

RADIOLOGICAL SURVEILLANCE & ALARM MANAGEMENT SYSTEMS



Complete Remote Monitoring Solutions
Automated Alarm Processing
Historical Event Tracking



OUTLINE

Corporate Overview



**a name
synonymous
with quality**

OMNIFLEX has been designing and manufacturing electronic products and systems for the automation and control industry since 1965.

Over the last 20 years Omniflex has designed and delivered products and systems for the Nuclear Industry specialising in Alarm Annunciators, Alarm/Event Management systems, Multiplexers and Radiological surveillance systems.

History

As part of British Nuclear Fuels Limited's standard ILW design standards, **Omniflex** was chosen to supply both radiological surveillance and alarm/event management systems. A number of new interface modules have been developed for the well proven Maxiflex I/O system to provide interfaces to any of the existing or new ranges of Harwell® or Lab Impex® Alpha, Beta and Gamma radiation monitors.

The ILW design also includes the supply of an independent alarm management system, which is designed to provide real-time alarm/event monitoring.

Omniflex Maxilarm and Omni 4000 systems were chosen to provide this critical monitoring and logging.

An investment in products that carry such a large responsibility requires confidence in our track record and the reliance of some of the world's leading nuclear industries, such as BNFL, on Omniflex technologies, is sufficient testimony.

Don't ask us – ask our loyal customer base.

www.omniflex.com

*your link to reliable solutions in radiological
surveillance networking and abnormal alarm
management*



SYSTEM

Radiological Surveillance

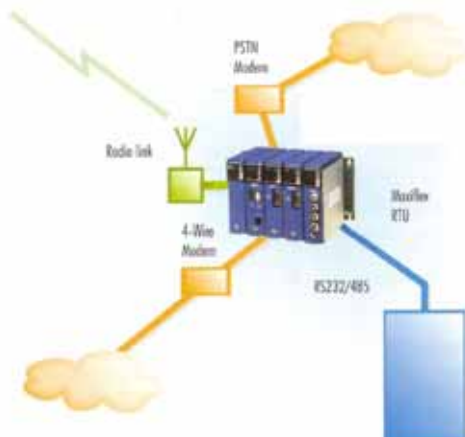
The Maxiflex System

The **Maxiflex** I/O system is designed to provide a cost effective and extremely flexible means of interfacing any radiation monitor to the building or site-wide SCADA system.

Maxiflex is modular in design and can accommodate any type of digital or analogue signal, together with distributed intelligent communications modules. The Maxiflex intelligent radiation monitor interface modules makes it an ideal system to distribute around the building or site.

Maxiflex has a very powerful communications infrastructure supporting **Conet** internetworking technology. A mix of communications media may be applied to suit the site including Conet/c (any grade of 2 core cable up to 10kms without the need for repeaters), Modbus, Ethernet, PSTN and Radio.

This range of specially developed Radiological Monitor interfaces allow existing infrastructure to be reliably and cost effectively networked.



Harwell Monitors AB96, G64, ICAM

These Alpha/Beta/Gamma monitors provide either a high speed pulsed stream output using RS422 voltage levels for which a 4 channel Maxiflex module (Model M1711A) was developed or an RS485 network output for which a Harwell NIM (Network Interface Module) Model M1588A was developed. The Harwell NIM will enable up to 32 monitors to be inter-connected on the same RS485 network. Up to 15 of either of these modules can be fitted to one Maxiflex system with no limit to the number of Maxiflex systems that can be interconnected.

Harwell Monitors 3230 & 3280

These Alpha/Beta monitors provide a high speed pulsed stream output using RS422 voltage levels, for which a 4 channel Maxiflex module (Model M1711A) was developed. This module will enable up to 4 monitors to be hardwired. Up to 15 of these modules can be fitted to one Maxiflex system with no limit to the number of Maxiflex systems that can be inter-connected.



Lab Impex Monitors CMS 2000

These Alpha/Beta/Gamma monitors provide a RS485 network output, for which a LabImpex NIM (Network Interface Module) M1585A was developed. This module will enable up to 32 monitors to be inter-connected on the same RS485 network. Up to 15 of these modules can be fitted to one Maxiflex system with no limit to the number of Maxiflex systems that can be inter-connected.



