

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 fullfeatured 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.

	General Param	neters				Scaling Parameters	
Point Active	Identifier	INCOM FLOW	[::]				
Poll Inhibit	Phrase	Coarse Screen Incon	ing Flow	[::]			
Alarm Inhibit	Tag Ref	CSS INCOM FLOW	-	[::] Auto		Min Displayed Value 0	
Event Inhibit	Evternal Ref	A 0001 0001				Max Displayed Value	
Control Inhibit		1.0001.0001				Min Scaled Value 0	–
Auto Control Inhibit	Units	Units L/S				Max Scaled Value 10	-
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Print Control 🔽	Alarm Out Of H	liHi 🔽				Point Recovery	0
Archive Control 🔽	Alarm Into H	igh 🔽 🛛 HiHi Alarm	Class 6	HiHi Alarm Limit	8.5	Alarm HiHi	0
Control Priv 0	Alarm Out Of H	igh 🔽 🛛 High Alarm	Class 6	High Alarm Limit	6.5	Alarm High	0
Condonnie o	Alarm Into L	ow 🗹 🛛 Norm Alarn	Class 6	Low Alarm Limit	3	Alarm Norm	0
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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.

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1	Туре	Stn Station Name								
2	Station	1 COARSE SCREEN SECTION								
3	Туре	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	ОК	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	ОК	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	ОК	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	ок	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	ок	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	ок	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	ОК	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	ОК	TRIPPED		N
27	Digital	29 INLET PK5	Coarse Screen Inlet Penstock	CSS INLET PK5 MANUAL	D.0001.0029	Binary	AUTOMATIC	MANUAL		N
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Editing an auto configuration CSV file using MS Excel

ACF0001.CSV - WordPad	x
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Type, Stn, Station Name Station, 1, COARSE SCREEN SECTION	
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Digital,1,COARSE SCREEN 1,COARSE SCREENING UNIT,CSS COARSE SCREEN 1 RUNNING,D.0001.0001,Binary,STOPFED,RUNNI Digital,2,COARSE SCREEN 1,Coarse Screening Unit,CSS COARSE SCREEN 1 RTIPFED,D.0001.0002,Binary,OK,TRIPFED,N.	NG ≡ ,Y
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For Help, press F1	

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.

3, Channel 1 - Communicatio	ons Channel Sur	nmary					8	- 0 x
Neasured Parameter	Today	Day-1	Day-2	Day-3	Day-4	Day-5	Dag-6	Day-7
No.of Connected Calls	44107	0	0	0	0	0	0	0
No.of Failed Calls	29	0	0	0	0	0	0	0
No.of Incoming Calls	0	0	0	0	0	0	0	0
Hin Dialup Time (secs)	1	0	0	0	0	0	0	0
Max Dialup Time (secs)	1	0	0	0	0	0	0	0
Ave Dialup Time (secs)	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hin Connect Time (secs)	0	0	0	0	0	0	0	0
Max Connect Time (secs)	185	0	0	0	0	0	0	0
Ave Connect Time (secs)	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tot Connect Time (mins)	2276.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Performance [%]	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No.of Messages Tad	459419	0	0	0	0	0	0	0
No.of Failed Replies	144	0	0	0	0	0	0	0
No.of Incoming Replies	203260	0	0	0	0	0	0	0
Min Reply Time (secs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Reply Time (secs)	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ave Reply Time [secs]	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comms Performance (%)	99.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 , COARSE SCREEN SECT	TION	Di	ALLING					

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.

3, 1	Page 50 -	General Points - Point History	N	. 🗆 🗙			Fine Daptay Contex Code Code Land Fine Daptay Contex Code Code Land Control 100	tern Rales∉ << + Sent > >> Zern Cytiens Gat	1010 1000 1000 1000 1000 1000 1000 100
0001	6 6 6 6 6 6 6 6 6 6 6	INCOM FLOW 23 Nov 07 15:12:29 23 Nov 07 15:11:48 23 Nov 07 15:11:48 23 Nov 07 15:11:02 23 Nov 07 15:03:45 23 Nov 07 15:03:45 23 Nov 07 15:03:23 23 Nov 07 15:08:23 23 Nov 07 15:06:20 23 Nov 07 15:05:39 30 Nov 07 15:05:39	7,953 4,298 4,277 3,95 4,212 4,915 4,511 5,094 5,904 5,615 6,57	L/S L/S L/S L/S L/S L/S L/S L/S L/S	Seneral Points - Point Histo COARSE SCREEN SE PENSTOCK 1 23 Nov 07 15:02:11 23 Nov 07 15:00:11 23 Nov 07 14:50:01 23 Nov 07 14:50:01 23 Nov 07 14:50:02 23 Nov 07 14:50:01 23 Nov 07 14:55:02 23 Nov 07 14:4:93 23 Nov 07 14:4:93 23 Nov 07 14:4:42 23 Nov 07 14:4:42 23 Nov 07 14:4:42 23 Nov 07 14:4:42	CTION OPEN OPEN CLOSED CLOSED CLOSED COPEN CLOSED CLOSED CLOSED CLOSED	Opus Opus Opus Opus Martine Ma		

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).

1 , U	K 27 - Genera	al Archiv	e Files	Directory							
0034	Analogue	5	4	COARSE AMPS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	x
	Local		Tag	Undefined							
0035	Analogue	5	5	FINE VOLTS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	х
	Local		Tag	Undefined							
0036	Analogue	5	6	FINE AMPS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	х
	Local		Tag	Undefined							
0037	Analogue	5	7	FOUL VOLTS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	x
	Local		Tag	Undefined							
0038	Analogue	5	8	FOUL AMPS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	x
	Local		Tag	Undefined							
0039	Analogue	5	9	STORM VOLTS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	x
	Local	-	Tag	Undefined							
0040	Analogue	5	10 T	STORM AMPS	1	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	x
0044	Local	-	lag	Undefined		100				44.07.00	
0041	Analogue	5	<u>.</u>	GEN VOLIS	1 A A	480	14 Jan 2008	06:08:00	14 Jan 2008	14:07:00	×
0043	Local	E	Tag 12	Undefined	1	400	14 2000	06.00.00	14 2000	14.07.00	×
0042	Analogue	5	12	GEN AMPS	· ·	400	14 Jan 2006	00.08.00	14 Jan 2006	14.07.00	^
0043	Apploque	5	12	GEN POWER	1	490	14 Jan 2009	06-09-00	14 Jap 2009	14-07-00	×
0045	Local	5	Tag	Undefined	÷	400	14 341 2000	00.00.00	14 341 2000	14.07.00	^
0044	Analogue	5	14	GEN ERECUENCY	1	480	14 Jan 2008	06-08-00	14 Jan 2008	14.07.00	Y
0011	Local	5	Tag	Undefined	1.1	400	14 0011 2000	00.00.00	14 001 2000	14.07.00	^
0045	Analogue	8	5	MAIN DEPTH	1	12000	06 Jan 2008	06:08:00	14 Jan 2008	14:07:00	хт
	Local		Tag	Undefined							
0046	Analogue	8	6	RAW VELOCITY	1	12000	06 Jan 2008	06:08:00	14 Jan 2008	14:07:00	ХТ
	Local		Tag	Undefined							
0047	Analogue	8	7	QMAIN FLOW	1	12000	06 Jan 2008	06:08:00	14 Jan 2008	14:07:00	ХТ
	Local		Tag	Undefined							
0001	Analogue	1	1	INCOM FLOW	1	12000	27 Nov 2007	01:58:00	05 Dec 2007	09:57:00	х
	Remote		Tag	Css Incom Flow							
•											F.

