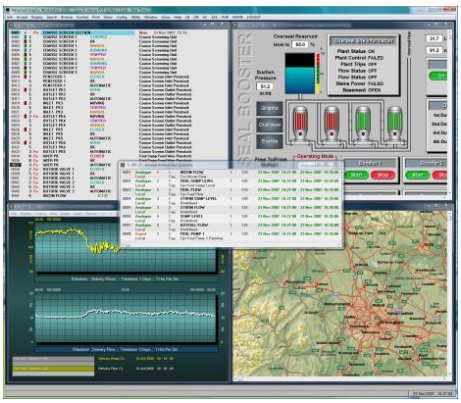
The Advanced Graphic Workstation software is the culmination of over fifteen years development in PC based workstation software.

The workstation provides a sophisticated user friendly graphic interface to the Opus PC6-SQL SCADA system for the display and analysis of real-time text and graphical information. The sections that follow provide a brief overview of the general features and types of information that may be displayed on the workstation.



Connectivity

Both integrated and external workstations are supported. The integrated workstation resides on the PC6-SQL computer system and communicates via an internal link.



Workstation with Multiple Windows Displayed

External workstations communicate with the PC6-SQL system via various forms of asynchronous link, including local and wide area networks, wired or wireless links.

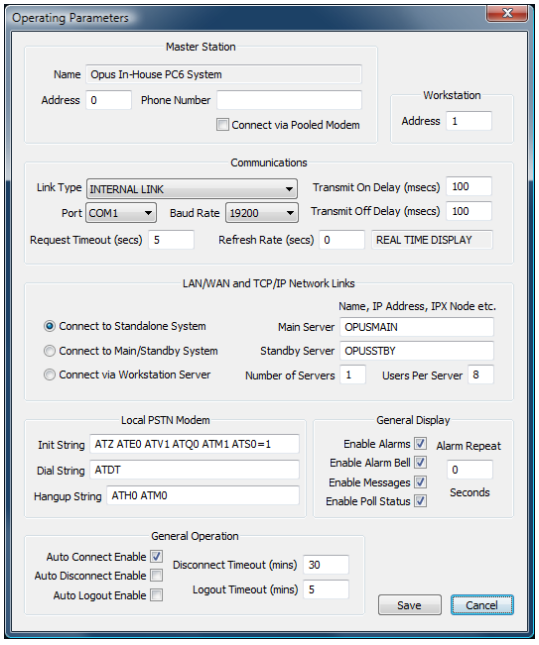
The workstation software is supplied free issue, the number of users on a system is controlled solely by the PC6-SQL licensing.

Workstation users access the system either directly or through one or more workstation servers. Multiple workstation servers can be installed to support a practically unlimited number of users without any appreciable degradation of system performance.

User Defined Setup

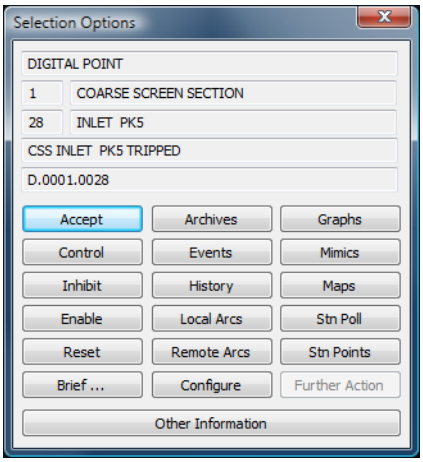
Connections with multiple named sites can be established using pre-configured ‘User Defined Setup’ files.

These files define all operational parameters for the connecting link, any required privilege levels and directory paths (unique paths for the site’s mimic, map, graph and template specification files etc.).



Displayed Information

Operator Shortcuts

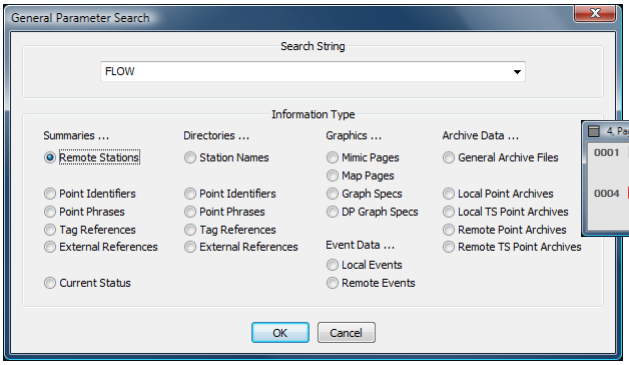


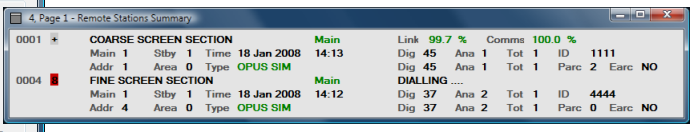
Double-clicking on any displayed point archive or time-stamped point archive provides a useful shortcut to view the archive's data in summary or graphical form.

Double-clicking on any mimic page, map page, graph specification or dual-parameter graph specification listed in an index (directory) or browse window displays the selected item.

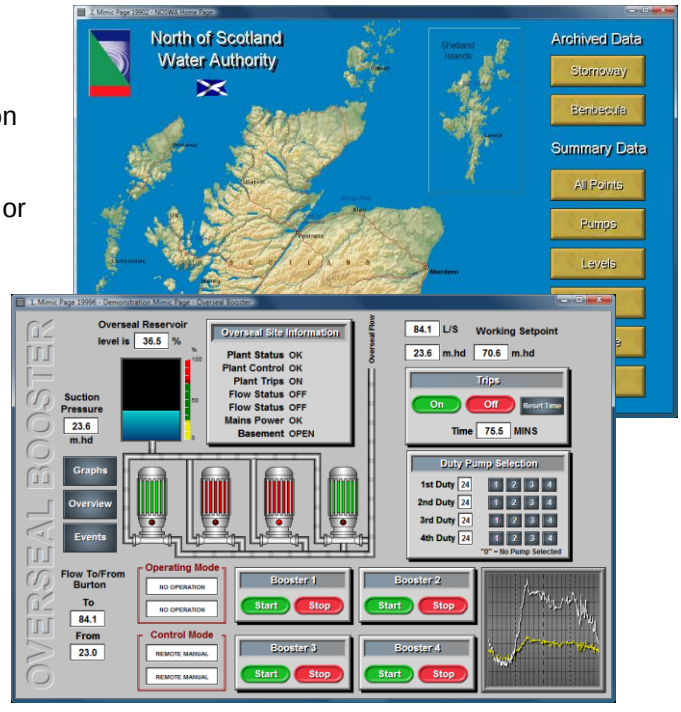
Clicking on any telemetry point displayed on a summary, mimic page or map page displays a dialog identifying the point and providing a list of useful shortcuts.

The Workstation may be operated either by selecting menu options with the mouse or by typing in commands at the keyboard. The Command Input dialogue will appear whenever a user types in a command. This dialogue has a Search button which provides a simple means of searching for different types of information on the system. The user simply enters a search phrase which identifies the data of interest and the system will search for data types matching this criteria.