Building Evacuation Logic

Omniflex also provides the Maxiflex evacuation logic system which connects to the RSS network. All alarms are monitored on the entire system from both the hardwired alarms from the monitors as well as the alarms generated within the SCADA system for verification. The Maxiflex Evacuation node then drives volt free relay outputs depending on the % of standing alarms and groups to the site evacuation system to ensure that under a building radiation alert condition all personnel are safely evacuated.

Other Equipment

The **Omniflex** development staff have in depth expertise and experience in the development of custom protocols and interfaces for third party equipment. It is likely that they have already implemented a protocol similar to your next special application, and can assist with a cost-effective integrated solution.

SYSTEM

Alarm & Event Management

Independent Alarms

In many instances (such as the BNFL ILW design) there is a requirement for an independent real-time Alarm management system.

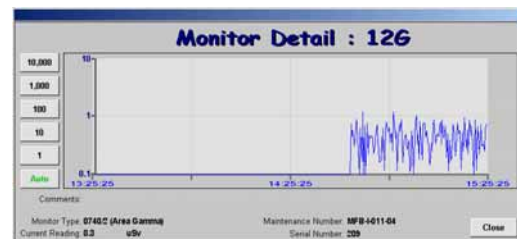
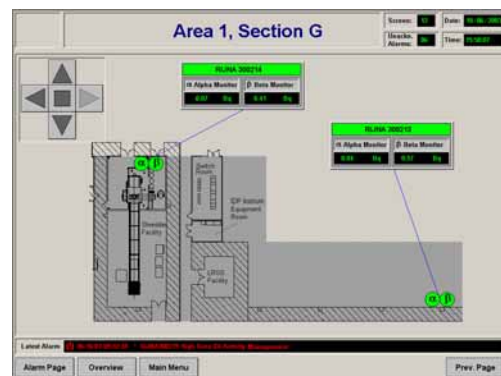
The **Maxiflex** system is designed to take in the hardwired High and Trip Alarms from each monitor. These alarms can be individually time-stamped by the **Maxalarm** alarm handling module's real-time clock at source, and the alarms displayed to the operators on **Omniflex'** **Omni 4000** PC based alarm handling package.

These systems are widely used across many BNFL sites.

Omniflex' range of independent alarm systems such as the **Omni16C** range, can also be integrated to provide independent backup for critical alarms, ensuring the appropriate levels of safety in the system can be achieved. PFD and MTBF data is available to aid in the verification of safety related system performance to meet standards such as IEC61508.

Time Stamp at source

In large distributed systems, it can take a finite time for alarms and events occurring on a site to propagate to the SCADA system. In wide area applications, this time can be significant. A common practice is to time stamp these events at the SCADA system. This can cause loss of valuable resolution in establishing the order of events on a site. The Maxiflex system can timestamp alarms at source, and pass these events with their original time stamp to the SCADA for logging. This allows the resolution of alarm occurrences to be kept in the order of milliseconds.



Station	Channel	Efficiency	Model	Type	Serial No.	Monitor Configuration	Comment1	Comment2
0000	10	YES	0740C	Area Gamma	81	MP D-0211-30		
0002	26	YES	0740C	Area Gamma	71	MP D-0211-40		
0003	90	YES	0740C	Area Gamma	62	MP D-0211-48		
0004	94	YES	0740C	Area Gamma	86	MP D-0211-47		
0006	16	NO	-	Spares	-	-		
0008	34	NO	-	Spares	-	-		
0007	16	YES	28.0	3200T	Alpha in Ar	33	MP D-0203-10	
0009	17	NO	-	Spares	-	-		
0010	18	NO	-	Spares	-	-		
0011	19	NO	-	Spares	-	-		
0011	36	NO	-	Spares	-	-		
0012	26	YES	28.0	3200T	Alpha in Ar	42	MP D-0203-17	
0013	21	NO	-	Spares	-	-		
0014	22	YES	28.0	3200T	Alpha in Ar	41	MP D-0203-16	
0016	23	NO	-	Spares	-	-		
0016	33	YES	0740C	Area Gamma	83	MP D-0211-46		
0017	2	YES	28.0	3200T	Alpha in Ar	31	MP D-0203-08	
0018	4	NO	-	Spares	-	-		
0019	3	YES	28.0	3200T	Alpha in Ar	31	MP D-0203-15	
0020	1	NO	-	Spares	-	-		
0021	28	NO	-	Spares	-	-		
0022	130	YES	0740C	Area Gamma	94	MP D-0211-61		
0023	36	YES	28.0	3200T	Alpha in Ar	45	MP D-0203-21	
0024	29	YES	28.0	3200T	Alpha in Ar	27	MP D-0203-04	
0026	110	YES	0740C	Area Gamma	88	MP D-0211-48		
0026	33	YES	28.0	3200T	Alpha in Ar	9	MP D-0203-14	
0027	14	YES	28.0	3200T	Alpha in Ar	28	MP D-0203-05	
0028	15	NO	-	Spares	-	-		