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 Even	nt Archi	ve Summa	ary	100	8 7648 6 7648	=	Reading (Proceedings)		
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	м
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	Α
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	м
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	м
25 Nov 07 14:19:26	Ack	G	Void	0001	0012	5	PENSTOCK 1	TRIPPED	
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(*) 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.

6	Control Manual Access	ne tous	A DECEMBER OF	
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	D.0001.0004 COARSE SCREEN SECTION	COARSE SCREEN 2	CSS COARSE SCREEN 2 RUNNING	D.0001.0004
	D.0001.0007 COARSE SCREEN SECTION	COARSE SCREEN 3	CSS COARSE SCREEN 3 RUNNING	D.0001.0007
	D.0001.0010 COARSE SCREEN SECTION	PENSTOCK 1	CSS PENSTOCK 1 OPEN	D.0001.0010
	D.0001.0014 COARSE SCREEN SECTION	OUTLET PK2	CSS OUTLET PK2 OPEN	D.0001.0014
1.0	D.0001.0018 COARSE SCREEN SECTION	INLET PK3	CSS INLET PK3 OPEN	D.0001.0018
2	D.0001.0022 COARSE SCREEN SECTION	OUTLET PK4	CSS OUTLET PK4 OPEN	D.0001.0022
- E	D 0001 0026 COARSE SCREEN SECTION	INLET PK5	CSS INLET PK5 OPEN	D.0001.0026
5	D.0001.0030 COARSE SCREEN SECTION	OUTLET PK6	CSS OUTLET PK6 OPEN	D.0001.0030
1.1	D.0001.0034 COARSE SCREEN SECTION	WIER PK	CSS WIER PK OPEN	D.0001.0034
18	D.0001.0038 COARSE SCREEN SECTION	ROTORK VALVE 1	CSS ROTORK VALVE 1 OPEN	D.0001.0038
2	D.0001.0042 COARSE SCREEN SECTION	ROTORK VALVE 2	CSS ROTORK VALVE 2 OPEN	D.0001.0042
	D.0002.0001 FOUL PUMP SECTION	FOUL PUMP 1	FPS FOUL PUMP 1 RUNNING	D.0002.0001
	D.0002.0004 FOUL PUMP SECTION	FOUL PUMP 2	FPS FOUL PUMP 2 RUNNING	D 0002 0004
	D.0002.0007 FOUL PUMP SECTION	FOUL PUMP 3	FPS FOUL PUMP 3 RUNNING	D.0002.0007
	D.0002.0010 FOUL PUMP SECTION	FOUL PUMP 4	FPS FOUL PUMP 4 RUNNING	D.0002.0010
	D.0002.0029 FOUL PUMP SECTION	ROTORK VALVE 3	FPS ROTORK VALVE 3 OPEN	D.0002.0029 *
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Can	Figured Poted Identifier			Contraction (Section 1)

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.

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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

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.

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l	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
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l	11	INTEG FLOW	NORMAL	3.82	ML	08/01/2007 10:23
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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.

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Query telemetry database page

Telemetry data display page

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1	1	COARSE SCREEN SECTION	INCOM FLOW	HIGH-HIGH	8.597	US	0	0	10	Select	4.8	11/12/2007 12:08:33	OPUS		
2	1	FOUL PUMP SECTION	FOUL SUMP LEVEL	HIGH	8.654	м	0	0	10	Select	0				
2	2	FOUL PUMP SECTION	FOUL FLOW	NORMAL	2.986	L/S	0	0	10	Select	7.4	29/11/2007 09:12:39	OPUS		
3	1	STORM PUMP SECTION	STORM SUMP LEVEL	HIGH	8.654	м	0	0	10	Select	0				
3	2	STORM PUMP SECTION	STORM FLOW	NORMAL	2.986	L/S	0	0	10	Select	0				
6	1	FINE SCREEN SECTION	SUMP LEVEL	HIGH	8.654	м	0	0	10	Select	0				
4	2	FINE SCREEN SECTION	OUTFALL FLOW	NORMAL	2.986	L/S	0	0	10	Select	0				
9	1	BOOSTER STATION	RES LEVEL	HIGH-HIGH	92	%	0	0	100	Select	0				
9	5	BOOSTER STATION	WORKING SETPOINT	NORMAL	3.1	m.hd	0	0	100	Select	0				
12	1	GENERAL TEST STATION	ANALOG POINT 1	HIGH	60267	RAW	0	0	65535	Select	0				
12	2	GENERAL TEST STATION	ANALOG POINT 2	HIGH	19572	RAW	0	0	65535	Select	0				
12	3	GENERAL TEST STATION	ANALOG POINT 3	HIGH	48870	RAW	0	0	65535	Select	0				
12	4	GENERAL TEST STATION	ANALOG POINT 4	HIGH	49918	RAW	0	0	65535	Select	0				
	5	GENERAL TEST STATION	ANALOG POINT 5	HIGH	2047	RAW	0	0	65535	Select	0				
12															

Query analogue set-point control database page

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	2	FOUL PUMP SECTION	FOUL FLOW	NORMAL	2.986	US	0	0	10	Select	7.4	29/11/2007 09:12:39	OPUS
	1	STORM PUMP SECTION	STORM SUMP LEVEL	HIGH	8.654	M	0	0	10	Select	0		
	2	STORM PUMP	STORM FLOW	NORMAL	2.986	L/S	0	0	10	Execute Cancel	0		
	1	FINE SCREEN SECTION	SUMP LEVEL	HIGH	8.654	м	0	0	10	Select	0		
	2	FINE SCREEN SECTION	OUTFALL FLOW	NORMAL	2.986	L/S	0	0	10	Select	0		
	1	BOOSTER STATION	RES LEVEL	HIGH- HIGH	92	%	0	0	100	Select	0		
	5	BOOSTER STATION	WORKING	NORMAL	3.1	m.hd	0	0	100	Select	0		
2	1	GENERAL TEST STATION	ANALOG POINT 1	HIGH	60267	RAW	0	0	65535	Select	0		
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Analogue set-point control page with a point selected

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1 1 1 4	COARSE SCREE SECTION COARSE SCREE SECTION	N COARSE SCREEN T	RUNNING STOPPED	0	STOP STOP	RUN RUN		RUN 29/11/2007 09:12:18	OPUS		Station	1 10
1 7 1 10	COARSE SCREE SECTION	N COARSE SCREEN 3	CLOSED	0	STOP CLOSE	RUN OPEN	STOP	STOF 09/01/2008 16:12:51	OPUS		Station Name	COARSE SCREEN SECTION
1 14	COARSE SCREE	N OUTLET PK2	OPEN	0	SHUTDOWN	STARTUP	Tertiary Cmd				Tag Reference	CSS PENSTOCK 1 OPEN
1 11 1 22	COARSE SCREE SECTION COARSE SCREE SECTION	N INLET PK3 N OUTLET PK4	CLOSED OPEN	0	SHUTDOWN	STARTUP	Tertiary Cmd		-		External Reference Current Status	D.0001.0010 CLOSED
1 28	COARSE SCREE	N INLET PK5	CLOSED	0	SHUTDOWN	STARTUP	Tertiary Cmd				Command	STOP
1 34 1 34	COARSE SCREE SECTION COARSE SCREE SECTION	N OUTLET PK6	OPEN CLOSED	0	SHUTDOWN OPEN	STARTUP CLOSE	Tertiary Cmd					Execute Cancel
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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.

