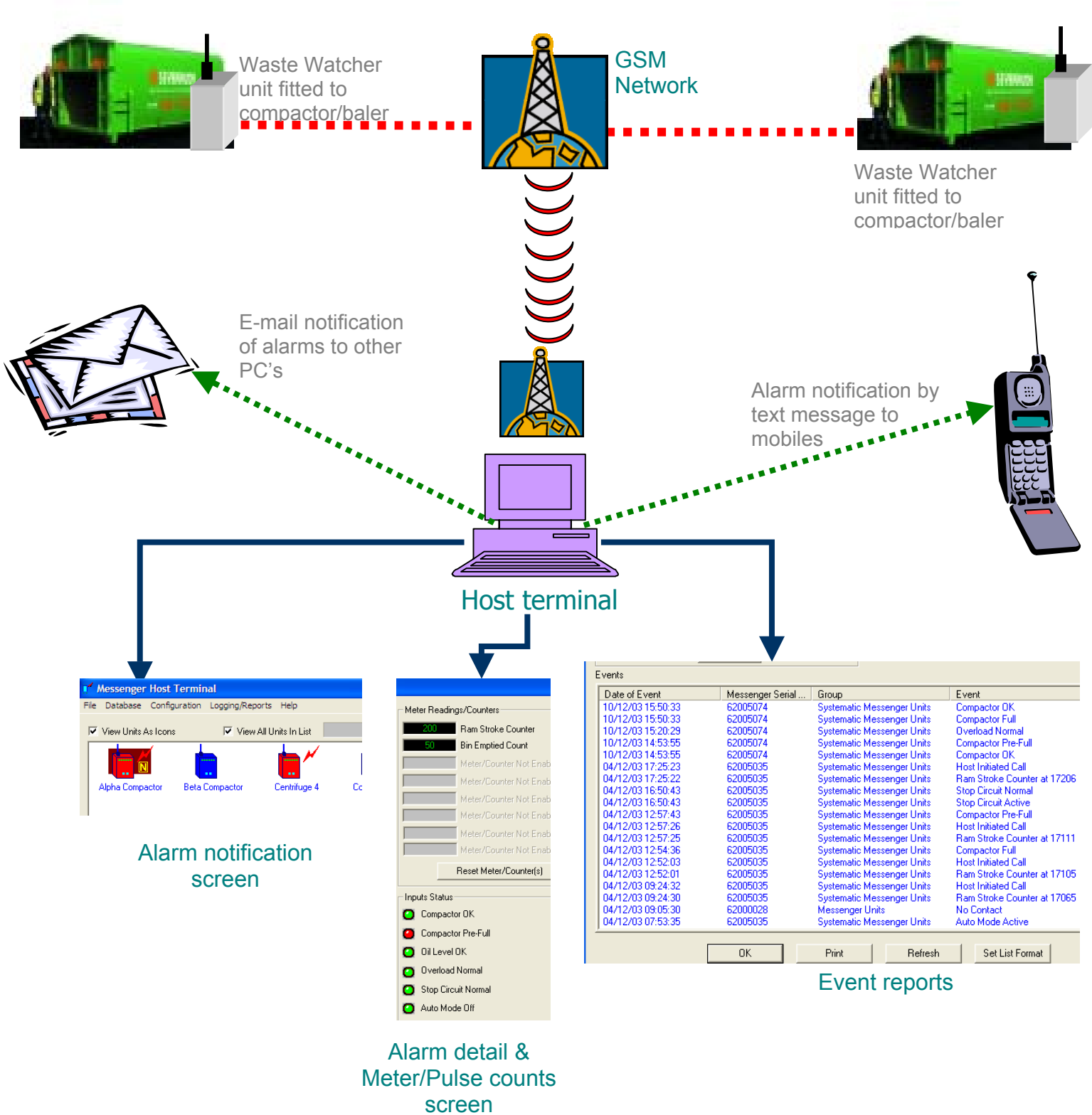


Waste Watcher

Remote monitoring for waste equipment



Waste Watcher has been developed to give companies a remote view of the operational status of their waste equipment. It comprises of any number of monitoring units fitted to waste equipment that report to a central host PC using the GSM mobile phone network. Information received by the host PC can forward to mobile phones as SMS text messages or as e-mails to any number of mailboxes. The schematic below details how the system operates:



Input Alarms and Counting functions

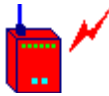
Waste Watcher can report on up to eight alarm inputs (expandable to 16) and eight meter/pulse counting inputs. Input text is operator configurable to reflect meaningful information, for example: -

	<i>Alarmed Status</i>	<i>Normal status</i>
Input 1	Container full	Container filling
Input 2	Container two thirds full	Container filling
Input 3	Stop button activated	Compactor operational
Input 4	Oil level Low	Oil level OK
Input 5	No container attached	Container attached
Counter1	Ram strokes since last emptied	138
Counter2	Total number of container changes	42

When a compactors relay that is configured to initiate an alarm, operates, Waste Watcher will send a data message via GSM (Global System for Mobile Phones) to the host terminal. Once accepted by the host it will be displayed as a flashing Icon with a red background, also an audible alert will be heard. Once the alarm has been acknowledged the audible alert will be cancelled and the icon background disappears. When the compactor has returned to its normal status, again the host will be notified and the Icon returns to a blue background.