Mimic Displays



Mimics are typically used to customise the operator interface or depict plant information in a graphic, or schematic form. AGWS6 mimics can act as templates allowing the same page to be re-used for different sites or plant areas.

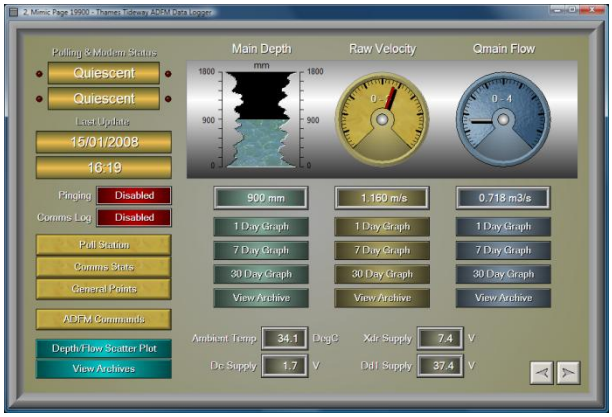
Mimic pages consist of a background (32-bit true colour) superimposed with static, marker, control and live data items.

The background can be rendered using either a solid colour, one of the various graduated fills (18 off), or using a specified image (e.g. an associated map, plan or photograph of the plant).

Various static items can be inserted onto a page including text, frames (2D or 3D shapes), titled boxes, pipes, tanks, cutout overlays, bitmap images and icons. Pipes, text frames and bitmaps may be animated.

Markers can be inserted onto a page and provide operator interaction using simple mouse clicks. These markers, or mouse hot spots can be inserted using either hidden points, hidden boxes, or

visible mouse buttons. The mouse cursor automatically changes to a pointing hand symbol whenever the cursor rolls over a marker.

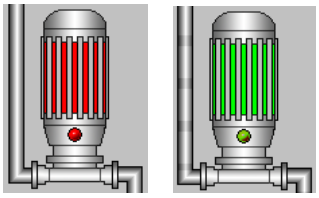


Separate commands can be associated with a marker's active and latched states. These commands can be used to provide links to Microsoft compatible packages (MS Access, MS Excel, Media Player etc.), to activate utility or user programs (e.g. Visual Basic control applications), to display other mimic or map pages, to display other directory or summary information, to display graph data, in fact to perform any desired display or control action.

User prompts can be associated with mimic markers, appearing as text messages at the bottom of the display and if desired, announced verbally by the workstation. An extensive variety of mouse buttons are provided in the workstation's object library.

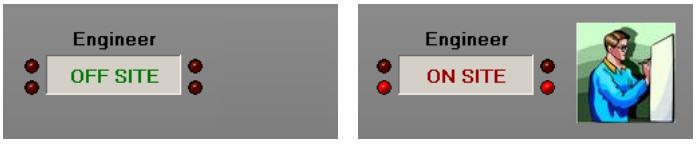
Live data items are used to represent the system's telemetry data, current mode of operation (e.g. a data acquisition channel's modem or polling state) and alarm status (presence of unacknowledged alarms). Live data can be presented in a wide variety of forms including descriptive text phrases, analogue and totalised values, bit-mapped colour coded symbols (of any complexity or size), regular and irregular fills, gauges, sliders, pipes and graph plots.

Live data objects can be configured to flash, change colour, and/or change image whenever the associated plant changes state.



A symbol such as a pump can change colour to indicate plant status.
In this example the pipe also displays an animated strobe effect to indicate flow.

Animations can be used to depict plant operation or motion, illustrate conditional flow along pipes etc., thereby bringing your mimic pages to life.

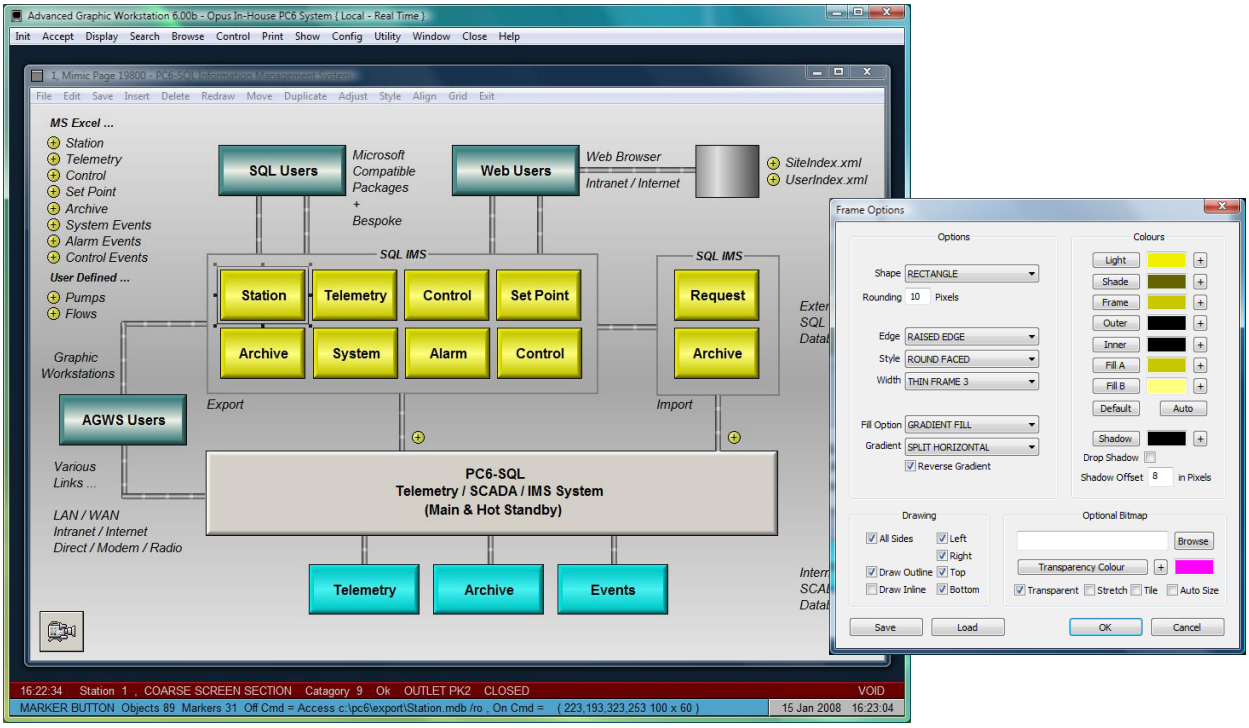


In this example lights animate and an image is displayed when an engineer is detected on site.