Operating Parameters										
Master Station										
Name Opus In-House PC6 System										
Address 0 Phone Number Workstation										
Connect via Pooled Modem Address 1										
Communications										
Link Type INTERNAL LINK Transmit On Delay (msecs) 100										
Port COM1 Baud Rate 19200 Transmit Off Delay (msecs) 100										
Request Timeout (secs) 5 Refresh Rate (secs) 0 REAL TIME DISPLAY										
LAN/WAN and TCP/IP Network Links										
Name, IP Address, IPX Node etc.										
Connect to Standalone System Main Server OPUSMAIN										
Connect to Main/Standby System Standby Server OPUSSTBY										
Connect via Workstation Server Number of Servers 1 Users Per Server 8										
Local PSTN Modem General Display										
Init String ATZ ATE0 ATV1 ATQ0 ATM1 ATS0=1 Enable Alarms V Alarm Repeat										
Dial String ATDT Enable Alarm Bell 🗸 0										
Hangup String ATH0 ATM0 Enable Poll Status V Seconds										
General Operation										
Auto Connect Enable Disconnect Timeout (mins) 30 Auto Disconnect Enable										
Auto Logout Enable Logout Timeout (mins) 5 Save Cancel										

User Account Record	1
Access Type	PASSWORD
Privilege Level	50
User Name	OPERATOR
Password	••••
Expiry	0 Days
Areas Of Interest	GLOBAL
Phone Number	01234 567890
Fax Number	01234 567890
Email Address	user@company.co.uk
Home Page Number	1
Login Command	M 32
Mimic List Filename	
User's Wo	rkstation File Server Parameters
USER'S WO	and a don't lie off ver that anice is
	User Note
The 'Mimic List worksta	Filename' must be located within the tion's USERDEF sub-directory.
<<	>> OK Cancel

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.

MRG0001.TXT - WordPad	E REP0001.TXT - WordPad	x
<u>File Edit View Insert Format H</u> elp	Eile Edit View Insert Format Help	
다 🗃 🖨 🕼 🦀 🐰 🖻 🛍 🗠 😼		^
{Line}	DEMONSTRATION MANAGEMENT REPORT - Generated on 15th January 2008, 15:51 Hrs	3
{TITLE} - Generated on {Datetime}	0001 COARSE SCREEN SECTION 15 Jan 2008, 15:51 Hrs 0001 5 Incom Flow 2.118 L/S Coarse Screen Incoming Flow	
{Cmd, "AN 1 2"}	0002 FOUL FUMP SECTION 15 Jan 2008, 15:51 Hrs 0001 5 Foul Sump Level 2.118 M Foul Sump Level Transducer 0002 5 Foul Sump Level 2.417 M(G Foul Sump Level Transducer	E
{Line} E {Asl,1,1}	2.41/ L/S FOUL Pump Section Flow Monitor	e
{Line}	0001 5 Incom Flow 2.118 L/S Coarse Screen Incoming Flow	
{Aid,1,1,16} {Ava,1,1,12} {Aun,1,1} {Aid,2,1,16} {Ava,2,1,12,3} {Aun,2,1} {Aid,2,2,16} {Ava,2,2,12} {Aun,2,2} {Line}	Incom Flow 2.110 L/S Foul Sump Level 2.118 M Foul Flow 2.417 L/S	•
	K	F
For Help, press F1	For Help, press F1	

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.

Management Report Record	1	-		🏉 Man	agement Repo	rt - Windows Inte	ernet Explorer		- 0 X	
Report Active 👽 Demand Process 👽 Batch Process	Source File Type TXT C HTM	Day of Week Undefined Day of Month 17	•	Stati) - 💽 G:\	REP0017.HTM Igement Report			₽ • • • ۞ T <u>o</u> ols • `	
Append Date Code 🗹 Append Time Code 🗹	Batch Ba D	Process Rate 0 tch Sync Time 00:00 efault Station 0	Mins	Stn 0004	Tg Stat FINE Type	SCREEN SEC	TION	Last Updated 17 Apr 2003, 09:29 Hrs PSTN 0.0 % Comms 100.0	•	
Report Title Dem Print Report ? Copy Report ? Fax Report ? Email Report ? Set Digital Point ?	Copy To Fax To Email To User@company.co.uk Station 0 Browse Point	Browse Browse 1 Browse		Point Pnt . 0004 0001 0002 0003 0004 0005 0006 0007	Ac Tg Poin FINE FINE FINE FINE FINE FINE FINE FINE	t Identifie SCREEN SEC SCREEN 1 SCREEN 1 SCREEN 1 SCREEN 2 SCREEN 2 SCREEN 2 SCREEN 2	r State/Valt FION RURNING OK MANDAL RURNING TRIPPED MANDAL RURNING	ne Description 17 Apr 2003, 09129 Hrs Fine Screening Unit Fine Screening Unit Fine Screening Unit Fine Screening Unit Fine Screening Unit Fine Screening Unit		
Run Application	Application Run First Run On Comp Cancel	letion		0008 0009 0010 0012 0013 0014 0016	4 FINE 2 FINE 1 Fa INLE 4 INLE 2 INLE 1 Fa OUTI 4 OUTI	SCREEN 3 SCREEN 3 T PK7 T PK7 T PK7 ET PK8 ET PK8	TRIPPED AUTOMATIC OPEN TRIPPED AUTOMATIC OPEN TRIPPED	Fine Screening Unit Fine Screening Unit Fine Screen Inlet Pensto Fine Screen Inlet Pensto Fine Screen Outlet Pensto Fine Screen Outlet Pensto Fine Screen Outlet Pensto Fine Screen Outlet Pensto	2292 * (2) Tgol * 2292 * (2) Tgol * 	

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.