RED ICON WITH BACKGROUND: This indicates a new alarm that has not been acknowledged. An alarm is acknowledged by double clicking on the alarm to view the details.



RED ICON: This indicates a unit in an alarm condition that has been acknowledged (viewed).



BLUE ICON: This indicates a unit with no alarm conditions (i.e. healthy)

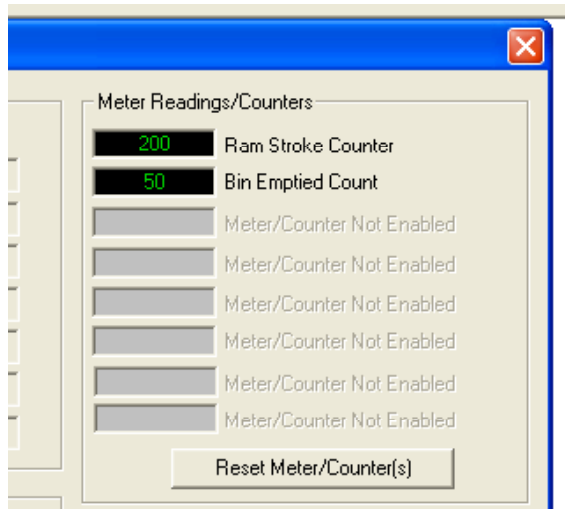


GREY ICON: This indicates a unit that has been disabled and is therefore no longer displaying alarm conditions. (i.e. Out of service)



GREEN ICON : This indicates a unit that has been powered for the first time. This usually denotes a newly commissioned compactor

Each time a Waste Watcher unit communicates with the host the Meter Readings/Pulse Counts are updated. If a real time reading is required the unit can be called from the host for an immediate update.



Ram stroke counts can be set to generate an alarm when a pre-defined number is reached, for example; once it is known that a specific type of waste paper requires 300 ram strokes to fill a container, the alarm threshold can be set at 200 to indicate the container is two thirds full and will soon require emptying. These settings can be

configured either on site during set up or remotely from the host, so that the threshold can be altered as the waste stream changes.

Each time a container is removed for emptying the ram stroke counts are returned to zero and the 'Bin Emptied' count increased by a factor of one. Again each time a container is removed from the compactor an alarm can be initiated to inform remote staff of this action, a time and date stamped record is made in the logs for future validation. When the container is returned the alarm status returns to normal and the icon turns blue, indicating the compactor is operational again.

Alarm Forwarding By SMS

The host terminal can send an SMS text messages to mobile phones reporting alarm



15:46:26
17/11/2003
Lexmay Ltd
Compactor Pre-Full

status of a machine. Each individual Waste Watcher can be configured (by the host terminal) so that some or all of its status events are forwarded to, up to 3 individual phone numbers

(phone numbers for each unit are independent and can be either typed in directly or selected from an SMS Phone Address Book).

Appropriate staff can be informed of relevant events for example; when staff shift patterns change.

Alarm Forwarding By e-mail

The host can also be configured to forward alarms as e-mails to an infinite number of e-mail addresses. As with SMS forwarding, events to be forwarded and recipients can be selected as required. The output for e-mail can either be via a separate BT landline, a GSM modem connected to the host PC, or via an existing e-mail network. Alarms will be received by the recipient(s) via the existing e-mail system in real time, provided of course an 'always on' connection is present.

Event Logs and Reports

The System logs all events reported by units to a historical archive. This includes reported alarms and events not normally displayed such as communication failures, restoration of faults, etc. Each event that is logged is stored with the following information:

Date of Event	Equipment Ref.	Group	Event
10/12/03 15:50:33	Alpha Compactor	Systematic Messenger Units	Compactor Full
10/12/03 15:20:29	Alpha Compactor	Systematic Messenger Units	Overload Normal
10/12/03 14:53:55	Alpha Compactor	Systematic Messenger Units	Compactor Pre-Full
10/12/03 14:53:55	Alpha Compactor	Systematic Messenger Units	Compactor OK
04/12/03 17:25:23	Prima Compactor	Systematic Messenger Units	Host Initiated Call
04/12/03 17:25:22	Prima Compactor	Systematic Messenger Units	Ram Stroke Counter at 17206
04/12/03 16:50:43	Prima Compactor	Systematic Messenger Units	Stop Circuit Normal
04/12/03 16:50:43	Prima Compactor	Systematic Messenger Units	Stop Circuit Active
04/12/03 12:57:43	Prima Compactor	Systematic Messenger Units	Compactor Pre-Full
04/12/03 12:57:26	Prima Compactor	Systematic Messenger Units	Host Initiated Call
04/12/03 12:57:25	Prima Compactor	Systematic Messenger Units	Ram Stroke Counter at 17111
04/12/03 12:54:36	Prima Compactor	Systematic Messenger Units	Compactor Full
04/12/03 12:52:03	Prima Compactor	Systematic Messenger Units	Host Initiated Call
04/12/03 12:52:01	Prima Compactor	Systematic Messenger Units	Ram Stroke Counter at 17105
04/12/03 09:24:32	Prima Compactor	Systematic Messenger Units	Host Initiated Call
04/12/03 09:24:30	Prima Compactor	Systematic Messenger Units	Ram Stroke Counter at 17065
04/12/03 07:53:35	Prima Compactor	Systematic Messenger Units	Auto Mode Active
04/12/03 07:53:11	Prima Compactor	Systematic Messenger Units	Auto Mode Off
04/12/03 07:04:40	Prima Compactor	Systematic Messenger Units	Auto Mode Active