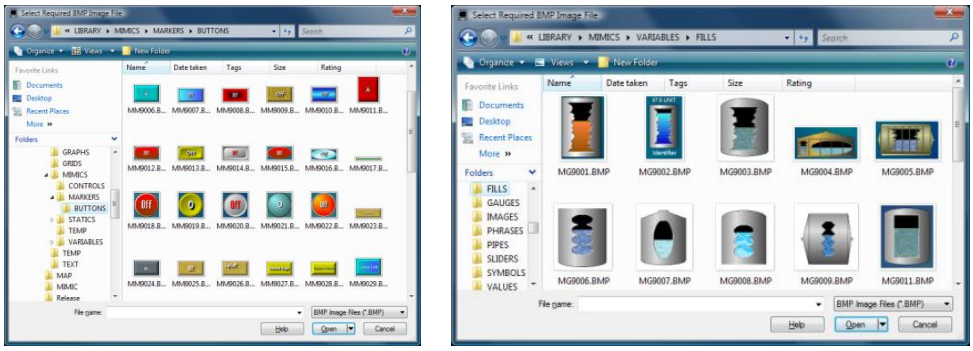
Our integrated object orientated mimic editor includes many tools enabling you to quickly create sophisticated mimic pages. Objects can be placed precisely using different sized 'snap to' grids, and our alignment options ensure your mimics look neat and professional.

Right clicking over any object will display a shortcut menu from which you can display the object's properties, duplicate the object, copy to clipboard, copy to library etc.

Favourite object styles can be named and stored within the library; these styles can be easily applied to other objects to add consistency to your displays.

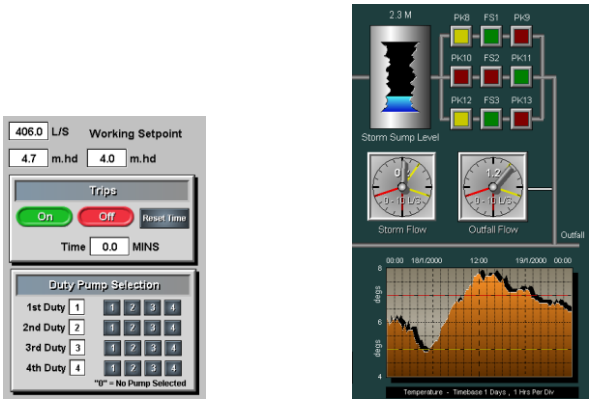


An extensive library of mimic objects such as pumps, tanks and pipes is supplied to simplify mimic creation.



Mimic Object Libraries

You can also append your own objects, or object groups, into the library to be used over and over again.



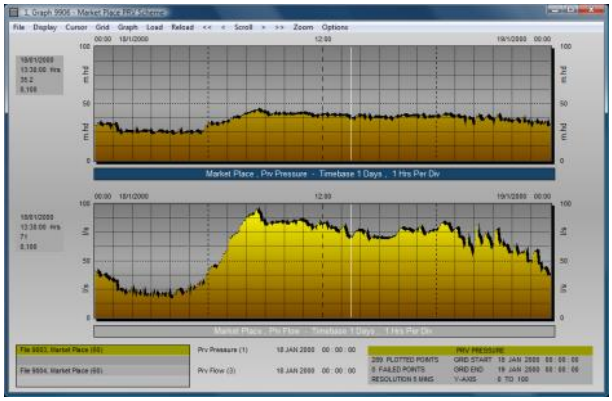
A group of objects can be copied to the library.
These groups can be pasted anywhere, speeding up mimic configuration.

Objects extracted from the library may be pasted onto the mimic their original size or resized as appropriate.

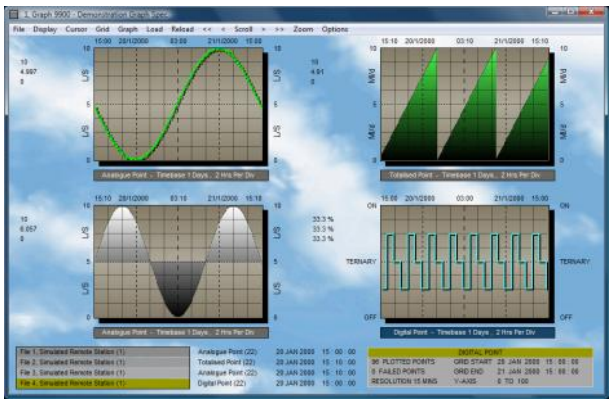
Map Displays

Map pages have the same functionality and capability as mimics but are intended to render geographical information, floor plans, maps and charts etc.

Graph Display and Analysis



Professional looking graphs of point archive and time-stamped point archive data can be created quickly and easily in graph analysis mode. A selection of graph templates are provided as standard. In addition you may create your own custom graph specifications which can be named and saved to disk. All graph specifications can be used as templates to load and display user specified archive data, usually in response to 'ad hoc' requests by the operator. Graph templates can also be inserted on mimic and map pages, allowing numerous sources of data to be selected with a simple click of the mouse.



Up to four graphs may be plotted in a single graph specification, either superimposed in one or two grids, or displayed individually in separate grid areas.

Various graph formats, line styles, fill options, bitmap and gradient fills are available including segmented colours to depict alarm boundaries. Alarm limits may be selected from the configured database or specified manually. The alarm limits may be plotted on the grid, rendered on the graph, or a mixture of both. Various markers can be displayed on the graphs to identify the sampled data points.

Graph plots may be scrolled forward and backward in time by either the default timescale or by a user specified period.

A graph cursor is available to examine the plotted data and zoom options are provided to assist your data analysis.

Useful statistics are presented for the plotted data including the minimum, average and maximum values, and the percentage of sampled data in the various alarm categories (high-high, high, normal, low and low-low).

Graph specifications may be configured to depict static data or to refresh automatically displaying current data.

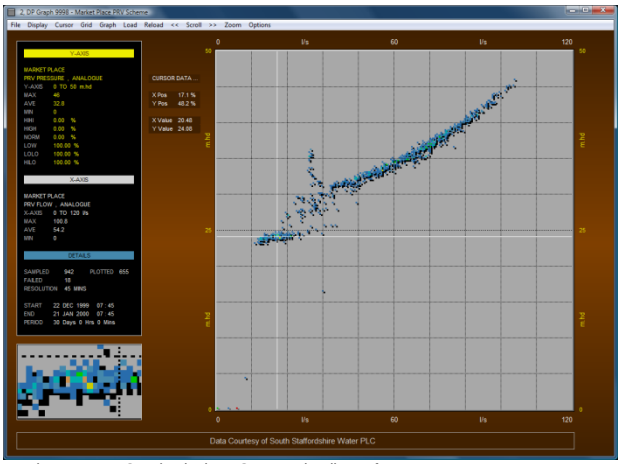
A graph's load specification gives you full control over the load period, synchronisation, time offset, data resolution and sampling function (i.e. whether to extract minimum, maximum, average or integrated totals, or all of the above).

Footnotes may be added to each graph specification to add useful comments. Favourite grid and graph styles can be named and stored within the library; these styles can be easily applied to other graph specifications to add consistency to your workstation.

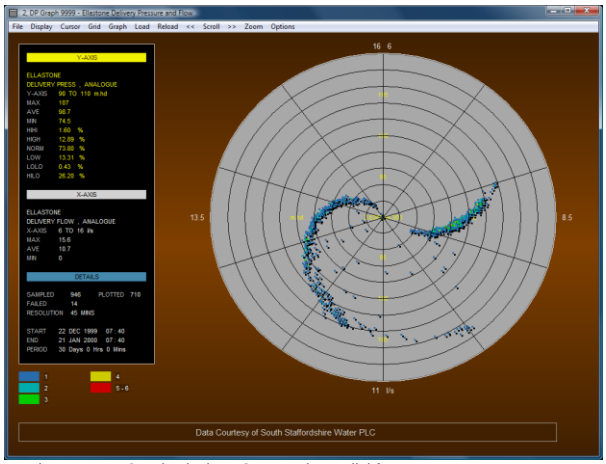
Dual Parameter Graphs

Two point archives may be plotted against each other as a dual-parameter graph providing a graphical representation of the relationship between the archives' data. For example, two point archives measuring wind speed and direction could be plotted against each other to show overall wind patterns.