😵 General Point Processor		
A + A A		
Hide Back Print Options		
Contents Index Security	Conoral CBD Eurotions	<u>^</u>
	General GPP Functions	
	The general functions, numbered 1 through to 199, identify general arithmetic functions w	vithin the
Overview Overview Configuring The Process For	GPP (e.g. sqrt, sin, cos, tan etc.).	
Process Formulae: Gramma		
Process Formulae: Operator	N.B. All general functions return a zero result on error.	
Alphabetical Index of GPP Fu	Mnemonic Syntax Description	
Numeric Index of GPP Functi	FLOOR F1 (exp) Nearest more negative integer value.	
GPP Functions	CEIL F2 (exp) Nearest more positive integer value.	
General Functions	ABS F3 (exp) Absolute value.	
Index	MOD F4 (expa, expb) Modulus value (expa mod expb).	
2 ABS-Abs Process Formulae	Record 1	
ALRMPR	ANALOGUE V Day of Week 0 Day of Month 0 Dion.	Ξ.
ASIN-Arc Station/Variable N	umber 6 Processing Rate 0 Mins	
ASTATE- Point Poin	lumber 1 Sync Time 00:00	
BACKUP Descriptive	Phrase	
CEIL-Ne:		
2 COSH-H		
		a
DATE-DA Process For	mulae	
DAY-DAY Code	ON(P1)	
EXP-Exponenti		
FLOOR-Neares	v	
IFFALSE-Conti	General Functions Control Functions Special Functions	analogue
IFTRUE-Contin		
🕐 LOG-Natural Lo		
LPTMON-Copy Ren	note Stations Digital Points Analogue Points Totalised Points	ecutive
MOD-Modulus		
MONTH-MONT	tory of General Functions	J
POLI - Initiate An All-D	0001, FLOOR(exp)	t (0 = main.
POWER-Raise To A F	0002 , CEIL(exp) 0003 , ABS(exp)	
PROCFAIL-Current S	0004, MOD(exp) 0005, SORT(exp)	nits also
R2DEG-Radian To D	0006 , D2RAD(exp) 1007 , R2DEG(exp) ts. 'sn' = station number	ar, sap =
REBOUT-Reboot the	lap = first limit analogu	ue point
SAVESPEC-Save The	0009 , COS(exp) digital point number, n 0010 , TAN(exp) sin group	= No. of
SAVEVARS-Save All V	0011, ASIN(exp) 0012, ACOS(exp) rent alarm state; 0 = N0	ORM alarm
SIN-Sine	0013, ATAN(exp) 0014 STNH(exp)	condition, 3
SQLDBASE-Monitor th	HI alarm condition.	DT minter
SQRT-Square Root	0016 , TANH(exp) 9X/NT systems. Copy I 0017 , EXP(exp) a consecutive group of	three binary
	0018 , LOG(exp) 0019 , POWER(expa, expb)	-
	0020 , DAYOFWEEK(exp)	
	0022 , STNSTA(exp, Pn)	
	0023 , SISILM(FI) 0024 , POLL(exp)	
	0025 , RPOLL(exp) 0026 , STNCHAN(exp, Pn)	
	0027 , CMPLIM(sn, sap, lap, ddp, n) 0028 , ASTATE(exp)	
	0029 , LPTMON(port, Pn)	
	Last Next OK Quit	

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

stem Summary										
	System Licensing and Configuration									
Master Station	1.0 Licence Class PC6 SM7 Maximum Users 4 Licence Number 129									
Workstation	6.00 Release Date 4 Dec 2007 Warranty Expiry 1 Jan 2009									
May Statione	4006 May Pointe NO DESTRICTION Data Evport and Import Ves Event Printer Ves									
Unique Stations	12 Active Points 140 RESTRICTION Data Export and Import Tes Event Printer Tes									
Free Stations	4084 Eree Points NO RESTRICTION General Point Processing Yes Alarm Paging Yes									
Thee blacks										
Database Statistics System Parameters										
Size 8.000	Mb System Type STANDALONE User Name Opus Software Limited									
Used 5.403	Mb 67.5 % Main System OK System Name Opus In-House PC6 System									
Free 2.597	Mb 32.5 % Stby System FAILED System Ident 31									
	Active System Processes									
System	AFC Drivers Console Users Supervisor Remote Admin									
Pol	Logger 1 Cos 1 Cos 5 Cos 9 Cos 13									
Interp	Mrg 2 Cos 2 Cos 6 Cos 10 Cos 14									
Export	Gpp 3 Cos 3 Cos 7 Cos 11 Cos 15									
Pager	Gen 4 Cos 4 Cos 8 Cos 12 Cos 16									
	Eila Tenefar									
	Urection									
	Master to workstation Workstation to Master									
	Parameters									
	Source File Browse									
	Destination File Browse									
vetom	Current State QUIESCENT Data Compression									
system.	File Size 0 Bytes to 1									
ine	Transfer Count 0 Bytes 0 %									
	Progress									
	110g cu									
	Start Abort									
e										
-										

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.

🔲 1, Pa	age 1 - C:\PC	5\LOCAL\P	ARC\			
Directo	ry Edit File	Create Fi	e Delete File			
0001	Analogue	1 1	INCOM FLOW	1	120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0002		2 1	FOUL SUMP LEVEL	1	120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0003	Analogue	2 2	FOUL FLOW	1	120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0004			STORM SUMP LEVEL		120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0005	Analogue	3 2	STORM FLOW	1	120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0006			SUMP LEVEL		120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0007	Analogue	4 2	OUTFALL FLOW	1	120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
8000	Digital	2 1	FOUL PUMP 1	1	120	15.Jap 2008 13:56:00 15.Jap 2008 15:55:00
0009	Analogue	7 1	HELFORD LEVEL	1	120	2, Archive Data File - C:\PC6\LOCAL\PARC\ARC
0010	Analogue	7 2	HELFORD RAIN	1	120	Goto Fail Ok 0 1 2 Set Scale Restore Save Exit
0011	Analogue	7 3	FAL LEVEL	1	120	
0012	Analogue	7 4	FAL RAIN	1	120	0001 15 Jan 2008 15:41 Fa
0013	Analogue	7 5	ALLEN LEVEL	1	120	0002 15 Jan 2008 15:42 Fa
0014	Analogue	76	ALLEN RAIN	1	120	0003 15 Jan 2008 15:43 0.294 L/S
0015	Analogue	7 7	FOWEY LEVEL	1	120	0004 15 Jan 2008 15:44 0.95 L/S
0016	Analogue	7 8	FOWEY RAIN	1	120	0005 15 Jan 2008 15:45 0.034 L/S
0017	Analogue	7 9	TORRIDGE LEVEL	1	120	0006 15 Jan 2008 15:46 8.597 US
0018	Analogue	7 1	0 TORRIDGE RAIN	1	120	0007 15 Jan 2008 15:47 9.015 L/S
0019	Analogue	7 1	1 TAW LEVEL	1	120	0008 15 Jan 2008 15:48 0.89 US
0020	Analogue	7 1	2 TAW RAIN	1	120	0009 15 Jan 2008 15:49 2.11 L/S
0021	Analogue	7 1	3 TAMAR LEVEL	1	120	1 10 10 15 an 2008 15:50 2 944 75
0022	Analogue	7 1	4 TAMAR RAIN	1	120	
0023	Analogue	7 1	5 AVON LEVEL	1	120	15 Jan 2008 13:56:00 15 Jan 2008 15:55:00
0024	Apploauo	7 1		1	120	15 las 2002 12-56-00 15 las 2002 15-55-00

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.).