- ◆ Serial number of unit
- ◆ Type of event
- ◆ Date/Time of event
- ◆ Group to which Waste Watcher is associated
- ◆ Any other relevant database information associated with the unit.

Database information is stored with each event so that if a Waste Watcher unit is moved to a new location (and hence the location information changes) the events reported before the move will retain the old location information.

Date ranges can be set for events and the range then printed.

Reports can be created from the Meter Reading/Pulse Counting inputs using the standard reporting suite, or tailored for individual requirements. They are compiled in CSV format (Comma separated values) and can therefore be exported to typical Windows software for example: Microsoft Excel, Access etc. Once the data has been exported it can then be manipulated as required. Reports can be generated automatically and sent automatically by e-mail. If required NHDS can create specific reports that can automatically interface with existing management software to provide seamless management information.

Weekly Consumption Report from Week Starting Mon, 25 Nov 2002 to Week Ending Sun, 21 Dec 2003 - Lexmay Compactor										
Site Name	Messenger No		Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Meter 7	
Lexmay Ltd	62000028	WS Mon, 13 Oct 2003	100	2	0	49800	0	0	0	
		WS Mon, 20 Oct 2003	320	4	0	49800	0	0	0	
		WS Mon, 27 Oct 2003	956	6	0	49800	0	0	0	
		WS Mon, 03 Nov 2003	1304	9	0	49800	0	0	0	
		WS Mon, 10 Nov 2003	1687	10	0	49800	0	0	0	
		WS Mon, 17 Nov 2003	2033	13	0	49800	0	0	0	
		WS Mon, 24 Nov 2003	2398	15	0	0	0	0	0	
		WS Mon, 01 Dec 2003	2776	17	0	0	0	0	0	
		WS Mon, 08 Dec 2003	3345	18	0	0	0	0	0	
		WS Mon, 15 Dec 2003	3876	22	0	0	0	0	0	
		Totals	18795	116	0	0	0	0	0	

Computer Requirements & Networking

To run the Waste Watcher Host Application an IBM compatible PC is required with the following specification:

- ◆ Windows 95/98/ME/NT operating system
- ◆ A Hayes AT compatible modem (PSTN or GSM – GSM is required for SMS Message forwarding)
- ◆ Intel Pentium or better processor (Pentium II processor recommended)
- ◆ 8 MB RAM (16MB recommended)
- ◆ Screen resolution of 800x600
- ◆ 3 MB of free hard disk space

This is the minimum requirement, most business PC's should exceed this requirement significantly.

If required PC's can be networked and integrated with existing enterprise systems.

Installation

Units can be supplied to your equipment provider for fitment prior to delivery of new equipment or, supplied directly for retro fitting to your existing equipment. In the majority of cases installation takes no more than one hour, however this can vary depending on the make of compactor, volt free contacts available and accessibility. NHDS can provide an installation service through our distributor "Systematic Servicing". This usually coincides with host terminal commissioning and user training. The system is provided with comprehensive user manuals.

Commissioning

When a compactor is installed with Waste Watcher, the unit can either be configured/commissioned on site by a laptop (installed with NHDS configuration software), or alternatively this can be carried out remotely by using the host terminal software. If a compactor is subsequently removed and installed at another location or handled by a different depot it would not be necessary for a member of staff to visit a site to reconfigure the unit.

Security

The data is transmitted using the GSM data and is therefore generally accepted as a secure link. The host terminal software can be password protected to ensure that only staff with the correct authority levels has access.

Communication

Units communicate with the host terminal using the GSM data network. The use of the data channel keeps airtime costs to a minimum as very small amounts of data are transferred when an alarm is initiated. Each Waste Watcher and each Host terminal will require a data enabled SIM card. These can be supplied by NHDS if required.

Key Benefits

- Container capacity maximised
- Improved planning and routing of trucks
- Improved utilisation of haulage fleet
- Reduced empty running
- Reduced running costs (Fuel, tyres, maintenance, servicing, depreciation etc.)
- Less disruption to customers operation
- Reduced environmental impact
- Less reliance on customers for information
- Increased control of product (bales)
- Visibility to unauthorised use of equipment (Balers)
- Accurate and timely management information for strategic decision making
- Ability to bench mark depots
- Competitor advantage
- Industry leader kudos
- Validation of service
- Notification of equipment failure
- Improved customer satisfaction
- Increased bottom line profits

To find out more contact: -

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