Data may be plotted in either a linear or radial form using either the conventional plotting formats or various scatter plot options.



Dual Parameter Graph Display– Scatter Plot, linear format



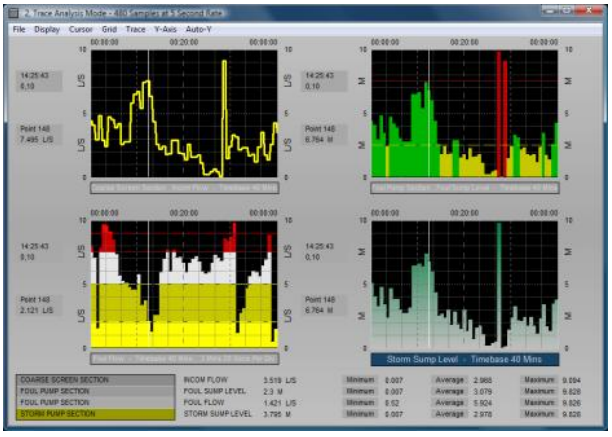
Dual Parameter Graph Display– Scatter Plot, radial format

Real Time Trace

Each workstation can trace up to 16 telemetry points at resolutions ranging from 1 to 60 seconds.

The data is presented in a form similar to normal graph analysis mode.

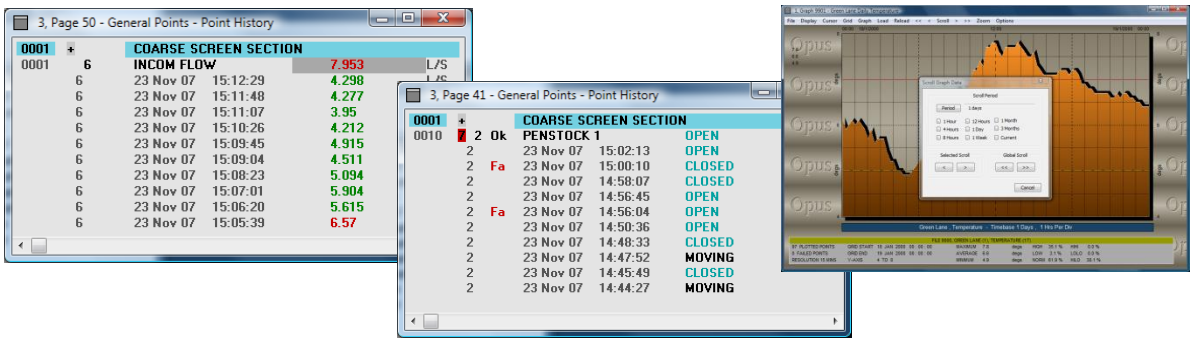
Up to four traced plots can be displayed in a single window and updated in real-time.



Point Histories

All telemetry points within the database have a recent history associated with them. This record of recent events is automatically logged by the system with no requirement for any manual configuration.

A real-time summary or graph of a point's history can be displayed with a simple click of the mouse.



Brief and detailed modes are supported. Brief mode displays the current value together with the previous 10 changes of state/value and detailed mode displays the previous 240 values.

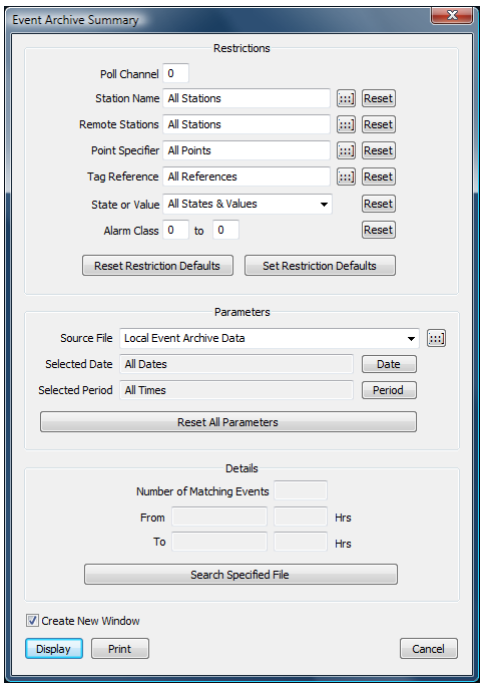
Event Archive Summaries

The extensive event archive can be queried to filter the data to specific points and time periods of interest.

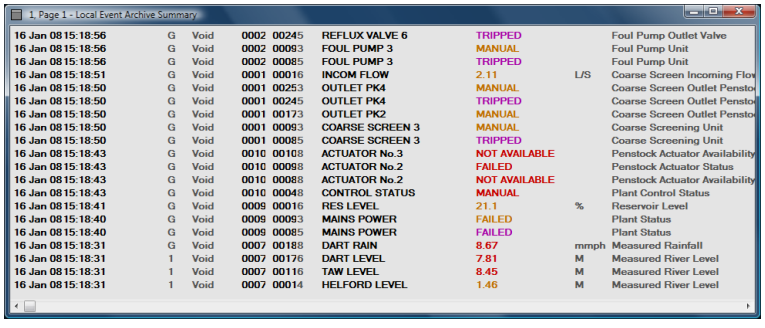
Any combination of station number, point identifier, tag reference, current state/value, alarm classification, date or time period may be specified and used as search keys for the required event data.

The resulting summary provides a chronological list of events and alarms matching the user specified search criteria.

Data is displayed in real-time at the workstation, with the latest events scrolling onto the screen.



Event archive restrictions dialogue

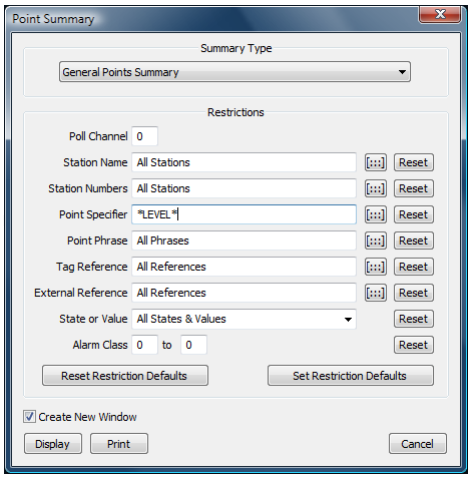


Resulting event archive summary

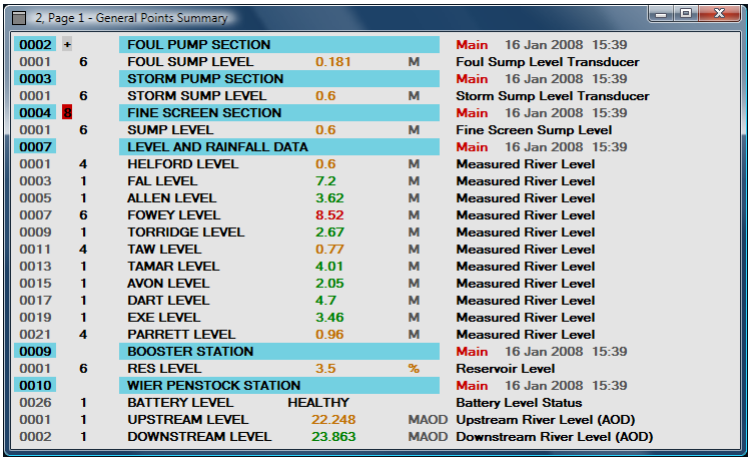
Data Summaries

A wide range of station and point summary displays are available.