Operating Par	ameters			X
(Master Station			
Name	Opus In-House PC6 System			
Address	0 Phone Number		Works	station
	Connect via Po	oled Mod	em Address	1
	Communication	s		
Link Type	INTERNAL LINK	Transm	nit On Delay (msecs)	100
Port	COM1 V Baud Rate 19200 V	Transm	it Off Delay (msecs)	100
Request Tin	eout (secs) 5 Refresh Rate (sec	cs) 0	REAL TIME DIS	PLAY
	LAN/WAN and TCP/IP Ne	twork Lin	ks	
		N	ame, IP Address, IPX	Node etc.
Conne	ect to Standalone System Main	Server	OPUSMAIN	
Conne Conne	ect to Main/Standby System Standby	Server	OPUSSTBY	
Conne Conne	ect via Workstation Server Number of S	Servers	1 Users Per Serv	ver 8
	Local PSTN Modem		General Display	
Init String	ATZ ATE0 ATV1 ATQ0 ATM1 ATS0=1	1	Enable Alarms 📝 🛛 Ala	rm Repeat
Dial String	ATDT	Ena	able Alarm Bell 🔽	0
Hangup Str	ing ATH0 ATM0	Enal	ble Poll Status 🔽	Seconds
	General Operation			
Auto Co	Disconnect Timeout (mins)	30		
Auto Lo	gout Enable Dugout Timeout (mins)	5	Save	Cancel
				

Displayed Information

Operator Shortcuts

Double-clicking on any displayed point archive or timestamped 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.

Selectio	Selection Options							
DIGIT	DIGITAL POINT							
1	COARSE SC	REEN SECTION						
28	INLET PK5							
CSS I	NLET PK5 TRI	PPED						
D.000	1.0028							
	Accept	Archives	Graphs					
(Control	Events	Mimics					
	Inhibit	History	Maps					
	Enable	Local Arcs	Stn Poll					
	Reset	Remote Arcs	Stn Points					
E	Brief Configure Further Action							
	Other Information							

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



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.

Advanced Graphic Workstation 6.00b	- Opus In-House PC6 System { Local - Re	I Time }			×	
Init Accept Display Search Brows	e Control Print Show Config Uti	ity Window Close Help				
					~	
1, Mimic Page 19800 - PC6-SQL	Information Management System					
File Edit Save Insert Delete	Redraw Move Duplicate Adjust S	yle Align Grid Exit				
MS Excel						
Station Tolomotry	Micro	oft	Web Browser			
Control	SQL Users Comp	atible Web Users		SiteIndex.xml UserIndex.xml	,	
🕒 🕒 Set Point	Packa	ges	Intranet / Internet	Userindex.xiii	1	
Archive Archive	+ Besno	ke l		Frame	Options	
Alarm Events					Options	Colours
Control Events	S S	QLIMS	SQL IMS			Light +
User Defined					Shape RECTANGLE	Shade +
Pumps	 Station Telemetry 	Control Set Poin	nt Request	Exter	Rounding 10 Pixels	Frame +
+ Flows				SQL		Outer +
	Archive	Alarm	1 Arabiya	Datal	Edge RAISED EDGE	Tinner +
Graphic	Archive System	Alarm	Archive		Style ROUND FACED	Fil A +
Tronstations					Width THIN FRAME 3	Fill B +
	Export		Import			Default Auto
AGWS Osers		(A)		F	Fill Option GRADIENT FILL	Shadow +
					Gradient SPLIT HORIZONTAL	Drop Shadow
Various		PC6-SQL			Reverse Gradient	Shadow Offset ⁸ in Pixels
	=	Telemetry / SCADA / IMS	System			
LAN / WAN		(Main & Hot Standby) 		Drawing	Optional Bitmap
Direct / Modern / Radio		1	1	_	All Sides 🔽 Left	Browse
Direct/ modem/ radio				Interr	Right	Transparency Colour +
	Telemet	v Archive	Events	SCAL	Draw Inline Bottom	Transparent Stretch Tile Auto Size
		,		Datal		
. . .					Save Load	OK Cancel
16:22:34 Station 1 , COARSE S	SCREEN SECTION Catagory 9 OI	OUTLET PK2 CLOSED		V	/OID	
MARKER BUITON Objects 89 Mar	rkers 31 Off Cmd = Access c:\pc6\ex	iort\Station.mdb /ro , On Cmd =	(223,193,323,253 100 x 60)	15 Jan 2008 16	:23:04	

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.

ADSD 1/S Monthley Schoolet	
400.0 L/O Working Setpoint	Storm Sump Leve
4.7 m.hd 4.0 m.hd	
Trips	
	C0-10 105-
On Off Reset. Time	
	Storm Flow
Time 0.0 MINS	
	8
Duity Pump, Selection	
	je egi
1st Duty 1 1 2 3 4	
2nd Duty 2 1 2 3 4	6
3rd Duty 3 1 2 3 4	ji
4th Duty 4 1 2 3 4	4
"0" = No Pump Selected	Tehnerah
	to the second seco



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.



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 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.



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.









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.

3,	Page 50 -	General Points - Point History						File Deptsy C	Green Land Salva Tencenstone men Gred Graph Least Raise great 10/1000	d << + Scoll > >> Zeen Option Ultr	14-14-1-14 - 14-14 14-12281 - 00-00
0001	+	COARSE SCREEN SECTION						្ណារប		<u>∧-</u> ∖.	. Op
0001	6	INCOM FLOW	7.953	L/S							
	6	23 Nov 07 15:12:29	4.298	1.10				Opu		Send Deph Date	100
	6	23 Nov 07 15:11:48	4.277	🔲 3, Pa	ge 41 - Ge	eneral Points - Point	t History			ScolPend	The second second
	6	23 Nov 07 15:11:07	3.95	0001	_		N OF OTION			Awad 15am	
	6	23 Nov 07 15:10:26	4.212	0001	+ 	LUARSE SUREI	IN SECTION	Opu	3.11	I THAN I STRANG I THANK	• O <u>r</u>
	6	23 Nov 07 15:09:45	4.915	0010	2 UK	PENSIULK I	02.12 OPEN	-		D Sthere D 1 Heat D Carrent	
	6	23 Nov 07 15:09:04	4.511		2	23 NOV U/ 15	02:13 UPEN	Gran		Selected Scrol Gobal Scrol	- G -
	6	23 Nov 07 15:08:23	5.094		2 14	23 NOV 07 13	.00:10 CL05ED	- Sho	8		1
	6	23 Nov 07 15:07:01	5.904		2	23 NUV 07 14	EC.4E ODEN			Cercot	
	6	23 Nov 07 15:06:20	5.615		2 5-	23 NUV 07 14	.30.43 UFEN -5C-04 OPEN	Opu	5.		Or
	6	23 Nov 07 15:05:39	6.57		2 10	23 Nov 07 14	-50-36 OPEN	and the second second	-	Down Lana Terrorenties - Terrahase 1 Dava - 1 Mo Der D	
					2	23 Nov 07 14	-49-33 CLOSED	-		FLE MOR. ORDIN LAME OU TEMPERATURE OT	
					2	23 Nov 07 14	40.55 CEUSED	BF PLOTTED PO B FALSD POWT	ets ORD START 18 JAN 2008 ORD END 18 JAN 2008	00 00 00 BAXMAN 7.8 dege 1909 36.1 % 06 00 00 AVERAGE 5.0 dege L0W 3.1 %	10K0 60%
-					2	23 Nov 07 14	45.49 CLOSED	Contraction of the	10 T-ANS 4 10 T	anterior es sept score en sis	40. 445
					2	23 Nov 07 14	44-27 MOVING				
					-	201101 01 11					