SYSTEM

The Total Solution

SCADA

Omniflex Engineers have vast experience in the design and configuration of SCADA systems and have successfully implemented systems using most of the world leading brands of SCADA software (such as Intouch, iFix, Factorylink and Panorama.) OPC Servers and other open industry standard interfaces are available for integrating the **Maxiflex** system to wide range of third party Supervisory Systems.

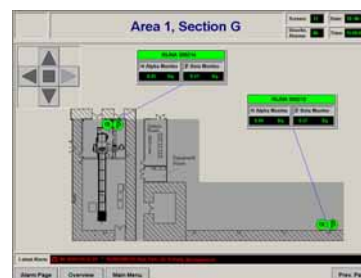
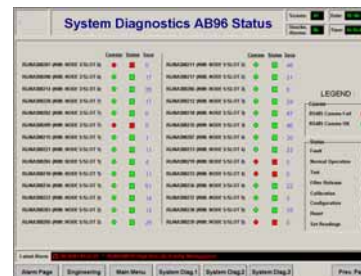
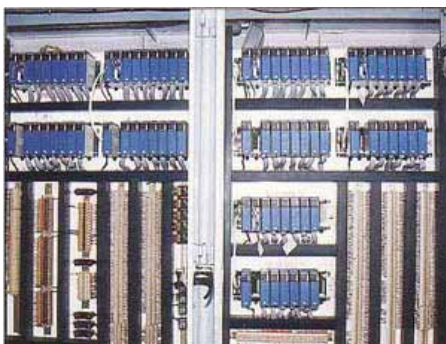
SCADA solutions are designed to provide a complete building or site-wide overview of every monitor. This enables an operator to keep an overview of the entire system, but to quickly zoom through the individual buildings and rooms down to individual monitors, all from the central control point.

System Integration

Omniflex can provide you the complete solution including PC Servers, workstations, printers, network servers as well as project management, design and build of all node panels, configuration, testing, commissioning, and ongoing maintenance.