A real-time summary can be restricted to display the stations and points of interest by selecting one of over 20 summary types and specifying the required search criteria.



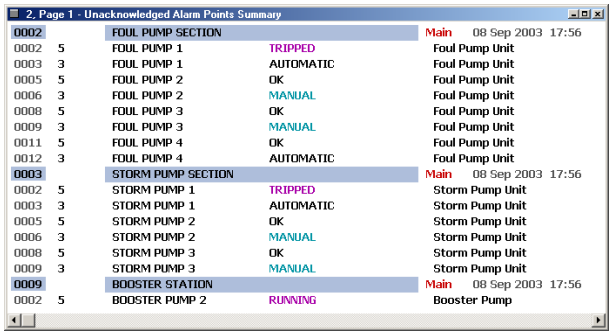
Point summary restrictions dialogue



Resulting point summary of levels

Alarm Display and Management

The system supports up to eight prioritised levels of alarm classification. Outstanding alarms are highlighted on all data summaries, mimic and map page displays. The workstation displays the highest priority alarm in a dedicated window area and can be configured to vocally annunciate alarms as they occur.
Numerous summary commands are provided with which to query the system and display both acknowledged and unacknowledged alarm data.

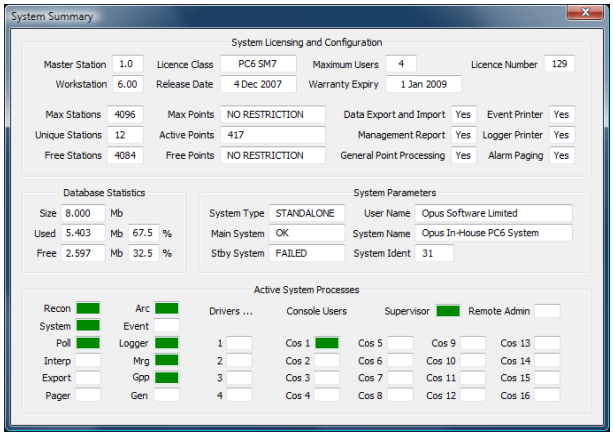


Optional search restrictions can be supplied with any summary command to restrict the contents of the summary to those stations and/or points of immediate interest.

Alarms may be configured with a delayed annunciation, to be displayed only after a pre-configured persistence time interval. The workstation can also be configured to repeat alarm annunciation after a predetermined interval. Alarms may be acknowledged individually or in a group, via summaries or mimics.

System Summary

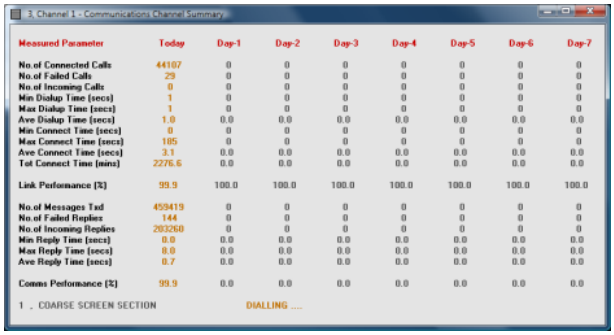
The System summary provides a breakdown of the Master station's current configuration, licensing level, database usage and active processes.



Communications Channel Summaries

Communications channel summaries display the current state and performance data of any data acquisition (polling) channel.

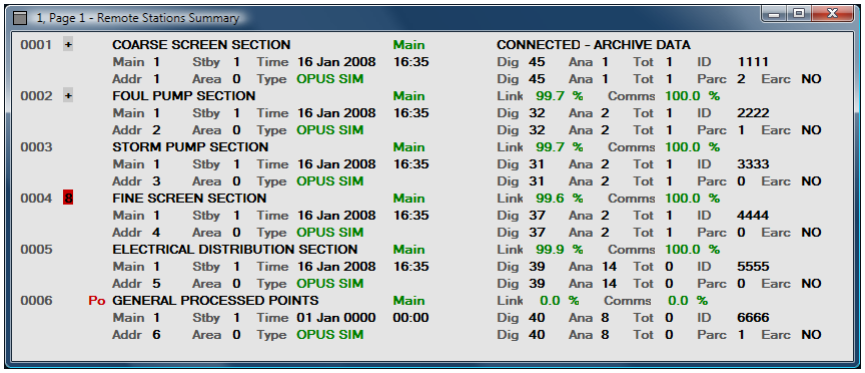
The displayed performance data also provides a seven day history for the selected communications channel.



Remote Station Summaries

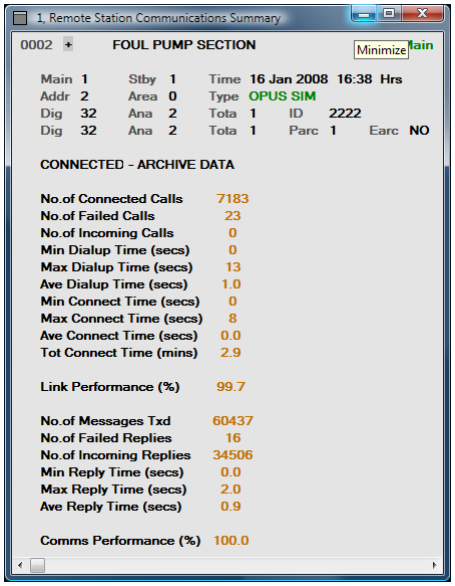
Remote station summaries display the current state and configuration of any outstation or group of outstations connected to the system.

The current polling state is displayed on the summary whilst the station is being polled.



Remote Station Statistics Summaries

Remote station statistics summaries display the current state and performance data for any remote station.



Point Summaries

A wide range of point summary displays are available. A point summary can be restricted to displaying the stations and points of interest by selecting one of the summary types and specifying any combination of station identity, point identifier, current state/value and alarm classification, as search keys for the required telemetry data. The various summary types available are listed below,

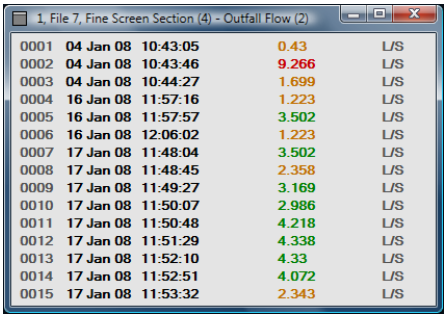
- General points with tag reference, external references or point history
- Digital points
- Analogue points
- Totalised points
- Analogue limit points

- Analogue and totalised points
- Alarmed points
- Unacknowledged alarm points
- Digital control points
- Analogue set-points
- Failed points
- Inhibited points
- Poll inhibited points
- Alarm inhibited points
- Event inhibited points
- Control inhibited points
- Auto-control inhibited points

Time Stamped Point Archive Summaries

Time Stamped Point Archive data can be displayed in tabular form.