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		×		Page 1	- Gene	eral Points Summary	-		_ D X
	Summary Type				_	,,	_		
General Points	Summary	•	000	2 +		FOUL PUMP SECTION			Main 16 Jan 2008 15:39
General Points	Summery		000	6	j .	FOUL SUMP LEVEL	0.181	м	Foul Sump Level Transducer
			000	3	_	STORM PUMP SECTION			Main 16 Jan 2008 15:39
	Restrictions		000	6	j .	STORM SUMP LEVEL	0.6	м	Storm Sump Level Transducer
Poll Channel	0		000	4 8	_	FINE SCREEN SECTION			Main 16 Jan 2008 15:39
			000	01 6	i .	SUMP LEVEL	0.6	м	Fine Screen Sump Level
Station Name	All Stations	[:::] Reset	000	7		LEVEL AND RAINFALL DAT	A		Main 16 Jan 2008 15:39
Station Numbers	All Stations	[:::] Reset	000	1 4		HELFORD LEVEL	0.6	M	Measured River Level
			000	3 1		FAL LEVEL	7.2	M	Measured River Level
Point Specifier	*LEVEL*	[:::] Reset	000	15 1		ALLEN LEVEL	3.62	M	Measured River Level
Point Phrase	All Phrases	[:::] Reset	000	07 6	5	FOWEY LEVEL	8.52	M	Measured River Level
	,		000	9 1		TORRIDGE LEVEL	2.67	м	Measured River Level
Tag Reference	All References	[:::] Reset	001	1 4		TAW LEVEL	0.77	м	Measured River Level
External Reference	All Deferences	[] Recet	001	3 1		TAMAR LEVEL	4.01	м	Measured River Level
External Reference	Air References	[] Reset	001	5 1		AVON LEVEL	2.05	м	Measured River Level
State or Value	All States & Values 🔹	Reset	001	7 1		DART LEVEL	4.7	м	Measured River Level
Alarm Class		Deset	001	9 1		EXE LEVEL	3.46	м	Measured River Level
Aldrift Class	0 10 0	Reset	002	21 4	ι.	PARRETT LEVEL	0.96	м	Measured River Level
Pecet Pectrictic	on Defaulte Set Pestrictie	on Defaults	000	9		BOOSTER STATION			Main 16 Jan 2008 15:39
		onecidane	000	01 6	э.	RES LEVEL	3.5	%	Reservoir Level
			001	0		WIER PENSTOCK STATION	N		Main 16 Jan 2008 15:39
Create New Window	V		002	6 1		BATTERY LEVEL H	IEALTHY		Battery Level Status
Display Print		Cancel	000	1 1		UPSTREAM LEVEL	22.248	MAOD	Upstream River Level (AOD)
Plint Plint		Cancer	000	2 1		DOWNSTREAM LEVEL	23.863	MAOD	Downstream River Level (AOD)

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 vecally appunciate alarms as they.

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.

🔳 2, Pa	age 1 - Una	acknowledged Alarm Points Sum	mary	-미포
0002		FOUL PUMP SECTION		Main 08 Sep 2003 17:56
0002	5	FOUL PUMP 1	TRIPPED	Foul Pump Unit
0003	3	FOUL PUMP 1	AUTOMATIC	Foul Pump Unit
0005	5	FOUL PUMP 2	OK	Foul Pump Unit
0006	з	FOUL PUMP 2	MANUAL	Foul Pump Unit
8000	5	FOUL PUMP 3	OK	Foul Pump Unit
0009	3	FOUL PUMP 3	MANUAL	Foul Pump Unit
0011	5	FOUL PUMP 4	OK	Foul Pump Unit
0012	3	FOUL PUMP 4	AUTOMATIC	Foul Pump Unit
0003		STORM PUMP SECTION		Main 08 Sep 2003 17:56
0002	5	STORM PUMP 1	TRIPPED	Storm Pump Unit
0003	з	STORM PUMP 1	AUTOMATIC	Storm Pump Unit
0005	5	STORM PUMP 2	OK	Storm Pump Unit
0006	3	STORM PUMP 2	MANUAL	Storm Pump Unit
0008	5	STORM PUMP 3	OK	Storm Pump Unit
0009	з	STORM PUMP 3	MANUAL	Storm Pump Unit
0009		BOOSTER STATION		Main 08 Sep 2003 17:56
0002	5	BOOSTER PUMP 2	RUNNING	Booster Pump
•				

Alarms may be configured with a delayed annunciation, to be displayed only after a preconfigured 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.

5, Channel 1 - Communicatio	ons Channel Sur	nmary	_					
Measured Parameter	Today	Dag-1	Dag-2	Day-3	Dag-4	Day-5	Dag-6	Day-7
No.of Connected Calls	44107	0	0	0	0	0	0	0
No.of Failed Calls	29	0	0	0	0	0	0	0
No.of Incoming Calls	0	0	0	0	0	0	0	0
Hin Dialup Time (secs)	1	0	0	0	0	0	0	0
Max Dialup Time (secs)	1	0	0	0	0	0	0	0
Ave Dialup Time (secs)	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hin Connect Time (secs)	0	0	0	0	0	0	0	0
Max Connect Time (secs)	185	0	0	0	0	0	0	0
Ave Connect Time (secs)	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tot Connect Time (mins)	2276.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Link Performance (%)	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No.of Messages Tad	459419	0	0	0	0	0	0	0
No.of Failed Replics	144	0	0	0	0	0	0	0
No.of Incoming Replies	203260	0	0	0	0	0	0	0
Min Reply Time (secs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Reply Time (secs)	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ave Reply Time [secs]	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Comms Performance (%)	99.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 , COARSE SCREEN SECT	TION	DI	ALLING					
		_				_	_	_

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.