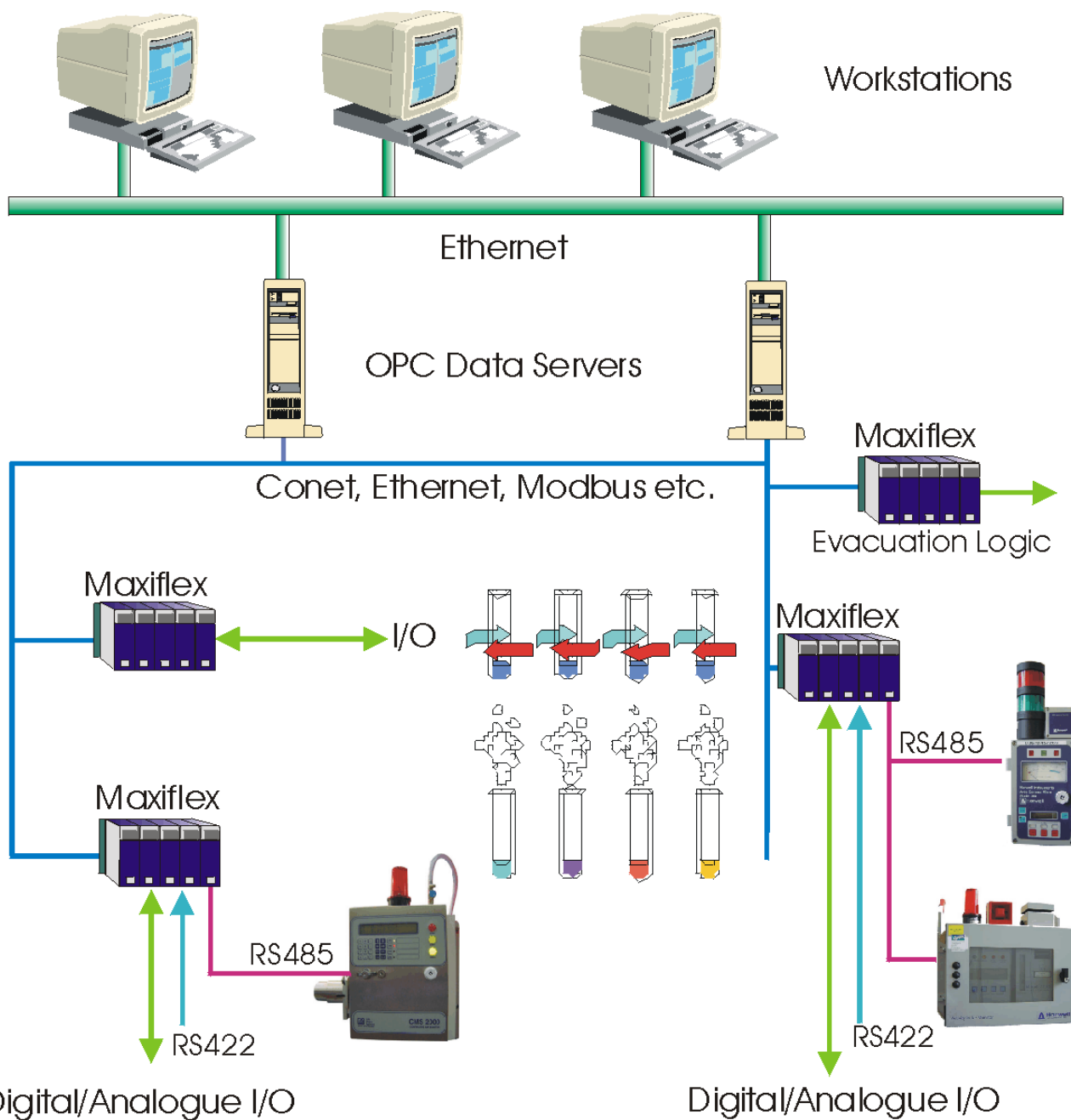
References

We are proud of the projects in this specialised area that we have successfully completed. Ask us for a reference list.



ARCHITECTURE

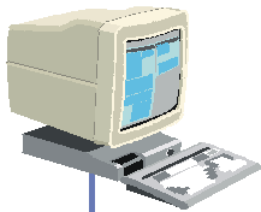
Radiological Surveillance



ARCHITECTURE

Alarm & Event Management

Omni 4000

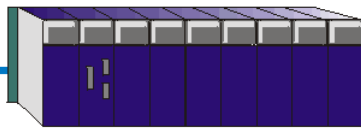


Omni 4000



Reports

Conet Realtime Local Area Network



Digital I/O

Maxilarm



Digital I/O



Maxiflex



RS485

Digital/Analogue I/O



The Total Solution

- **Integrate Radiation monitors from different manufacturers**
- **Integrate existing monitors into SCADA, regardless of age**
- **Future proof modular design (eg. Future Radnet support)**
- **Take full advantage of the extensive Maxiflex capabilities:**
 - **High Isolation Analogue and Digital Monitoring**
 - **Optional IEC61131 PLC Control**
 - **Real-time alarm/event management**
 - **Low cost networking up to 10km on twisted pairs**
 - **Inter-networking for wider area solutions**
 - **Integrated datalogging and multiplexing**



Solutions by Design