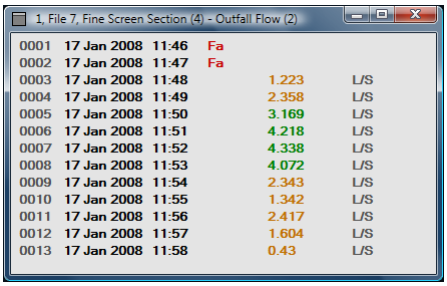
The tabular summary provides a chronological list of time stamped sampled data commencing at the specified date and time.



Point Archive Summaries

Point Archive data can be displayed in tabular form.

The tabular summary provides a chronological list of sampled data commencing at the user specified date and time.



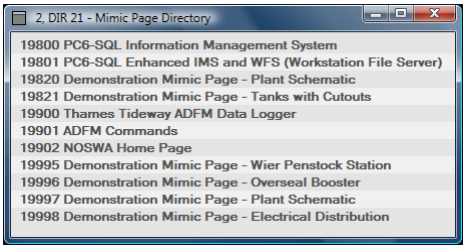
Data Directories

The Master station's relational database lends itself to providing directories of information.

Thirty two different database directories are available to display the configured contents of the Master station's database and workstation setup data.

Directories list database records of one specific type such as point identifiers, tag references, external references etc.

Optional search restrictions can be used to filter the resulting directory.

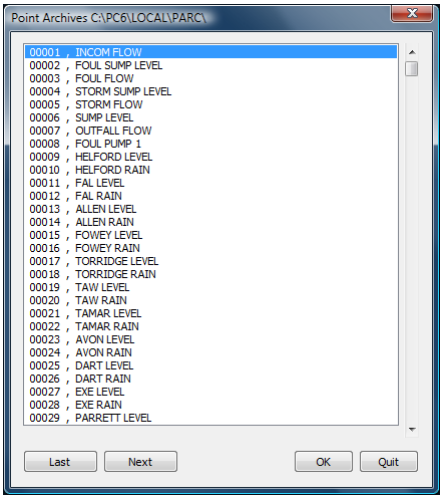


Additional directories are provided to list all configured mimic pages, map pages, graph specifications and dual-parameter graph specifications. Double clicking on one of these items will display the requested information. Other directories list User Accounts, Licenced Users and Management Reports.

Browse Information

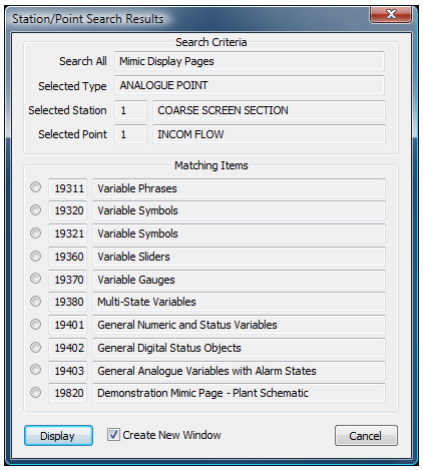
Numerous browse options are provided to search the system and list all related information from the PC6-SQL database and AGWS6 libraries.

Individual items can be selected directly from a browse dialog. Browsing is used extensively in mimic/map editing, database reconfiguration as well as in the general operation of the workstation.



Search Functions

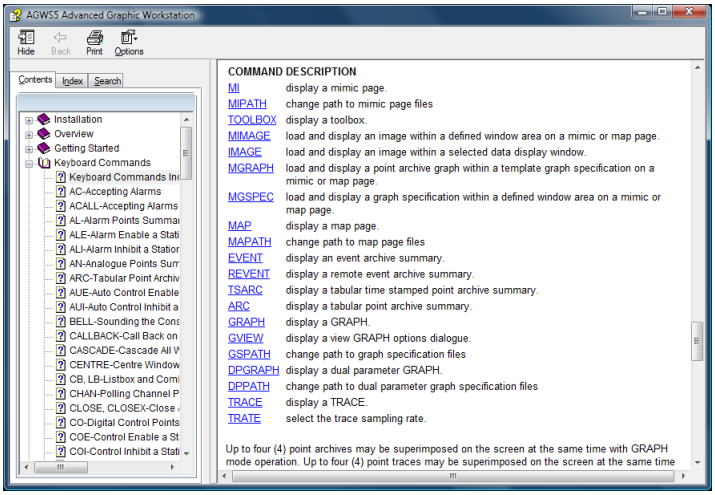
Any displayed telemetry point can be identified with the mouse cursor and the workstation's search options used to display a list of all associated archive files, graph specifications, mimic pages and map pages.



Help Information

Help information is available at all levels within the system providing the operator with an extensive online reference library.

User defined or site specific help text is easily installed on the system.

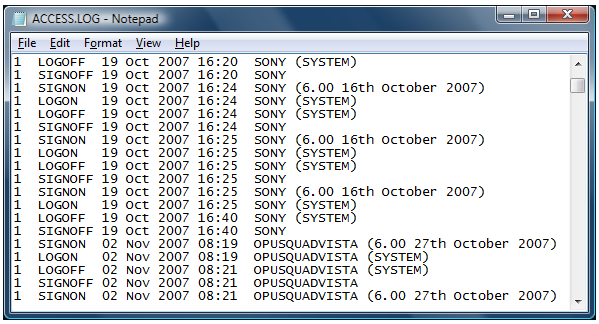


System Monitoring

Monitor utilities provide real-time statistical analysis of communications and software performance. The resulting statistical data can be displayed in summary form at the workstation along with the daily and monthly logs. Other utilities are provided to monitor the communication ports, network links and certain system processes. All monitored data can be captured and automatically saved to disk for later scrutiny.

System Access Log

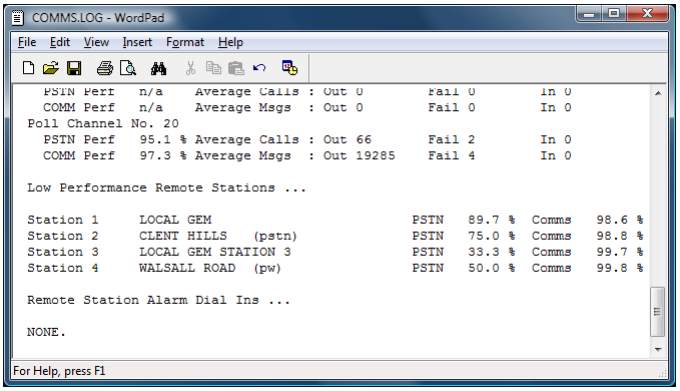
The system access log stores all workstation signon/signoff and user logon/logoff operations and is archived on a monthly basis.