📕 1, Page	1 - Remote Stations Summary		
0001 +	COARSE SCREEN SECTION	Main	CONNECTED - ARCHIVE DATA
	Main 1 Stby 1 Time 16 Jan 2008	16:35	Dig 45 Ana 1 Tot 1 ID 1111
	Addr 1 Area 0 Type OPUS SIM		Dig 45 Ana 1 Tot 1 Parc 2 Earc NO
0002 +	FOUL PUMP SECTION	Main	Link 99.7 % Comms 100.0 %
	Main 1 Stby 1 Time 16 Jan 2008	16:35	Dig 32 Ana 2 Tot 1 ID 2222
	Addr 2 Area 0 Type OPUS SIM		Dig 32 Ana 2 Tot 1 Parc 1 Earc NO
0003	STORM PUMP SECTION	Main	Link 99.7 % Comms 100.0 %
	Main 1 Stby 1 Time 16 Jan 2008	16:35	Dig 31 Ana 2 Tot 1 ID 3333
	Addr 3 Area 0 Type OPUS SIM		Dig 31 Ana 2 Tot 1 Parc 0 Earc NO
0004 8	FINE SCREEN SECTION	Main	Link 99.6 % Comms 100.0 %
	Main 1 Stby 1 Time 16 Jan 2008	16:35	Dig 37 Ana 2 Tot 1 ID 4444
	Addr 4 Area 0 Type OPUS SIM		Dig 37 Ana 2 Tot 1 Parc 0 Earc NO
0005	ELECTRICAL DISTRIBUTION SECTION	Main	Link 99.9 % Comms 100.0 %
	Main 1 Stby 1 Time 16 Jan 2008	16:35	Dig 39 Ana 14 Tot 0 ID 5555
	Addr 5 Area 0 Type OPUS SIM		Dig 39 Ana 14 Tot 0 Parc 0 Earc NO
0006	Po GENERAL PROCESSED POINTS	Main	Link 0.0 % Comms 0.0 %
	Main 1 Stby 1 Time 01 Jan 0000	00:00	Dig 40 Ana 8 Tot 0 ID 6666
	Addr 6 Area 0 Type OPUS SIM		Dig 40 Ana 8 Tot 0 Parc 1 Earc NO

Remote Station Statistics Summaries

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

 1, Remote Station Communicat 	tions Su	mmary				х
0002 + FOUL PUMP S	N	/inimize	lain			
M_:- 1 Other 1	T:	16 1-	- 200	16.2		_
Addr 2 Area 0	Type		III 2000 8 91M	5 10.3	o nis	
Dig 32 Ana 2	Tota	1		2222		
Dig 32 Ana 2	Tota	i	Parc	1	Earc	NO
CONNECTED - ARCHIVE	DATA					
No.of Connected Calls	718	3				
No.of Failed Calls	23					
No.of Incoming Calls	0					
Min Dialup Time (secs)	0					
Max Dialup Time (secs)	13					
Ave Dialup Time (secs)	1.0					
Min Connect Time (secs)	0					
Max Connect Time (secs)	8					
Ave Connect Time (secs)	0.0					
Tot Connect Time (mins)	2.9					
Link Performance (%)	99.7					
No.of Messages Txd	6043	7				
No.of Failed Replies	16					
No.of Incoming Replies	3450	6				
Min Reply Time (secs)	0.0					
Max Reply Time (secs)	2.0					
Ave Reply Time (secs)	0.9					
Comms Performance (%)	100.0	D				
•						Þ

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

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.

- Inhibited points
- Poll inhibited points
- Alarm inhibited points
- Event inhibited points
- Control inhibited points

2, DIR 21 - Mimic Page Directory

19901 ADFM Commands

Auto-control inhibited points

🔲 1, Fi	le 7, Fine Scre	en Section (4) - Outfall Flow (2)	_ _ x
0001	04 Jan 08	10:43:05	0.43	L/S
0002	04 Jan 08	10:43:46	9.266	L/S
0003	04 Jan 08	10:44:27	1.699	L/S
0004	16 Jan 08	11:57:16	1.223	L/S
0005	16 Jan 08	11:57:57	3.502	L/S
0006	16 Jan 08	12:06:02	1.223	L/S
0007	17 Jan 08	11:48:04	3.502	L/S
8000	17 Jan 08	11:48:45	2.358	L/S
0009	17 Jan 08	11:49:27	3.169	L/S
0010	17 Jan 08	11:50:07	2.986	L/S
0011	17 Jan 08	11:50:48	4.218	L/S
0012	17 Jan 08	11:51:29	4.338	L/S
0013	17 Jan 08	11:52:10	4.33	L/S
0014	17 Jan 08	11:52:51	4.072	L/S
0015	17 Jan 08	11:53:32	2.343	L/S

🔲 1, Fi	le 7, Fine Screen	Section (4	4) - Out	tfall Flow (2)	
0001	17 Jan 2008	11:46	Fa		
0002	17 Jan 2008	11:47	Fa		
0003	17 Jan 2008	11:48		1.223	L/S
0004	17 Jan 2008	11:49		2.358	L/S
0005	17 Jan 2008	11:50		3.169	L/S
0006	17 Jan 2008	11:51		4.218	L/S
0007	17 Jan 2008	11:52		4.338	L/S
8000	17 Jan 2008	11:53		4.072	L/S
0009	17 Jan 2008	11:54		2.343	L/S
0010	17 Jan 2008	11:55		1.342	L/S
0011	17 Jan 2008	11:56		2.417	L/S
0012	17 Jan 2008	11:57		1.604	L/S
0013	17 Jan 2008	11:58		0.43	L/S

19800 PC6-SQL Information Management System 19801 PC6-SQL Enhanced IMS and WFS (Workstation File Se

19820 Demonstration Mimic Page - Plant Schematic 19821 Demonstration Mimic Page - Tanks with Cutouts 19900 Thames Tideway ADFM Data Logger

19902 NOSWA Home Page 19995 Demonstration Mimic Page - Wier Penstock St 19996 Demonstration Mimic Page - Overseal Booster

19997 Demonstration Mimic Page - Plant Schematic 19998 Demonstration Mimic Page - Electrical Distribu

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.

tation/Point Search Results									
	Search Criteria								
	Search	n All	Mimic	: Display Pages					
Se	elected T	ype	ANALOGUE POINT						
Sele	ected Sta	tion	1	1 COARSE SCREEN SECTION					
Se	Selected Point			INCOM FLOW					
				Matching Items					
\odot	19311	Var	iable P	hrases					
\odot	19320	Variable Symbols							
\odot	19321	Variable Symbols							
\odot	19360	Variable Sliders							
\odot	19370	Var	iable Gauges						
\odot	19380	Multi-State Variables							
\odot	19401	1 General Numeric and Status Variables							
\odot	19402	General Digital Status Objects							
\odot	19403	General Analogue Variables with Alarm States							
\odot	Demonstration Mimic Page - Plant Schematic								
Display Create New Window Cancel									

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.

	COMMAND DESCRIPTION	
Contents Index Search	MI display a mimic page.	
	MIPATH change path to mimic page files	
🗉 🔷 Installation 🔺	TOOLBOX display a toolbox.	
🐵 🧇 Overview	MIMAGE load and display an image within a defined window area on a mimic or map page.	
🐵 🍫 Getting Started 📃	IMAGE load and display an image within a selected data display window.	
 Weyboard Commands Keyboard Commands Inc. 	MGRAPH load and display a point archive graph within a template graph specification on a mimic or map page.	
	MGSPEC load and display a graph specification within a defined window area on a mimic or map page.	
AL-Alarm Points Summai	MAP display a map page.	
ALE-Alarm Inhibit a Station	MAPATH change path to map page files	
2 AN-Analogue Points Sum	EVENT display an event archive summary.	
? ARC-Tabular Point Archiv	REVENT display a remote event archive summary.	
AUE-Auto Control Enable	TSARC display a tabular time stamped point archive summary.	
🕐 AUI-Auto Control Inhibit a	ARC display a tabular point archive summary.	
BELL-Sounding the Cons	GRAPH display a GRAPH.	
CALLBACK-Call Back on	GVIEW display a view GRAPH options dialogue.	
CASCADE-Cascade All V	GSPATH change path to graph specification files	
CENTRE-Centre Window	DPGRAPH display a dual parameter GRAPH.	
CLIAN Palling Changel P	DPPATH change path to dual parameter graph specification files	
CLOSE CLOSEX-Close	TRACE display a TRACE.	
CO-Digital Control Points	TRATE select the trace sampling rate.	
Co Digital Control Conto		

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.

	ACCESS.LOG	i - Notepa	d		
<u>E</u> ile	e <u>E</u> dit F <u>o</u>	rmat <u>V</u> ie	w <u>H</u> el	р	
Eile 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	E Edit Fo LOGOFF SIGNOFF SIGNON LOGOF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF SIGNOFF	Imat Vie 19 Oct 19 Oct	w Hel 2007 2007 2007 2007 2007 2007 2007 200	p 16:20 16:20 16:24 16:24 16:24 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:24 16:24 16:24 16:24 16:24 16:24 16:24 16:24 16:24 16:25 16:26 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:25 16:26	SONY (SYSTEM) SONY (6.00 16th october 2007) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM) SONY (6.00 16th october 2007) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM) SONY (SYSTEM)
1 1 1 1	LOGON LOGOFF SIGNOFF SIGNON	02 NOV 02 NOV 02 NOV 02 NOV	2007 2007 2007 2007	08:19 08:21 08:21 08:21	OPUSQUADVISTA (SYSTEM) OPUSQUADVISTA (SYSTEM) OPUSQUADVISTA OPUSQUADVISTA (6.00 27th October 2007)

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.

COMMS.LOG - W	/ordPad								_ 0	X	3
<u>File Edit V</u> iew	<u>I</u> nsert F <u>o</u> rmat <u>H</u> elp										
0 🛩 🖬 🎒 [) A % D B	ک ا									
PSTN Pert	n/a Averag	e Calls	: Out	U	Fall	0		in U			
COMM Perf	n/a Averag	e Maga	: Out	0	Fail	0		In O			
Poll Channel	No. 20										
PSTN Perf	95.1 % Averag	e Calls	: Out	66	Fail	2		In O			
COMM Perf	97.3 % Averag	e Msgs	: Out	19285	Fail	4		In O			
Low Performa	nce Remote Stat	ions									
Station 1	LOCAL GEM				PSTN	89.7	ę	Comms	98.6	号	
Station 2	CLENT HILLS	(pstn)			PSTN	75.0	ę	Comms	98.8	ę	
Station 3	LOCAL GEM STA	TION 3			PSTN	33.3	ę.	Comms	99.7	ę	
Station 4	WALSALL ROAD	(pw)			PSTN	50.0	ę.	Comms	99.8	ę	
Remote Station Alarm Dial Ins										ш	
NONE .											
											Ψ.
For Help, press F1											

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.

🔲 1, Pa	age 1 - (igital Control Points Summary			x	Performi	ng controls	via summaries			
0001 0001	+ 22	COARSE SCREEN SEC COARSE SCREEN 1	TION STOPPED	Main 18 Jan 2008 16:09 Coarse Screening Unit							
0004	22	COARSE SCREEN 2	RUNNING	Coarse Screening Unit	Die	ital Point Contro	1				
0007	22	COARSE SCREEN 3	STOPPED	Coarse Screening Unit							
0010	2 2 0	k PENSTOCK 1	OPEN	Coarse Screen Inlet Penstock	C C		Current	Selection			
0014	2 2 0	k OUTLET PK2	MOVING	Coarse Screen Outlet Penstock		Selected Type DIGITAL POINT					
0018	2 2 0	k INLET PK3	MOVING	Coarse Screen Inlet Penstock		beleeted ()p					
0022	2 2 0	k OUTLET PK4	OPEN	Coarse Screen Outlet Penstock		Selected Station	n 2 FOUL	PUMP SECTION			
0026	2 2 0	k INLET PK5	OPEN	Coarse Screen Inlet Penstock		Selected Poin	t 4 FOUL	PUMP 2			
0030	20	k OUTLET PK6	MOVING	Coarse Screen Outlet Penstock							
0034	8 F	a WIER PK	CLOSED	Foul Sump Feed Wier Penstock		Tag Reference	E FPS FOUL PU	MP 2 RUNNING			
0038	2	a ROTORK VALVE 1	CLOSED	Foul Sump Feed Rotork Valve		Extern Reference	e D.0002.0004				
0042	2 1	a ROTORK VALVE 2	CLOSED	Storm Sump Feed Rotork Valve							
0002	+	FOUL PUMP SECTION		Main 18 Jan 2008 16:09			Contro	Status			
0001	2	FOUL PUMP 1	STOPPED	Foul Pump Unit							
0004	2	FOUL PUMP 2	RUNNING	Foul Pump Unit		Control Type	BINARY	SELECT AND EXECUTE			
0007	2	FOUL PUMP 3	STOPPED	Foul Pump Unit		Control Code	1	Timeout 0 Mins			
0010	_ 2	FOUL PUMP 4	RUNNING	Foul Pump Unit							
0029	20	0k ROTORK VALVE 3	OPEN	Foul Pump Bypass Rotork Valve		Off State	STOPPED				
0003		STORM PUMP SECTIO	N	Main CONNECTED - DIGITAL DATA		On State	PLINNING				
0001	2	STORM PUMP 1	STOPPED	Storm Pump Unit		On State	RONINENG				
0004	2	STORM PUMP 2	RUNNING	Storm Pump Unit		Ternary State					
0007	2	STORM PUMP 3	STOPPED	Storm Pump Unit							
0010	2	HYD VALVE 1	OPEN	Storm Pump Hydraulic Valve		Status	Quiescent				
0013	2	HYD VALVE 2	OPEN	Storm Pump Hydraulic Valve							
0016	2	HYD VALVE 3	CLOSED	Storm Pump Hydraulic Valve	C C		Comman	d Options			
						SHUTDOW	STA	RIUP			
							Command SHUT	TDOWN			
ts Ov	ervie	W				Execute Control	Execute an	nd Quit Cancel			

34 Products Overview



Execute Control Execute and Quit

Cancel

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 multicore 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.