System Communications Log

The system communications log contains the monthly overall polling channel performance data, a low performance remote station list and remote station dial in counts.

PSTN performance is determined by the number of successfully connected calls. Communications performance is determined by the number of successful protocol message exchanges. A separate section lists any low performance remote stations, i.e. those stations with a performance level below 90%. The final section of the communications log catalogues all remote station alarm dial ins.



Workstation Customisation

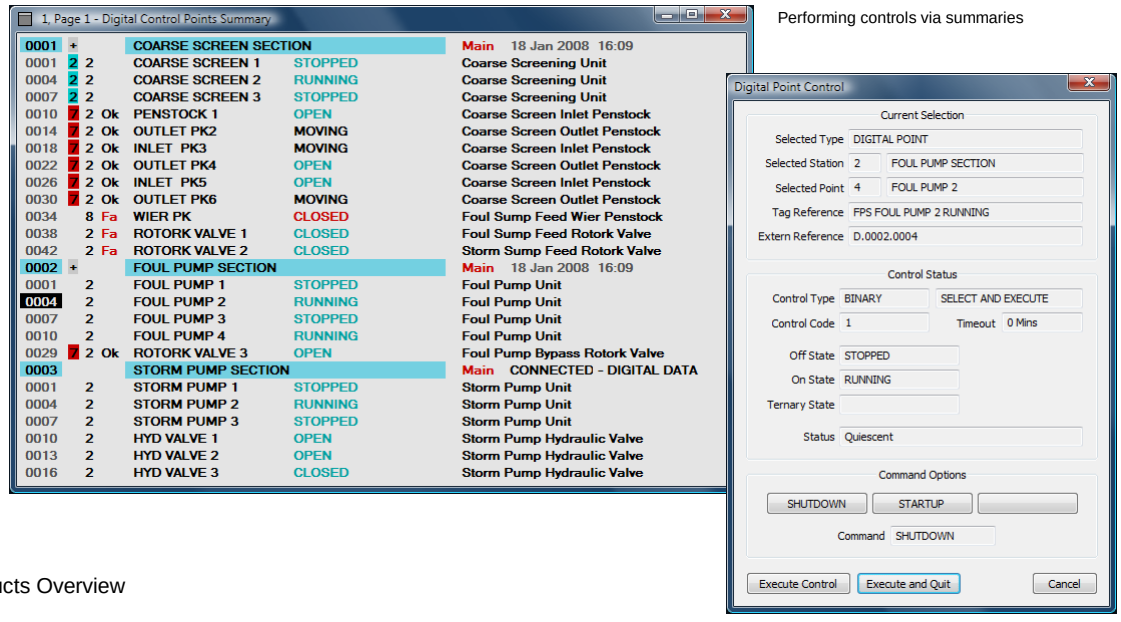
Each workstation's operating parameters can be tailored to suit an operator's individual requirements. User defined commands and function keys (Normal, Shifted, Control and Alternate) can be configured to produce a standardised or highly individual workstation. Window definition files can be used to store and recall complex displays consisting of multiple window areas.

Touch Screen

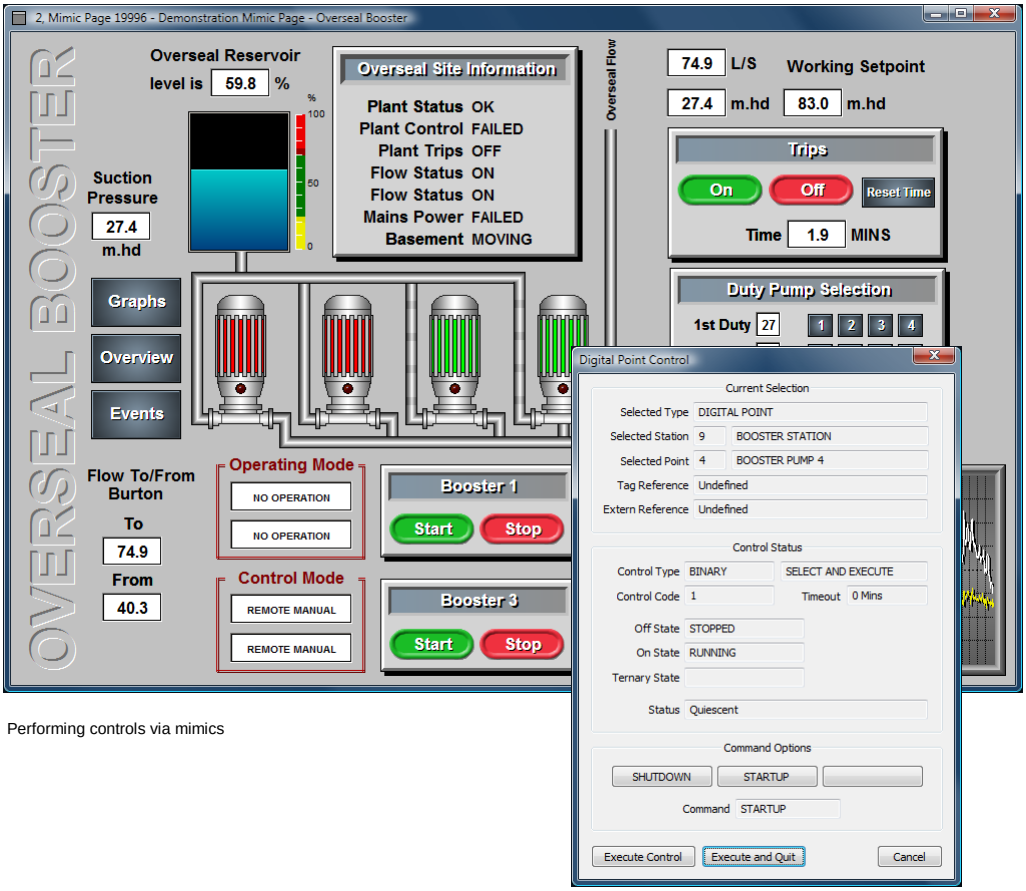
The workstation can be configured to operate in a touch screen mode. In this mode numeric and alphanumeric dialogs are used to request operator input.

Controls

Digital and analogue controls may be performed by a privileged operator via either summary displays or mimic pages. The operating privilege level for performing controls is configured within the workstation, an operator must be logged into an account with this privilege level or higher in order to execute controls.



Performing controls via summaries



Performing controls via mimics

AGWS6 General Features:

- User friendly graphic interface to the SCADA system based on the Windows operating system.
- Support for serial, private wire modem, PSTN modem and network (LAN, WAN, and Internet) links.
- Real time, periodic update or static display options.
- Concert operation with two or more workstations with message exchange facility between users.
- Extensive command language with query access to interrogate the Master station's database.
- Up to 256 user defined commands and 47 function key sequences.
- Sixteen data display windows for multiple display of text and graphic information.
- System and user defined help text providing comprehensive online reference facility.
- Over thirty database directories provided to display the configured contents of the workstation and Master station databases.
- Communication Channel and remote station summaries providing detailed configuration and performance data.
- Extensive range of point summaries.
- Event and point archive summaries to interrogate and display archive data.
- Up to 20,000 user defined graph specifications and extensive graph analysis facilities.
- Extensive Archive Data Management facilities.
- Real-time background trace and trace analysis facilities.
- High resolution full bit mapped mimic pages with real time update of plant information.
- High resolution map display pages.
- Extensive utilities for image handling and file transfer to and from a Master station.
- Full online reconfiguration of the workstation's setup data including its function keys, path specifications and operating parameters.
- Full online reconfiguration of the Master station's database.
- Support for local data logging (report) and colour screen dump printers.

Product History

Original Specification, Design and Development

The specification for a new Telemetry and SCADA (Supervisory Control And Data Acquisition) package commenced in 1981. The design of the system was originally influenced by the PICK operating system, which placed the database at the heart of the system.

The original specification was finalised in the same year and called for a specially designed fixed schema relational database to sit at the heart of the SCADA system. A high performance DBMS (Database Management System) would be developed to create and maintain the database and control all access to and from the system's configuration and telemetry data. The design of the system would have to allow for 'real time' access and update of the database. The system performance would be largely independent of the size of the system and the number of users accessing the system.

Several prototype packages were developed and tested over the next six years running on a variety of computer systems (mostly HP Development and DEC PDP computer systems). Finally in 1987, with the availability of high performance and relatively low cost DEC MicroVAX II computer systems, a VAX based package was developed and marketed by Opus Software.

First VAX Based Systems

The original UV2 system was completed in 1987 and intended for use on large systems based on the high performance DEC MicroVAX II computer system running under control of the DEC MicroVMS operating system. These systems used DEC VT and Tektronix terminals to provide a variety of text and graphic man-machine interfaces to the SCADA system.

The high performance and versatility of this software resulted in the systems being used during the construction phase of the Channel Tunnel and featured on the Tomorrow's World television program. The VAX based software was also adopted in 1988 by South Staffordshire Water PLC as their standard Telemetry and SCADA system package. Over the years, this system has been extensively upgraded and continually expanded. With over fifteen years of reliable service, the current distributed system consists of 21 SCADA Master stations installed at sixteen different sites and supporting over 50 graphic workstation users.

First PC Based Systems

With the advent of high performance low cost personal computers Opus Software Limited were one of the first companies to introduce a PC based workstation back in 1988. The original GWS (Graphic Workstation) software was a DOS based package and designed around the standard VGA 640x480 16-colour display.

Further improvements in PC performance enabled a PC version of the Master station software to be developed. This package was released in October 1989 for the multitasking IBM OS/2 operating system and offered a low cost alternative to the large VAX based systems. Continued improvements in PC performance allowed this software to supersede the VAX based system in June 1990.

Advanced Graphic Workstations

The Opus AGWS (Advanced Graphic Workstation) software was developed over a two year period in 1993-94 as a replacement for the older GWS package. This 32-bit protected mode software ran under control of the Rational Systems DOS/4GW DOS Extender. The AGWS package was designed to provide users of the Opus Telemetry and SCADA systems with a highly advanced and sophisticated Graphic User Interface (GUI). The workstation's user interface was based on a 1024x768 pixel display supporting 256 on screen colours (i.e. 8-bit colour).

In 1996 the Windows 95 version of the Advanced Graphic Workstation (WINAGWS) was released followed by the Windows 98 version in 1998. This package was the culmination of over eight years experience in the development of real time graphic workstation software. The workstation's display was based on a 1024x768 pixel display with either 16.7 million on screen colours (24-bit True Colour) or 64K on screen colours (16-bit High Colour). The 16-bit colour mode was intended for use on portable Master stations and Workstations using colour laptops with restricted graphics memory.

PC2000 Telemetry/SCADA Master Stations

The Windows 95/NT version of the Master station software was released in 1996, followed by the Windows 98/NT version in 1998, and the Windows 2000 version in 2000. Each new version of software incorporates numerous enhancements and extended features.

Fourth Generation Advanced Graphic Workstations

In 1999 development began on the 'fourth' generation of our graphic workstation software, the Opus AGWS4 Advanced Graphic Workstation. This software incorporates many advanced features including support for up to eight dynamic data display windows. Unlike our previous workstation software (the GWS, AGWS and WINAGWS packages) the AGWS4 is largely independent of the display resolution with support for 16, 24 and 32-bit colour displays at resolutions up to 1920 by 1200 pixels.

Fifth Generation Advanced Graphic Workstations

In 2001 development began on the fifth Windows 2000/NT generation of our graphic workstation software, the Opus AGWS5 Advanced Graphic Workstation. This software incorporates many new features including animated mimic variables and object orientated graphic libraries.

PC5-SQL Telemetry/SCADA Master Stations

With the release of Microsoft's MS.NET framework, development began on the next generation of Master station software. There is support for both Microsoft Access and Sql Server databases. The integrated SQL interface uses standard Microsoft packages. An integrated web interface supports Intranet and/or Internet browser access. Report generation has been extended to support HTML and text export formats. Automated procedures have been implemented to simplify the back up all key system data. Communications has been extended to include fax, e-mail and SMS texting.

PSI

In 2002 work began on the Opus PSI system. PSI is a Microsoft .NET framework software development package which provides an interface to third party data. Applications within PSI access and process data sourced from local and remote data based systems (IMS, Telemetry, SCADA systems, general purpose database etc.).

Standard applications such as the Opus AGWS PSI workstation provide highly sophisticated interfaces to the data based systems.

Remote Telemetry Unit

In 2005 we released the Opus RTU. These systems are intended for use at remote unmanned sites operating as Remote Telemetry Units providing typical outstation and data logging facilities. These systems are full-featured Telemetry/SCADA/IMS systems equipped with integrated SQL based

Information Management System, a sophisticated Web interface, printing and management report generation facilities, alarm paging and a single-user interface based on the very latest Advanced Graphic Workstation software.

PC6-SQL Telemetry/SCADA Master Stations

With the release of Microsoft's Windows Vista operating system and the new generation of multi-core processors, development began on the next generation of Master station software. The software is highly optimised for improved performance and new TCP/IP software will be introduced to take advantage of the latest Gigabit LANs and widespread use of broadband links. Closer integration with the Microsoft Office software suite provides further facilities for SQL data export and enhanced report generation.

Sixth Generation Advanced Graphic Workstations

In 2007 development began on the sixth Windows Vista generation of our graphic workstation software, the Opus AGWS6 Advanced Graphic Workstation. This software incorporates many new features including support for up to sixteen dynamic data display windows, extended search facilities and new user defined toolbars.

Ongoing Development Program

Opus Software Limited has always maintained an ongoing development program devoting large resources to pure research and development work. Such development has always enabled us to remain at the forefront of technology and offer our customers 'state of the art' systems. Furthermore, our ongoing development program and expandability of the software has enabled our customers to upgrade their systems and effectively extend the life span of their telemetry/SCADA systems indefinitely.

Opus Software Limited are specialists in the design and development of Telemetry and SCADA systems software. It is our policy to continuously develop and enhance all products and we thereby reserve the right to change any product specification without prior notice.